



Effect of construal level on the drivers of online-review-helpfulness

Swagato Chatterjee¹

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Abstract

The purpose of this study is to explore the effect of purchase context on the relative importance of the drivers of online review helpfulness and also to explore the psychological process behind it. This will help the review management team of online retailers to create a better review ranking system that considers purchase context. Based on the theory of helpful behavior, we propose that review-helpfulness is driven by review characteristics such as review diagnosticity and vicarious expression in the review, and reviewer characteristics such as reviewer-trustworthiness. Moreover, following construal level theory, we explain the relative importance of the review and reviewer characteristics. Using four experimental studies, we find that, at low construal, review characteristics have higher relative importance than high construal, while reviewer characteristics have lower relative importance. The current study contributes to the literature on online review-helpfulness and the application of construal level theory in consumer behavior. The study proposes a unique method of ranking the reviews based on consumers' purchase context and predicted psychological state while displaying them on the platforms. This is the first paper that explores the impact of construal level on review and reviewer characteristics on review-helpfulness.

Keywords Online-review-helpfulness · Construal level theory · Review diagnosticity · Vicarious expression · Reviewer-trustworthiness

1 Introduction

With the decreasing cost of the internet and increasing access to information, consumers have become heavily interconnected. In such a close-knitted world, consumer experiences and opinions create brand and consumer community, influence purchase decisions, and impact consumer loyalty [7]. Online reviews are one such

✉ Swagato Chatterjee
swagato.chatterjee@qmul.ac.uk

¹ Queen Mary University of London, Mile End, London, UK

outcome of consumer experience and opinions which influence the business a lot, more so in the era of e-commerce [16, 22, 53, 65].

Online reviews have two-way utility: one, they help prospective consumers in assessing the service quality and value provided by a service provider; two, it also helps the service providers understand what the consumers are looking for and where they need to improve (64). From a consumer point of view, online reviews are more trustworthy than promotional messages shared by companies. Better reviews can attract more prospective customers than product or service descriptions in e-commerce channels [6, 8]. Extant literature found online reviews to be one of the most trusted sources of information, sometimes at par or just next to recommendations from close friends or family [21]. Therefore, an online review can impact the consumers' purchase decisions and the sales of a company extensively [16, 22, 53, 65]. This calls for a probe into the drivers of the helpfulness of a review in the consumer purchase decision-making process.

Extant literature in marketing, information systems, decision science, hospitality, etc. has focused on antecedents and predictors of review-helpfulness. Researchers have focused on both review and reviewer level attributes [2, 3, 12, 17, 18, 23, 44, 47, 50, 64] and both quantitative and qualitative information [7, 23, 28, 48] while evaluating online-review-helpfulness. While the majority of studies have focused on the number of helpful votes as the measure of review-helpfulness and performed an aggregate level analysis, some studies have also focused on the individual reader or consumer-level data and perception of review-helpfulness [23, 50, 62]. However, the impact of the reader's purchase context on perceived review-helpfulness has remained understudied [1]. Moreover, the influence of the underlying psychology of the reader on the perceived helpfulness of the review has also not been studied in greater detail [26, 63], although these are important for website managers and review managers. Consumers often unknowingly share information about their purchase context during the product search. For instance, a consumer generally gives the details of her purchase context, such as the date of travel/stay, the distance of the destination, and/or the number of persons traveling/staying, before booking an airline ticket or a hotel room. Moreover, based on the profile (date of birth, date of the anniversary, etc.) and purchase history (baby products, toys, hygiene products), an online retail store can often map the purchase context. If a profile, which has regularly bought baby products in the last couple of years, searches for a toy, the online store should be able to identify that the purchase is being made for a kid in the family, probably close to the purchaser. All of these can suggest different purchase contexts in which different reviewer or review-related attributes will lead to review-helpfulness. Therefore, when the platforms rank the online reviews based on relevance, they should also consider the above purchase contexts and how that affects the drivers of helpful reviews. Extant literature has not shed light on this research question [49]. Moreover, the theoretical framework that can explain the influence of purchase context on the drivers of review-helpfulness has also not been explored in the extant literature. The above knowledge is important as such a theoretical framework will provide a better understanding to the platform managers in terms of review management and reputation management. This leads to the following research question: *How does the purchase context influence the helpfulness*

of an online review? How does the relative importance of the review-related and reviewer-related drivers of review-helpfulness vary in various purchase contexts? What theoretical framework can explain the above relationships?

In this study, we have used helping behavior proposed by Bach [4] and construal level theory [58] to identify how review and reviewer characteristics differentially impact review-helpfulness based on the purchase context. The helping behavior of individuals has three components: problem-solving, insight mediation, and perceived trustworthiness [4]. In the context of reviews, these three components are associated with review diagnosticity, vicarious expression in the review, and the reviewer-trustworthiness respectively. With four experiments, we establish that reviewer-trustworthiness is more important in high-construal purchase contexts than in a low-construal purchase context. Similarly, review characteristics such as review diagnosticity and vicarious expressions in the review are more important in low construal purchase contexts than in high construal purchase contexts. The above relationship has been tested for different product/service categories to ensure the generalizability of the results. We have also controlled for review valence and reader-level characteristics while analyzing the data. The study contributes to the literature of online-review-helpfulness and the application of the construal level theory. It also helps managers in better review management strategies, especially when the purchase contexts are known.

In the next part of the paper, we thoroughly review the studies on online-review-helpfulness and find the research gap that the current study is filling. Next, we create the theoretical framework, followed by empirical studies, discussions on results, theoretical contributions, managerial implications, limitations, and future scope.

2 Literature review

2.1 Review-helpfulness

Review-helpfulness can be defined as the perception of the consumer about the ability of a review in helping the consumer in making informed purchase decisions. Extant literature in marketing, information systems, decision science, hospitality, etc. has focused on antecedents and predictors of review-helpfulness. In doing so, one stream of literature has focused on non-text attributes of the review such as average rating, product type, review word count, and review extremeness [12, 17, 18, 44], others focused on textual attributes such as imagery and textual formats [64], negative word percentage [3], the proportion of positive–negative statements [50], review length, review sentiment and review polarity [48], review readability and sentiment tone [2], review type and the number of concepts [47], profanity [23], fit between the focal review and prior review [66], etc. A few studies combined the effects of qualitative and quantitative information from the review [7, 23, 28, 48]. Some have also explored the signals about the reviewer-trustworthiness, such as reviewer image, the total number of helpful votes by the reviewer or time gap between review and experience, etc., on online review's helpfulness to provide a holistic view of this construct [7, 28, 33]. However, most of the above-mentioned

studies have seen review-helpfulness at a collective level by using the number or share of helpful votes of a review as their dependent variable in their model. However, consumer psychology that leads to a perception of review-helpfulness at an individual level has remained unexplored, which our study tried to explore.

Another stream of literature focused on the individual consumer-level analysis of review-helpfulness [15, 17, 18] [23, 50, 62]. Such literature suggested moderate review length, non-evaluative product information, and information about the reviewer, spelling and grammatical errors, expressive slang and humor, lack of negative bias, profanity, authorship, content abstractness, discrete emotions expressed in the reviews, etc. were associated with review-helpfulness [11, 23, 30, 38, 50, 62]. These studies have majorly focused on review characteristics and reviewer characteristics and did not focus on purchase context beyond the situational (e.g. product type, purchase relevance) and personal (e.g. tie strength, homophily) factors. In a similar line, some researchers, who have used survey-based individual-level analysis, have used review diagnosticity and review information adoption as dependent variables and later also found their impact on purchase intentions [15, 17, 18]. However, all these studies have not focused on the contextual effect of the purchase context on the consumers' individual level perception of review-helpfulness. Our study explores this research gap.

In this study, we have explored the effects of purchase context such as timeframe, distance, social closeness, etc. on consumers' psychology and perceptions of review-helpfulness. Using construal level theory, we explain how the relative importance of various review and reviewer-related attributes on the perception of review-helpfulness varies depending on the context. While a few past studies have seen the effects of drivers of review helpfulness such as review diagnosticity, vicarious expressions, and source credibility [37, 38], the studies have not seen the effect of purchase context on the relative importance of these drivers. Thus, the current study bridges the above-identified gaps. The closest study that we found is a conference paper by Tang et al. [55] which explores the relative importance of argument strength and source credibility in various levels of reviewer-recipient tie strength. However, our study focuses on different constructs and uses more nuanced contextual effects and greater generalizability. Table 1 gives the relative positioning of the current paper in the extant literature on review-helpfulness.

3 Theoretical framework

3.1 Drivers of review-helpfulness

Our study is based on the three dimensions of helping behavior proposed by Bach [4]: problem-solving, insight mediation, and perceived trustworthiness. As the helping behavior of an individual makes the individual helpful, three dimensions can be considered as the drivers of perceived helpfulness in an individual. Based on these three constructs we have also identified three major drivers of perceived review-helpfulness: review diagnosticity, vicarious expression in the review, and

Table 1 Relative positioning of current paper in extant literature

Author	Dependent variable	Measure of helpfulness	Independent variable	Moderating variable	Mediating variable	Analysis level	Data source	Context
<i>Individual level studies</i>								
Schindler and Bickart [50]	High-value review	Reflective	Statement count, Proportion of positive and negative evaluative statements, product-descriptive statements, review-descriptive statements, negative and positive style characteristics			Individual	Scenario-based experiments	Personal purchase
Li et al. [38]	Product Review-helpfulness	Reflective and formative measure	Authorship, Content Abstractness	Authorship		Individual	Laboratory experiment	Personal purchase
Filieri [15]	Information adoption		Information quality, information quantity, overall product rankings, consumer ratings		Information diagnosticity, source credibility	Individual	Survey	Personal purchase

Table 1 (continued)

Author	Dependent variable	Measure of helpfulness	Independent variable	Moderating variable	Mediating variable	Analysis level	Data source	Context
Filieri et al. [17]	Purchase Intention	Reflective	Two-sided reviews, source trustworthiness, source expertise, source homophily, service popularity, eaters recommendations		Information helpfulness	Individual	Survey	Personal purchase
Filieri et al. [18]	Perceived Information Diagnosticity	Reflective	Long review, relevant review, factual review, current review, overall ranking score, source credibility	Involvement		Individual	Survey	Personal purchase
Ismagoliva et al. (30)	Helpfulness of review	Reflective	Discrete Emotions		Perceived price fairness, Perceived reviewer rationality	Individual	Experiments	Personal purchase
<i>Both aggregate and individual level studies</i>								
Wu [62]	Review-helpfulness	Ratio of helpful votes to total votes, reflective measures	Valence, word count			Aggregate and Individual	Amazon, Experiments	Personal purchase

Table 1 (continued)

Author	Dependent variable	Measure of helpfulness	Independent variable	Moderating variable	Mediating variable	Analysis level	Data source	Context
Hair and Ozcan [23]	The usefulness of online reviews	Helpful votes, reflective measure	Profanity		Perceived objectivity and perceived credibility	Aggregate and Individual	Yelp.com, Survey	Personal purchase
Craciun et al., [11]	Review-helpfulness	The ratio of helpful votes to total votes, reflective measures	Discrete emotions		Gender	Aggregate and Individual	Amazon, Experiments	Personal purchase
<i>Aggregate level studies</i>								
Mudambi and Schuff [44]	Review-helpfulness	The ratio of helpful votes to total votes	Review depth, review extremity	Product type		Aggregate	Amazon	Not used
Baek et al. [3]	Review-helpfulness	Helpful votes	Rating Inconsistency, Reviewer ranking, reviewer real name, word count, negative word percentage	search and experience good, price		Aggregate	Amazon	Not used

Table 1 (continued)

Author	Dependent variable	Measure of helpfulness	Independent variable	Moderating variable	Mediating variable	Analysis level	Data source	Context
Huang et al. [28]	Review-helpfulness	Ratio of helpful votes to total votes	Word Count, Reviewer experience, reviewer impact, cumulative helpfulness, product rating			Aggregate	Amazon Product Reviews	Not used
Agnihotri and Bhattacharya [2]	Review-helpfulness	The ratio of helpful votes to total votes	Review readability, Sentiment tone	Reviewer experience		Aggregate	Amazon Product Reviews	Not used
Fang et al. [14]	Helpful votes of author	Helpful votes of author	Positivity bias, readability, extreme sentiment			Aggregate	Tripadvisor Reviews	Not used
Qazi et al. [47]	Review-helpfulness	The ratio of helpful votes to total votes	Number of concepts, sentence length, wordiness	Review type		Aggregate	Tripadvisor Reviews	Not used
Salehan and Kim [48]	Review-helpfulness	The ratio of helpful votes to total votes	Longevity, Title sentiment, title length, review sentiment, review length	Review and title polarity		Aggregate	Amazon	Not used
Karimi and Wang [33]	Review-helpfulness	Helpful votes	Review attributes and reviewer attributes	Review attributes		Aggregate	Google play games	Not used

Table 1 (continued)

Author	Dependent variable	Measure of helpfulness	Independent variable	Moderating variable	Mediating variable	Analysis level	Data source	Context
Yang et al. [64]	Review usefulness	Helpful votes	Review enjoyment, review length, review readability, number of images			Aggregate	Yelp.com reviews	Not used
Chatterjee [7]	Review-helpfulness	Helpful votes	Review and reviewer characteristics, textual information of the review, overall rating			Aggregate	Tripadvisor reviews	Not used
Zhu et al. [66]	Review-helpfulness	Helpful votes	Review characteristics	Prior review characteristics	Fit	Aggregate	Amazon reviews	
Our study	Review-helpfulness	Reflective	Reviewer-trustworthiness, Review Diagnosticity, and Vicarious Expressions in the Review	Construal Level		Individual	Scenario-based experiments	Purchase context varies based on psychological distance

reviewer-trustworthiness [38]. How these dimensions are related to the dimensions proposed by Bach [4] is discussed below.

According to Bach [4], problem-solving is associated with providing advice or information to solve somebody's problems. In the context of the purchase decision-making problem, problem-solving will be related to providing information that will help future purchasers take a more informed and unambiguous decision. This can be only possible when the information provided leads to a conclusive answer, removes uncertainty, and ensures correct interpretation. Consumer reviews are such a set of information that is expected to do the above. More specifically, the diagnosticity, i.e., the sufficiency of information available to complete a judgment-related task, of the review plays an important role in problem-solving in the consumer purchase decision-making process [40]. In the domain of information processing and consumer behavior, diagnosticity means "the extent to which a given piece of information discriminates between alternative hypotheses, interpretations, or categorizations" [27], p. 457]. In this context, review diagnosticity can be defined as the perception of the consumers on the ability of the review in familiarizing the consumer with the product/service in the evaluation of the expected performance/outcome of the product/service. Moreover, review diagnosticity is also related to the absence of ambiguity in the review and a higher level of comprehensibility [38, 40]. A less ambiguous review is often related to information available, sentiments expressed, writing style, etc. [41, 61]. Such reviews reduce the cognitive load on the reader's mind while taking a purchase decision [40]. All these together help an individual in making purchase decisions as it provides the important signals of product and service quality and set expectations about the same. Therefore, as the reviews become diagnostic, it also becomes more helpful for the readers.

H1 Review diagnosticity has a positive relationship with perceived review-helpfulness.

The next step of Bach's [4] dimension of helpful behavior is insight mediation. Insight mediation means "insights into other people's functioning, understanding their inside world better and sensing better what makes them tick" [4], p. 1155). An advisee will find the advice more helpful when she can see the inner world of the adviser and find what and why the adviser wants to share [38]. Extending the above, in the context of purchase decision-making, a future purchaser will find a customer review helpful when she can see the reviewer's inner thoughts, motivations, and feelings. This becomes more possible when the review gives a vicarious expression to the reader such that the reader can almost experience in imagination the same pleasures and pains that the author of the review has experienced. The vicarious expression can be defined as a combination of two words, "vicarious" and "expression". The literal meaning of vicarious is "experienced by reading or watching someone else do something". Vicarious measures the "viewers' perceived levels of understanding of available content" [36]. On the other hand, expression suggests the tangible outcome of the internal cognitive and affective

state of the writer. Therefore, “vicarious expression” leads to the degree of the reader’s understanding about the cognitive and affective reaction of the writer about the product/service experience. This is often related to the vivid description of the experience and expressions of the reviewer which will help the consumers to make more optimized decisions. Therefore, extending the insight mediation dimension of helpful behavior, we can suggest that vicarious expression in the review will help the reader achieve the above. Hence, we posit:

H2 Vicarious expression in the review will have a positive relationship with perceived review-helpfulness.

Perceived trustworthiness means the perception of the advisee about how much trust can be kept in the adviser in terms of the intention and ability of the adviser [4]. In the context of online reviews, consumers use various cues and signals from the reviewer’s profile to judge the reviewer’s trustworthiness [38]. The polarized opinion may also be taken with high importance if the reviewer is trustworthy. This is in line with the adviser-advisee relationship suggested by Bach [4] when the adviser is trustworthy. In such a situation, even if the advisees and advisers have a difference of opinions, they will still be open-minded and more prone to discuss and resolve disputes [38]. Extending the above thoughts, one can say that a review will be taken in its true essence if the reviewer is considered trustworthy. Hence we posit:

H3 Reviewer-trustworthiness has a positive relationship with perceived review-helpfulness.

3.2 Construal level theory

Construal level theory focuses on the effect of psychological distance between stimuli and an individual on the individual’s thoughts and behavior [58]. According to this theory, an individual creates various mental representations of the same stimuli depending on the above-mentioned psychological distance of the stimuli from the egocentric reference point. Such psychological distance governs the concrete and abstract thinking of the consumers. If the psychological distance is high, a consumer is said to be in a high-level construal where her thinking process is more abstract. Further, for lower psychological distance, the consumers are said to be at a low construal level and have more contextual, concrete, and detailed thinking [59]. Therefore, high psychological distance will lead individuals to put their attention only on the superordinate and primary aspects of the stimuli, while low psychological distance will lead to focus on subordinate and incidental aspects [26].

The psychological distance can be of multiple dimensions, the major three dimensions are temporal, spatial, and social [59, 60]. Hypothetical social distance, which is governed by the degree of certainty, is also another dimension of psychological distance [26]. Often such dimensions are interrelated and one activates the other. Therefore, it is important to study the joint influence of such multiple dimensions in the context of CLT [26, 29].

Many domains of social psychology have documented the utility of construal level theory and psychological distance while explaining individual behavior, making it a key factor for the study of different behaviors. Recently, in the domain of marketing and information management, such application is also increasing [13, 26, 57]. In the context of consumer reviews, studies have focused on temporal, spatial and social distance [26, 29, 32, 56]. However, these studies either did not focus on the reader's purchase context or not on review helpfulness. In this paper, we use CLT to explain the differential impact of review and reviewer characteristics on perceived review-helpfulness based on the reader's purchase context. The application of CLT in consumer behavior suggests that consumers focus on 'vivid', tangible and process aspects when they are making decisions in the context of lower temporal, psychological, and social distance. On the other hand, in the context of higher temporal, psychological and social distance, they give more importance to distant, intangible, abstract, and outcome attributes [13, 26, 57]. We extend the above argument in the consumer review-helpfulness context.

3.3 Purchase context, construal level theory and relative importance of drivers of perceived review helpfulness

Purchase context can lead to different levels of construal in the mind of the consumers. For instance, consumers stay in lower construal level when the purchase context is psychologically closer to them. Therefore, planning a trip which will happen soon or deciding on a gift for a close family member can lead the consumers to a lower construal level [57]. Similarly, planning a trip which will happen in the far future or deciding a gift for a not so close colleague can lead the consumers to a higher construal level [57]. As discussed earlier in the introductions section, consumers often leave footprints in their browsing history and cookies which can signal the purchase context of the consumer and therefore, the possible construal level of the consumer.

According to construal level theory, consumers process concrete aspects better when they are in a lower construal. On the other hand, they process abstract aspects better when they are at a higher construal level [57, 59]. Perceived diagnosticity as a concept has been associated with a concrete scheme of mental process in extant literature [54]. The Diagnosticity of a customer review is related to the amount of unbiased and detailed information available in the review. Such information is often a concrete cue of quality and can help potential consumers in decision-making. Concreteness of a review and higher diagnosticity of a review has also been well-established [39]. Therefore, consumers in low construal, who find concrete stimuli more consistent with their mental state, will use the concrete cues from diagnostic reviews in reducing inconsistency and uncertainty. According to consistency theory [20], consumers look for consistency in their mental processes and try to avoid inconsistency. Hence, such concrete cues will get higher importance in decision-making when consumers are in low construal. Moreover, vicarious expression in the review is also related to the accurate and vivid expression of the experience of the consumer. In a review with vicarious expression, a reader can feel, understand, and relive the experiences of the reviewer. As vividness of a situation/state

reduces the psychological distance from the state [46], the vicarious expression of the review reduces the psychological distance between a reader and the experience of the reviewer. Moreover, vivid expressions are often perceived to be related to the concreteness [25], which is in sync with lower construal. Therefore, consumers in lower construal will find vicarious expression of the reviews more consistent with their mental state. As vicarious expression has higher consistency with lower construal, following consistency theory, it will impact review-helpfulness more strongly when the reader is in lower construal.

On the other hand, reviewer trustworthiness is formed by several reviewer characteristics (positivity, involvement, experience, reputation, competence, sociability) [5]. Reviewer-trustworthiness is related to cues and signals which talk about the overall expertise and likability of the reviewer. Such cues and signals are not related to the actual service experience that the reviewer had, but are more related to the credibility of the source. Trustworthiness is closely related to credibility in social psychology research, more than how expertise is connected with credibility [43]. Trust has traditionally been considered as an abstract concept [19]. Moreover, source credibility being an abstract aspect is expected to be more related to higher construal [55]. The relative importance of source credibility and argument strength in information adoption is moderated by the construal level. In lower construal, argument strength becomes a stronger driver and higher construal source credibility becomes stronger [55]. Extending the above, we can suggest that reviewer-trustworthiness will be related to higher construal. The above discussion helps us to posit the following:

H4 The relative strength of the relationships of review diagnosticity, vicarious expression in the review, and reviewer-trustworthiness with perceived review-helpfulness is moderated by the viewer's construal level derived from purchase context.

H4a Review diagnosticity will have a stronger relationship with perceived review-helpfulness in low construal than in high construal.

H4b Vicarious expression in the review will have a stronger relationship with perceived review-helpfulness in low construal than in high construal.

H4c Reviewer-trustworthiness will have a stronger relationship with perceived review-helpfulness in high construal than in low construal.

Figure 1 shows the theoretical model of the paper.

4 Empirical study

First, we test the effects of the construal level on the relative importance of review diagnosticity, vicarious expression, and reviewer-trustworthiness. We first tested for temporal, social, and physical distance dimensions separately in Studies 1, 2, and 3

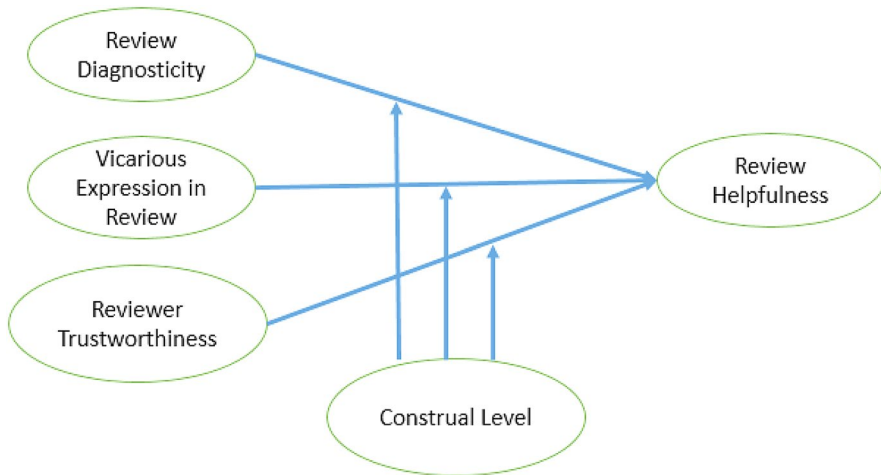


Fig. 1 Theoretical model

respectively. Moreover, studies 1 and 2 are done in a product context, and study 3 is done in a service context. In study 4, we try to test the joint effects of multiple distance dimensions in a service context.

4.1 Study 1

4.1.1 Design, stimuli, procedure, and measures

In this study, we tested the effect of temporal construal (High vs. Low) by randomly showing the 61 respondents (Average age = 29.42, Age range = 22 years to 35 years, Male = 74%), who were recruited from students from two BSchools. In the Indian context, online purchase is majorly done by a young male, and therefore the sample is suitable. The data was collected in Kolkata and Mumbai, India and the sample from the two different cities had no significant characteristic difference in terms of age and gender. The snapshot of the consumer review in Fig. 2 was shown to the respondents and they were asked to imagine the following: “Imagine that you are planning to buy a mobile phone for you next month (high temporal distance)/next week (low temporal distance). You are going through various reviews on various mobile phones when you saw the following review”. Next, we asked the respondents to mention their believability of the purchase context on a 7-point scale and found the purchase context to be believable (mean = 5.72). We have also checked for the knowledge of the respondents about the product category on a 7-point scale. We found that the respondents are knowledgeable about the product category (mean = 5.81). We checked the manipulation by asking whether the purchase date mentioned is “pretty close”, using a 7 points scale, and found the manipulation worked (Temporal manipulation: Mean closeness_{Low} = 3.75, Mean closeness_{High} = 5.76, $t(59) = -5.91, p < 0.05$). Further, we asked them to rate review diagnosticity, vicarious expression in the review, and reviewer-trustworthiness and

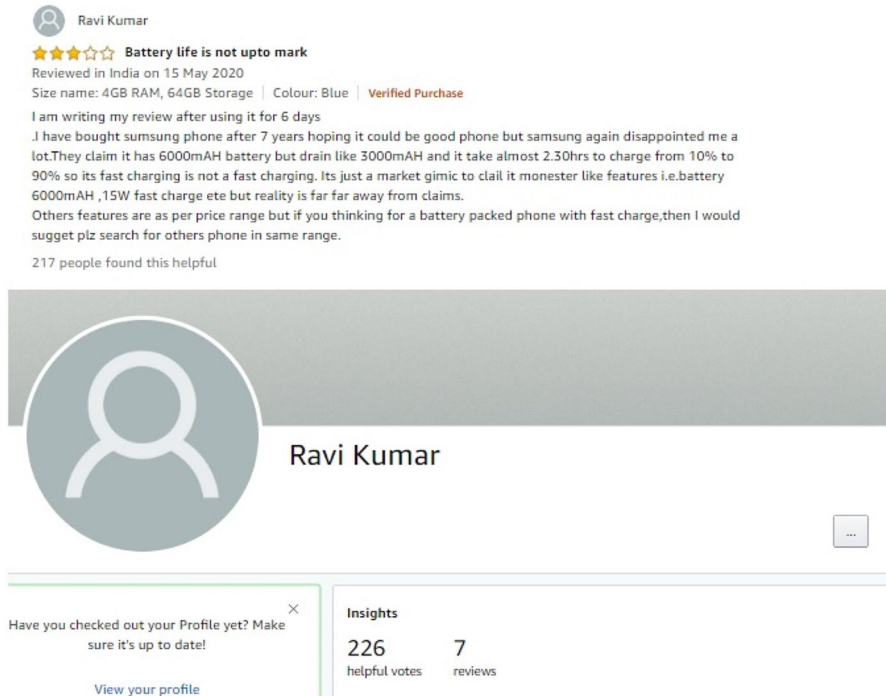


Fig. 2 Stimuli for study 1 and 2

review-helpfulness by expressing their degree of agreeableness with the statements given in Table 2. The sources of the measures are also given in Table 2. The scale for review-helpfulness was adapted from Sen and Lermna [52], reviewer-trustworthiness was adapted from [9], review diagnosticity was adapted from Jiang and Benbasa [31] and vicarious expression in the review was adapted from Manz and Sims [42]. We have also measured brand preference as a covariate and measured using statements adapted from Cobb-Walgren et al. [10].

4.1.2 Results

We checked the reliability and validity of the measures using confirmatory factor analysis (CFA). The measurement model had good fit ($\text{Chi-sq}/df=1.16$, $\text{RMSEA}=0.024$, $\text{CFI}=0.997$, $\text{GFI}=0.971$, $\text{NFI}=0.98$) and were as per suggested values in extant literature [35, 51]. Both, good factor loadings of the individual items of the latent constructs (>0.7 as per Table 2) and high average variance explained (AVE) scores (more than 0.5 as per Table 3) signify good convergent validity. Moreover, as per Table 3, as mean shared variance (MSV) and inter-construct correlations were lower than AVE we can confirm discriminant validity [24]. The Cronbach's α values (Table 3) and composite reliability (CR) scores for all the constructs are more than 0.7 suggesting good reliability [24].

Table 2 Measures and their details

Construct	Source	Items	Cornbach's alpha	Standardized factor loadings
Review-helpfulness	Sen and Lermma [52]	This review helps me decide about the product	0.866	0.713
Reviewer-trustworthiness	Cheung et al. [9]	This review impacts my purchase decision for this product for sure	0.939	0.95
		I perceive that the reviewer is reputable		0.929
		I perceive that the review source is good		0.998
		I perceive that the reviewer is trustworthy		0.828
Review diagnosticity	Jiang and Benbasa [31]	The reviews helped me familiarize myself with the product	0.938	0.829
		The reviews helped me evaluate the product		0.995
		The reviews helped me understand the performance of the product		0.838
Review vicarious expression	Manz and Sims [42]	By reading this product review, I can feel what the author is trying to say about the product and his/her usage experience	0.914	0.946
		By reading this product review, I can imagine what the author is trying to say about the product and his/her usage experience		0.778
		By reading this product review, I can envision what the author is trying to say about the product and his/her usage experience		0.846
Brand preference	Cobb-Walgren et al. [10]	I think Samsung mobile phones are superior to other competing brands	0.876	0.845
		I prefer Samsung mobile phones		0.811
		When considering purchasing a mobile phone, I would consider Samsung over other brands		0.914

Table 3 Reliability and validity of the measures

	CR	AVE	MSV	ve	diag	trust	helpful	bpref
ve	0.894	0.739	0.051	0.859				
diag	0.919	0.793	0.197	0.032	0.891			
trust	0.943	0.848	0.080	-0.051	-0.064	0.921		
helpful	0.824	0.705	0.298	0.048	0.197	0.080	0.840	
bpref	0.911	0.736	0.298	0.005	0.045	0.047	0.298	0.858

Ve, review vicarious expression; diag, review diagnosticity; trust, reviewer-trustworthiness; helpful, review-helpfulness; bpref, brand preference; CR, composite reliability; AVE, average variance explained; MSV, mean shared variance

To check the direct effects of review diagnosticity, vicarious expression in the review, and reviewer-trustworthiness on review-helpfulness we ran a regression (Model 1.1 in Table 5) controlling for temporal construal (dichotomous variables, 0=low construal, and 1=high construal), the age, and gender of the respondents. As per Table 4, as review diagnosticity, vicarious expression in the review, and reviewer-trustworthiness are not correlated, the result of Table 5 is free of

Table 4 Correlation of independent variables

	ve	Trust	diag	bpref
ve	1			
trust	-0.253	1		
diag	0.334	0.165	1	
bpref	0.215	0.228	0.314	1

ve, review vicarious expression; diag, review diagnosticity; trust, reviewer-trustworthiness; bpref, brand preference

Table 5 Regression results for study 1

Variable	Model 1.1 (AdjR ² =0.33)		Model 1.2 (AdjR ² =0.494)	
	Standardized Coeff	<i>p</i> -value	Standardized Coeff	<i>p</i> -value
Intercept	-.464	.244	-0.719	0.045
ve	.222	.136	.118	.549
trust	.066	.599	-.025	.903
diag	.415	.005	.155	.000
HTI	0.535	.029	-.635	.004
Age	.012	.264	.013	.156
GenderM	-.219	.373	-.193	.376
bpref	-0.335	0.412	-0.331	0.388
ve X HTI			0.014	.958
trust X HTI			1.05	.000
diag X HTI			-.543	.043

ve, review vicarious expression; diag, review diagnosticity; trust, reviewer-trustworthiness; HTI, high temporal distance

multicollinearity issues. We checked for the variance inflation factor (VIF) also to check the multicollinearity and found the VIFs of all factors to be less than 3, suggesting no multicollinearity. We tested the moderating effect of construal on the relative importance of review diagnosticity, vicarious expression in the review, and reviewer-trustworthiness in model 1.2 by including the interaction terms in the regression model 1.1. Model 1.2 had a better fit (higher $\text{adj}R^2$ value) than model 1.1 suggesting an improvement in the explanatory power of the model.

As per the results, review diagnosticity (Model 1.1: $\beta=0.415$, $p<0.05$) has a positive and significant relationship with review-helpfulness while reviewer trustworthiness and vicarious expression in the review are not significant. Thus, the result supports H1, but not H2 and H3. We did not find any significant impact of age, gender-male, and brand preference, however, the construal level (Model 1.1: $\beta=-0.535$, $p<0.05$) is found to have significant relationships. The importance of reviewer-trustworthiness drops ($\beta=1.05$, $p<0.05$), and the importance of review diagnosticity ($\beta=-0.543$, $p<0.05$) increases in the low temporal distance, thus supporting H4a and H4c. However, we found no moderation effect of construal level on the vicarious expression-helpfulness link. Collectively, it suggests that the construal level moderates the relative importance of review diagnosticity and reviewer-trustworthiness, thus partially supporting H4.

Study 1 could only check for temporal construal. Moreover, the existence of multiple dimensions of construal together has also not been studied. These limitations are handled in the next studies.

4.2 Study 2

4.2.1 Design, stimuli, procedure, and measures

In this study, we tested the effect of social construal (High vs. Low). 71 respondents (Average age = 31.60, Age range = 22 years to 37 years, Male = 70%) were recruited from professionals of two branches of a software company. In the Indian context, online purchase is majorly done by a young male, and therefore the sample is suitable. The data was collected in Kolkata and Mumbai, India and the sample from the two different cities had no significant characteristic difference in terms of age and gender. The same stimuli as in Study 1 were used. The respondents were asked to imagine the following: "Imagine that you are planning to buy a mobile phone for your father (low social distance)/your business colleague (high social distance) for his birthday. You are going through various reviews on various mobile phones when you saw the following review". As in study 1, we checked for believability (mean = 5.48), product category knowledge (mean = 5.87), and the manipulation by asking whether the person whom you are purchasing the mobile is "close to me" using 7 points scale (Social manipulation: Mean closenessLow = 3.87, Mean closenessHigh = 5.90, $t(69) = 5.032$, $p < 0.05$). Further, we asked them to rate brand preference, review diagnosticity, vicarious expression in the review, and reviewer-trustworthiness and perceived review-helpfulness following Study 1. We ran the reliability and validity tests similar to Study 1 and found the measurement scales

without any reliability and validity issues. Due to the interest in space, such details are not produced again.

4.2.2 Results

As per the results, review diagnosticity ($\beta=0.284$, $p<0.05$), vicarious expression in the review ($\beta=0.412$, $p<0.05$), and reviewer-trustworthiness ($\beta=0.205$, $p<0.05$) have positive and significant relationships with perceived review-helpfulness, thus supporting H1, H2 and H3. We did not find any significant impact of the construal level and age, however, gender-male ($\beta=0.428$, $p<0.05$) is found to have significant relationships. We checked for the variance inflation factor (VIF) also to check the multicollinearity and found the VIFs of all factors to be less than 3, suggesting no multicollinearity. Next, we tested the moderating effect of construal. Model 2.2 had a better fit (higher $\text{adj}R^2$ value) than model 2.1 suggesting an improvement in the explanatory power of the model. The importance of reviewer-trustworthiness increases in the high social distance ($\beta=0.486$, $p<0.05$), thus supporting H4c. However, the importance of vicarious expression in the review ($\beta=-0.611$, $p<0.05$) drops in the higher social distance (high construal), supporting H4a. We did not find any significant effect of construal level on the review diagnosticity-helpfulness relationship, thus not supporting H4b. Collectively, it suggests that the construal level moderates the relative importance of vicarious expression in the review and reviewer-trustworthiness, thus partially supporting H4. Males ($\beta=0.410$, $p<0.05$) are found to the reviews more helpful.

Till now we could establish the impact of temporal and social distance, however physical distance has not been explored. Moreover, the effect of the co-existence of multiple dimensions of construal has also been explored yet. Lastly, both these studies (Study 1 and 2) have been conducted in the context of product and the same should be tested in the service context too to check generalizability (Table 6).

4.3 Study 3

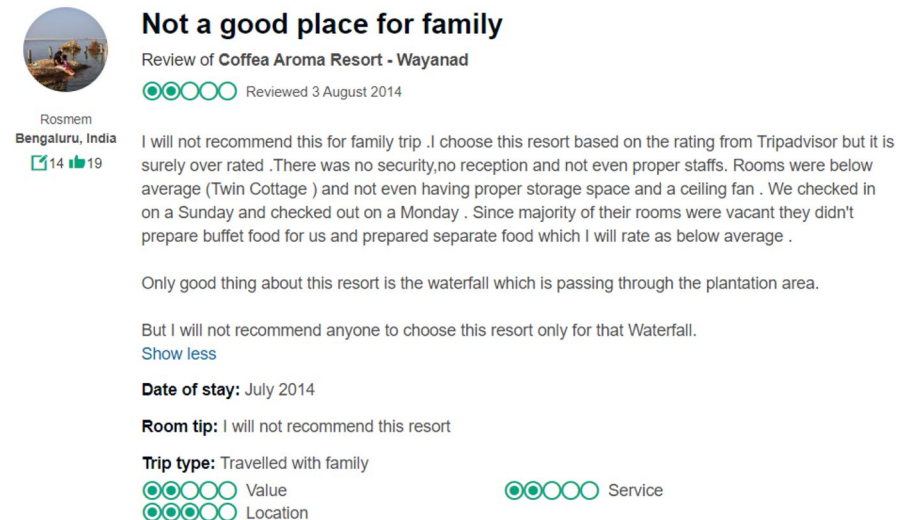
4.3.1 Design, stimuli, procedure, and measures

In this study, we tested the effect of physical construal (High vs. Low). 76 respondents (Average age = 32.96, Age range = 21 years to 34 years, Male = 80%) were recruited from two software companies. We used the stimuli as in Fig. 3. The respondents were asked to imagine the following: "Imagine that you are planning to travel to Wayanad, a tourist place in Kerala. You are going through various reviews on various hotels and resorts when you saw the following review". We collected data in two different cities in India, Kolkata (high physical distance) and in Bangalore (low physical distance) to manipulate physical construal. As in study 1, we checked for believability (mean = 5.47) and manipulation by asking whether the destination is "pretty close" or "very far" (reversed) using 7 points scale (Physical manipulation: Mean closenessLow = 3.84, Mean

Table 6 Regression results for study 2

Variable	Model 2.1 (AdjR ² =0.51)		Model 2.2 (AdjR ² =0.55)	
	Standardized Coeff	<i>p</i> -value	Standardized Coeff	<i>p</i> -value
Intercept	.217	.460	.170	.565
ve	.412	.000	.063	.779
trust	.205	.045	.586	.002
diag	.284	.005	.384	.004
HSC	.045	.798	.044	.797
Age	.002	.817	.003	.663
GenderM	.428	.026	.410	.034
bpref	−0.145	0.087	−0.141	0.085
ve X HSC			−.611	.037
trust X HSC			.486	.033
diag X HSC			.356	.153

ve, review vicarious expression; diag, review diagnosticity; trust, reviewer-trustworthiness; HSC, high social distance



Not a good place for family

Review of **Coffea Aroma Resort - Wayanad**

Reviewed 3 August 2014

Rosmem
Bengaluru, India

I will not recommend this for family trip .I choose this resort based on the rating from Tripadvisor but it is surely over rated .There was no security,no reception and not even proper staffs. Rooms were below average (Twin Cottage) and not even having proper storage space and a ceiling fan . We checked in on a Sunday and checked out on a Monday . Since majority of their rooms were vacant they didn't prepare buffet food for us and prepared separate food which I will rate as below average .

Only good thing about this resort is the waterfall which is passing through the plantation area.

But I will not recommend anyone to choose this resort only for that Waterfall.

[Show less](#)

Date of stay: July 2014

Room tip: I will not recommend this resort

Trip type: Travelled with family

Value Service

Fig. 3 Stimuli for study 3 and 4

closenessHigh = 5.86, $t(74) = 5.04$, $p < 0.05$). Further, we asked them to rate review diagnosticity, vicarious expression in the review, reviewer-trustworthiness and perceived review-helpfulness following Study 1. We ran the reliability and validity tests similar to Study 1 and found the measurement scales without any reliability and validity issues. Due to the interest in space, such details are not

produced again. There was no characteristic difference (age, gender) in the sample of Kolkata and Bangalore.

4.3.2 Results

Like study 1, first, we checked for the direct effects of review diagnosticity, vicarious expression in the review, and reviewer-trustworthiness on perceived review-helpfulness (Refer to Table 7). As per the results, review diagnosticity ($\beta=0.222$, $p<0.05$), vicarious expression in the review ($\beta=0.429$, $p<0.05$), and reviewer-trustworthiness ($\beta=0.280$, $p<0.05$) have a positive and significant relationship with perceived review-helpfulness, thus supporting H1, H2 and H3. We did not find any significant impact of the construal levels, age, or gender. We checked for the variance inflation factor (VIF) also to check the multicollinearity and found the VIFs of all factors to be less than 3, suggesting no multicollinearity. Next, we tested the moderating effect of construal. Model 3.2 had a better fit (higher adjR² value) than model 3.1 suggesting an improvement in the explanatory power of the model. The importance of reviewer-trustworthiness increases in the high physical distance ($\beta=0.486$, $p<0.05$), thus supporting H4c. However, the importance of vicarious expression in the review ($\beta=-0.838$, $p<0.05$) drops in the high physical distance (high construal), supporting H4b. We did not find any significant moderating effect of construal level on the review diagnosticity-helpfulness relationship, hence H4a was not supported. Collectively, it suggests that the construal level moderates the relative importance of vicarious expression in the review and reviewer-trustworthiness, thus partially supporting H4. While studies 1, 2, and 3 check the individual impact of each dimension of the construal level, the impact of their coexistence has not been tested. We test the same in Study 4.

Table 7 Regression results for study 3

Variable	Model 3.1 (AdjR ² =0.45)		Model 3.2 (AdjR ² =0.55)	
	Standardized Coeff	<i>p</i> -value	Standardized Coeff	<i>p</i> -value
Intercept	.594	.101	.599	0.091
ve	.429	.000	-.059	.744
trust	.280	.005	.538	.000
diag	.222	.019	.166	.228
HD	.141	.431	-.148	.366
Age	-.017	.053	-.013	.137
GenderM	-.124	.565	-.316	.125
ve X HD			-.838	.000
trust X HD			.486	.010
diag X HD			.182	.347

ve, review vicarious expression; diag, review diagnosticity; trust, reviewer-trustworthiness; HD, high spatial distance

4.4 Study 4

4.4.1 Design, stimuli, procedure, and measures

We used a 2 (Temporal construal level: High vs. Low) \times 2 (Social construal level: High vs. Low) \times 2 (Physical construal level: High vs. Low) orthogonal design experiment.

We collected the data using convenience sampling and ensured that all respondents are familiar with online hotel review websites and use them for their travel decisions. 270 participants (Average age = 33 years, Age range = 28 years to 39 years, Male = 58%) were randomly assigned to one of the four groups mentioned above based on temporal and social distance. The respondents were shown stimuli as shown in Fig. 3 and were asked to imagine the following: “Imagine that you are planning to travel to Wayanad, a tourist place in Kerala, next month (high temporal distance)/next week (low temporal distance). You will visit with your business colleagues (high social distance)/family members (low social distance). You are going through various reviews on various hotels and resorts when you saw the following review.” To manipulate physical distance, we collected the data in two cities, one in Kolkata which is away from the tourist spot, and one in Bangalore which is near the tourist spot. We collected the data from a software company that had branches in both cities. The data was collected in return for cafeteria coupons in the company.

Next, we asked the respondents to mention their familiarity with the tourist spot. All of the respondents mentioned that they know about the tourist spot. We further checked if the manipulation of temporal, physical, and psychological distance was as expected by asking whether the travel dates were “pretty close” or “in near future”, travel destination was “pretty close” or “very far” (reversed) and whether they are visiting with people “close to” them. We used 7 points Likert scale to measure the same and found the manipulation worked (Temporal manipulation: Mean closeness_{Low} = 2.8, Mean closeness_{High} = 5.5, $t(268) = -3.13$, $p < 0.05$; Physical manipulation: Mean closeness_{Low} = 1.3, Mean closeness_{High} = 6.1, $t(268) = -4.12$, $p < 0.05$; Social manipulation: Mean closeness_{Low} = 1.6, Mean closeness_{High} = 4.2, $t(268) = -3.56$, $p < 0.05$). We also asked them to rate review diagnosticity, vicarious expression in the review, and reviewer-trustworthiness and perceived review-helpfulness following study 1. We ran the reliability and validity tests similar to Study 1 and found the measurement scales without any reliability and validity issues. Due to the interest in space, such details are not produced again.

4.4.2 Analysis and result

To check the direct effects of review diagnosticity, vicarious expression in the review, and reviewer-trustworthiness on perceived review-helpfulness we ran a regression (Model 4.1 in Table 8) controlling for spatial, temporal, and social construal (dichotomous variables, 1 = low construal, and 0 = high construal), the age and gender of the respondents. As per the results, review diagnosticity ($\beta = 0.152$, $p < 0.05$), vicarious expression in the review ($\beta = 0.106$, $p < 0.05$), and reviewer-trustworthiness ($\beta = 0.075$, $p < 0.05$) have a positive and significant

Table 8 Regression results for study 4

Variable	Model 4.1 (AdjR ² =0.65)		Model 4.2 (AdjR ² =0.676)	
	Standardized Coeff	<i>p</i> -value	Standardized Coeff	<i>p</i> -value
Intercept	0.001	0.357	0.002	0.466
ve	.106	.004	.099	.006
trust	.075	.040	.063	.085
diag	.152	.000	.155	.000
HD	-.011	.771	.004	.918
HTI	-.062	.086	.055	.123
HSC	.056	.126	-.053	.133
Age	.778	.000	.771	.000
GenderM	.235	.036	.233	.039
ve X HD			.003	.940
ve X HTI			-.006	.018
ve X HSC			-.022	.547
trust X HD			.123	.001
trust X HTI			.006	.871
trust X HSC			.109	.003
diag X HD			-.035	.322
diag X HTI			-.083	.023
diag X HSC			-.019	.587

ve, review vicarious expression; diag, review diagnosticity; trust, reviewer-trustworthiness; HD, high spatial distance; HTI, high temporal distance; HSC, high social distance

relationship with perceived review-helpfulness, thus supporting H1, H2 and H3. We did not find any significant impact of the construal levels, however, age ($\beta=0.778$, $p<0.05$) and gender-male ($\beta=0.235$, $p<0.05$) are found to have significant relationships.

We tested the moderating effect of construal on the relative importance of review diagnosticity, vicarious expression in the review, and reviewer-trustworthiness in model 4.2 by including the interaction terms in regression model 4.1. Model 4.2 had a better fit (higher adjR² value) than model 4.1 suggesting an improvement in the explanatory power of the model. The importance of reviewer-trustworthiness increases in the high spatial distance ($\beta=0.123$, $p<0.05$) and in the high social distance ($\beta=0.109$, $p<0.05$) (both are high construal), thus supporting H4c. However, the importance of vicarious expression in the review ($\beta=-0.006$, $p<0.05$) and review diagnosticity ($\beta=-0.083$, $p<0.05$) drops in the high temporal distance (high construal), supporting H4a and H4b. Collectively, it suggests that the construal level moderates the relative importance of review diagnosticity, vicarious expression in the review, and reviewer-trustworthiness, thus supporting H4. Males ($\beta=0.223$, $p<0.05$) and older people ($\beta=0.771$, $p<0.05$) found to the reviews more helpful.

5 Discussion

Based on the theory of helping behavior, the helpfulness of a person depends on three components: problem-solving, insight mediation, and perceived trustworthiness [4]. In the context of reviews, these three components are associated with review diagnosticity, vicarious expression in the review, and the reviewer-trustworthiness respectively. These three components lead to the perception of the helpfulness of the reviews, as also supported by our study. However, the study establishes the moderating impact of construal level on the relationship between review and reviewer characteristics with the perceived review-helpfulness. More specifically, in lower construal based on temporal, spatial, and social dimensions, the relative importance of the review characteristics such as the diagnosticity of the review and vicarious expression in the review increases. On the other hand, in a higher construal context, the relative importance of reviewer-trustworthiness increases. The above results are in line with construal level theory [58] which suggests that in low construal tangible and concrete information is better processed while in high construal intangible and abstract information is better processed. In the context of review helpfulness, the reviews provide more tangible and concrete information than the information about the reviewer. Therefore, the differential relative importance of reviewer and review characteristics as per the purchase context and construal level of the reader is justified.

5.1 Theoretical contribution

The paper has several theoretical contributions. First, the paper proposes the primary drivers of review helpfulness as perceived review diagnosticity, vicarious expressions of the reviews, and reviewer trustworthiness. Extant literature has suggested many review-related and reviewer-related variables that create review helpfulness [2, 3, 7, 12, 23, 33, 44, 48, 50]. However, all such variables are expected to affect review helpfulness through the above-mentioned psychological factors. For instance, while review polarity will affect helpfulness through review diagnosticity, review sentiment content will make the review more vicarious [37]. Thus, our paper suggests the three key drivers of review helpfulness, contributing to the review literature.

Second, the paper focuses on the relative importance of review and reviewer characteristics in perceived review-helpfulness. Extant literature has explored drivers of review-helpfulness, however, the contextual variations of the relative importance of such drivers have remained relatively understudied [2, 3, 7, 12, 23, 33, 44, 48, 50]. Our study contributes to this literature.

Third, the theoretical framework of finding the helpfulness of a review has been studied in this paper. The paper extends the literature on helpful behavior [4] and connects the review characteristics (review diagnosticity and vicarious expression in the review) and reviewer characteristics (reviewer-trustworthiness) with the reader's perception of the review helpfulness by connecting these to the three components of helpful behavior: problem-solving, insight mediation, and perceived trustworthiness.

The paper also suggests how the construal level impacts such a theoretical framework changing the relative importance of the review and reviewer characteristics. While extant literature has applied CLT in the context of consumer reviews including the impact of earlier reviews on consumer evaluations and decision making, no study has explored CLT in the context of review-helpfulness [13, 26, 57]. Thus, the current study contributes to the literature on the application of CLT in consumer reviews.

Fourth, the extant literature on review-helpfulness has majorly focused on secondary data and analyzed the review-helpfulness at a collective level [2, 3, 7, 12, 23, 33, 44, 48, 50]. Most such studies have considered the total number of helpful votes or likes of a review as the dependent variable. However, individual consumer-level studies have remained relatively scanty (15, 17, 18) [23, 50, 62]. This study contributes to this stream of literature.

5.2 Managerial implications

The paper has several managerial implications as well. The primary and most important managerial implication of the paper is the suggestions for website design and review management, which has to be seen from a contextual point of view. How the reviews will be shown to an e-commerce user is a crucial decision as such displays influence the review helpfulness and in turn the purchase intention of the user. Therefore, the review managers and the website designers should take extra care of the dynamic review display strategy. The followings are some of the possible suggestions to handle such review management and display.

First, the study gives the review managers an idea that the predictors of perceived review-helpfulness will vary depending on the purchase situation of the consumer. In this context, e-commerce developers can collect more information from the purchaser to get an idea about the purchase situation so that more relevant and helpful reviews can be highlighted. For instance, a traveler looking for air travel or a hotel which will happen 1 week later than the booking date and/or they are booking rooms/air seats for adults and kids suggests that the purchase situation is temporally and socially proximal. This suggests that the purchaser is in low construal. Therefore reviews which are diagnostic and with vicarious expressions will be more helpful to her. Such reviews should be highlighted on the e-commerce website. The reviews are often shown based on “relevance”, however, the definition of “relevance” should depend on the purchase situation. Website designers and/or website managers should create a new review ranking strategy to ensure a better experience.

Second, e-commerce firms often collect and analyze purchase data of consumers and make inferences about the purchase context. For instance, a profile regularly purchasing personal hygiene products for babies or a profile buying toys for toddlers can indicate that the profile has a baby/toddler at the house. When such a profile search for a new item for an infant or a toddler, it can be understood that the probability of the user being low construal is high. Such rules can be created to check for different purchase contexts and a contextual review ranking system should be adopted when such purchase contexts are identified. This will result in improved

decision-making by the consumers leading to customer satisfaction and revenue generation.

Third, the study also gives an idea that for less traveled or long-distance destinations (high spatial construal), reviewer-trustworthiness matters a lot. Therefore, it is important to get such destinations reviewed by expert reviewers to get more traction in the e-commerce channel. Moreover, when consumers are searching for long-distance destinations, the review websites should show reviews from trustworthy reviewers first, rather than showing reviews that are more informative or elaborate.

Additionally, our paper provides a guideline to the reviewers on how to make their reviews more successful. In the era where review writing has become a profession, such information will help reviewers to build their profiles. The review helpfulness varies depending on the consumer purchase situation and the review writers should also understand the same. Our paper suggests the reviewers what factors become more important in review helpfulness in what context, thereby prescribing the method of successful review writing.

6 Limitations and future scope

The current study has been performed in the context of high technology and travel. To make it generalizable, studies have to be done in other industries, products, service types, etc. Contextual factors such as product involvement, purchase urgency, time availability, etc. have been found to influence the impact of construal level on information processing [34, 45]. The effects of such variables can also be explored to find the boundary conditions of the stated findings of the study. The current study also used a negative review. Whether review valence will change the above-mentioned relationships will also be an interesting area of study. Future researchers should focus on the same. Future studies can also focus on how the social distance between the reviewer and the reader (both are from the same native country or a different country) influences the above-mentioned relationships. The current study could not explore the above. The current study could have been stronger if a little higher sample size could have been used.

Data availability The data that support the findings of this study are available from the corresponding author upon request.

Declarations

Ethical approval The author confirms that the study has been performed following standard ethical guidelines and the manuscript has been prepared following COPE guidelines.

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