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Understanding and encouraging online reviewing with a selection-based review system

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Abstract

Online consumer reviews are important for people wishing to make purchases online. However, not everyone contributes online reviews. This paper looks at consumer motivations of reviewing and rating behaviour in order to motivate the design of a mobile interface for online reviewing. An interview study found that people tend to contribute reviews and ratings based on their perception of whether they would be helpful or not to others as well as their own personal view of the usefulness of reviews and ratings when buying products. There also seems to be a cost-benefit trade off that influences people's decisions to review and rate: people tend to make a decision based on the perceived value of that review or rating to the community against the effort and costs of contributing. A mobile interface was designed that was intended both to reduce the cost of leaving reviews, and to increase the perception of the usefulness of the reviews to others. An initial evaluation of this reviewing interface suggests it could encourage more people to leave reviews.

Keywords

User studies; Social recommendation (social computing); Online shopping; Online reviews; Review contribution.

Research Highlights

- We conducted an exploratory interview study to understand people's online reviewing and rating behaviour
- People contribute online reviews based on their perceptions of the usefulness to others of the review in comparison to the cost of leaving the review
- We developed and evaluated a prototype selection-based reviewing system designed to make it easier to leave more useful product information without taking as much time as writing a review
- Participants spent less time leaving reviews, preferred, and rated as more useful our new reviewing system compared to a common reviewing system.

INTRODUCTION

It is now commonplace to search out consumer reviews and opinions online before making purchasing choices. Reviewing sites (e.g. Trip Advisor, Yelp) or e-retailer's own feedback platforms (e.g. Amazon's and Ebay's reviewing and star rating functionality) have a strong impact on customers, their purchasing decisions and purchasing intentions (Bailey, 2005; D.-H. Park, Lee, & Han, 2007). Despite the benefits to consumers and businesses, some customers are not always willing to contribute written posts or ratings.

In this paper we develop a prototype reviewing interface, which we evaluate in a lab study. To inform the design of this interface we draw on previous literature and an interview study which explores more fully why different people do and do not contribute reviews and ratings so as to suggest ways to design to encourage people to review more.

Much of the literature on online reviewing focuses on identifying predictors to reviewing intentions through quantitative study. In our preliminary interview study we take a qualitative approach to gain a more holistic view of motivations for contribution, including exploring the differences between people who do and do not regularly rate and review, with the aim of understanding the motivators and barriers to online rating and reviewing. In contrast to previous work, and in order to better inform design, we draw a distinction between rating (leaving a score, often a star rating, on an aspect or aspects of the product or service) and reviewing (leaving a written account of the product or service). We do this as the latter takes considerably more time and therefore it is likely to affect willingness to engage.

Insights from this initial study allowed us to make informed design suggestions for encouraging more informative online reviewing and rating, which we then used to design and evaluate a prototype interface for leaving online product reviews. Findings from our work are discussed in terms of suggestions for ways to improve reviewing systems so as to encourage more people to leave useful product information beyond a simple star-rating.

PRELIMINARY STUDY: UNDERSTANDING REVIEW AND RATING BEHAVIOUR

Background: motivators for review contribution

The positive role of reviewing in online sales is well understood (Cheung & Lee, 2012), yet there is less clarity on why people make contributions to opinion-based platforms (Dellarocas, Gao, & Narayan, 2010; King, Racherla, & Bush, 2014; Picazo-Vela, Chou, Melcher, & Pearson, 2010), and

why some people do not contribute at all (Cheung & Lee, 2012). Also, the majority of studies focus on online reviewing, without exploring both rating and written reviews or the particular motivators and barriers for each (though there is some work which focus on the modeling and design challenges for rating systems specifically (Harper, Li, Chen, & Konstan, 2005; Nobarany et al., 2012)) [see Table 1 for a summary of recent research in this area].

When asked, people report a desire to share positive and negative experiences with other consumers as well as the desire to contribute to community knowledge as significant motivations to review, with other factors such as reputation and rewards for reviewing being mentioned (Shipman & Marshall, 2013). Questionnaire studies looking at self-reported intentions to review, and studies analysising online reviewing behaviour, have also found factors that affect review likelihood, for example: a desire to share experiences (Shipman & Marshall, 2013; Tong, Wang, Tan, & Teo, 2013), reciprocity (Pai & Tsai, 2016), prior engagement with the online community they are contributing to (Wu, Fan, & Zhao, 2018), influence of peers (Mishra, Maheswarappa, Maity, & Samu, 2018; Moe & Schweidel, 2011), trust (Thakur, 2018), satisfaction (Thakur, 2018; Tong et al., 2013; Xiang, Zheng, Zhang, & Lee, 2018), pressure to review (e.g. in terms of messages/reminders), monetary and other rewards (Tong et al., 2013; Utz, 2009; Zhu, Zhang, Chang, & Liang, 2019) and concerns for their own reputation (Dellarocas et al., 2010; Utz, 2009). Also it has been suggested that perceived time and cognitive cost of executing reviews have a negative relationship with intention to contribute (Tong et al., 2013). Individual personality traits have been found to mediate these factors, with Picazo-Vela et al. (2010) suggesting that 50% of variance in reviewing behaviour to be explainable by attitude to providing reviews, perceived pressure to provide reviews, neuroticism and conscientiousness. Others have also discussed individual differences having an impact on likelihood to review. For example Utz (2009) conducted a cluster anlalysis and identified 5 groups of people with distinct reviewing behaviours, including a small group motivated by earning money, most people scoring highly on alturism and pleasure of interaction, and other groups differing in the extent to which they are motivated by generalized reciprocity, moral obligation and reputation. Mishra et al. (2018) noted gender differences in teenagers' reasons for leaving reviews, with males being most influenced by peers and females by reliance and belief in online information, and others reveal how traits such as repricoity norms and beliefs of self-efficacity (in terms of one's own abilities to leave a useful review) can affect review likelihood (Cheung & Lee, 2012; Pai & Tsai, 2016; Tong et al., 2013).

Clearly there are a number of interacting factors at play that determine whether and when people choose to leave reviews. Combined, these lead to a review gap or bias in product reviews – with a tendency for most people to leave reviews only when they are very happy or very unhappy with an

experience or purchase (Chevalier & Mayzlin, 2006; Hu, Zhang, & Pavlou, 2009; King et al., 2014) creating a skewed picture. This can be partly explained by people's motivation to help others and contribute to the community as discussed above, as they may feel that these reviews contribute the most. Such a reporting bias might also be exasperated by the reviewing context, such as the product or previous reviews. For example, Dellarocas et al. found that people prefer to post reviews for products that are less available and less successful in the market, although it has also been found that people are more likely to contribute reviews for products that many other people have already commented on (Dellarocas et al., 2010; Godes & Silva, 2012). If previous reviews and ratings are more positive, people are more likely to post, however they are more likely to leave a review if it is different to what has gone before (Godes & Silva, 2012). Offering monentary or other rewards as way to adress this seems only to have a small effect, as research suggests that people will only review for a reward if they were likely to anyway (Tong et al., 2013), and Zhu et al. (2019) found that people who received product discounts left shorter and less diverse reviews than regular customers.

Whilst more recent studies have differentiated to some extent between online written reviews and ratings, these tend to report on the impact on rating scores of various factors, rather than the particular motivators and barriers to leaving them. For example, customers have been found to leave higher product ratings if they have received a discount (Zhu et al., 2019) or if they are more engaged in the online community around the product (Wu et al., 2018). Higher community engagement has also been found to lead to leaving more reviews and ratings (Wu et al., 2018) and people are more likely to leave ratings if previous ratings are mostly positive than if previous ratings are mostly negative (Moe & Schweidel, 2011). People who have not left many ratings before tend to give ratings similar to existing ratings of the products, whilst more frequent raters give more different ratings (Moe & Schweidel, 2011). However, overall, average rating scores for a product tend to go down over time (Godes & Silva, 2012; Moe & Schweidel, 2011). It has been hypothesised that this is because an increased diversity in reviews over time leads to more purchasing errors (Godes & Silva, 2012), highlighting another problem with the review bias discussed above. This suggests that finding ways to encourage more people to leave reviews, and to encourage reviewing and rating that more accurately represents the products, would be beneficial to both consumers and sellers.

Therefore previous work points to a complex picture surrounding motivations to leave reviews, affected by reviewing context and individual differences. There is also a lack of previous research which looks at the relationship between people's reviewing and rating behaviours and motivations, in particular the barriers to reviewing and rating from those that do not review. Therefore, through this work we looked to explore further why some people review and rate, whilst others do not. In

particular we wanted to explore the relationship between motivations to review and rate, and explicitly asked people not only why they did, but also why and when they choose *not* leave reviews or ratings. Our intention in doing this was to generate ideas for improving reviewing systems by reducing the barriers to leaving reviews. In order to do this, we first conducted an exploratory interview study to investigate the issues above.

<TABLE 1 HERE>

METHOD

Our initial exploratory study used semi-structured interviews and a qualitative approach to investigate the motivators for reviewing and rating, the reasons for people not reviewing and not rating, and the differences between people who do and do not leave ratings and/or reviews. The primary motivation of this study is to identify ways of improving reviewing and rating systems to widen contribution.

Participants

11 participants (7 Male, 4 Female), ranging in age from 23 – 44 took part. They were recruited via email from a UK university, and selected in a purposeful way to ensure we included participants with varying levels of reviewing and rating experience. They were given a £5 Amazon voucher for taking part.

Interview Structure

A semi-structured interview was developed to explore further the reasons why people do or do not leave ratings or reviews, with a particular emphasis on unpicking the difference in motivators to reviewing and rating, and the factors which might affect these. Following from previous research, interviews focused mainly on participants current online rating and reviewing behaviours including reasons why they may or may not contribute online ratings and reviews – using open questioning to allow participants to volunteer their main motivators and attitudes. We also probed more directly to explore people's views on the impact of others' reviews and ratings on their purchasing decisions or review/rating behaviour (since previous research suggests these can affect people's ratings and likelihood to review). We concluded by asking if they had any ideas for how to improve reviews/ratings and interfaces for leaving them (see Appendix A for full interview schedule). Each interview session lasted between 15 and 25 minutes.

Procedure

Participants were invited to the lab, were given information about the study and were asked for their consent to take part. The interviews were conducted in the lab and audio-recordings captured. Once completed, participants were debriefed as to the motivations of the study and thanked for taking part.

Data Analysis

Interview recordings were transcribed, and a combination of a bottom-up and top-down qualitative thematic analysis (Braun & Clarke, 2006) was conducted to understand the data: initial bottom-up coding was used to describe the data, which were then understood in terms of high-level themes of interest for this research – including frequency of reviewing/rating, review/rating use in making purchasing decisions, motivations for reviewing and rating, and the barriers to reviewing and rating (See Table 2 for a summary of findings).

We then underwent a process of pattern-coding (Miles & Huberman, 1994; Yin, 1989) whereby we looked for patterns, similarities and differences across and within themes. As a result of this, we grouped participants into three groups acording to their rating and reviewing behaviour, and revealed a relationship between participants' use of and attitudes to the usefulness of others' reviews and ratings, and their own reviewing and rating behaviour (see Table 3).

RESULTS

Relationship between rating and reviewing behaviour

We found that rating and reviewing behaviours varied considerably across participants – with some participants saying they leave ratings and reviews after almost all online purchases, and others saying they almost never did. Our thematic analysis and pattern coding revealed that our participants fitted on a continuum between these two extremes, and that their rating and reviewing behaviours were related. We organised them into three main groups (see also Table 3):

Review and Raters (Rv+Ra): The five participants who said they regularly leave written reviews also rate products at least as often as they review them. Of these, four participants reported that they reviewed and rated most products they bought online (A, B, C and D), and one reviewed and rated around half of the products they bought (E).

Rate only (RaOnly): Three participants (F, G and H) said they only sometimes left feedback, and when they did, they usually only left a star or other rating for products but no written review.

Non Review or Raters (NoRvorRa): Finally three participants (I, J, and K) said they almost never left either ratings or written reviews.

Overall, the reasons people gave for why and when they choose to leave ratings were similar to the reasons they gave for leaving written reviews (see Table 2), with a few exceptions which we discuss below. Our pattern coding also suggested that there were some differences in the motivations to leave feedback between participants from the different groupings, in particular how useful they found the

reviews/ratings of others when making their own purchasing decisions (see Table 3). The findings are summarised in Table 2, and discussed in relation to the different groups of participants below.

< Table 2 Here >

< Table 3 Here >

Motivations for rating and reviewing

Participants were asked to think about what motivated them to leave a rating or review. Overall, the reasons people gave for leaving ratings were similar to the reasons they gave for leaving reviews (see Table 2). However, there were some differences in motivations between groups.

The biggest reason participants reported for leaving ratings or reviews was to help other consumers and share experiences with them. Participant A expressed this most clearly when asked why he reviewed products:

"Because it's definitely going to help somebody... everybody working together to help any other person who is going to buy or to sell to make a better informed decision"

Three participants (C, D and E), all whom regularly rated and reviewed, explicitly talked about wanting to review or rate as they had benefited from other people's in the past, e.g. Participant C:

"I feel that, for rating, I feel that I have to give a rating because it's such an easy thing to do, and I personally benefited from the rating and from the review"

Those who reported only rating/reviewing sometimes suggested they were more likely to rate (and review) when they had either had a very good experience or a very bad one.

We did not ask people specifically if they would be motivated to rate or review if offered a reward, but this was raised by a number of participants. Four participants (D, F, F and K), from across the groups, indicated that they would be more inclined to review (or had in the past) when offered some kind of small monetary reward (either cash, money off voucher or reward points). Only 1 of the 5 Ra+Rv participants – D (who said she tended to leave brief/quick reviews), raised the idea of a reward as motivation. Participant J (noRvorRa), felt that money incentives would not change his mind.

Current methods to encourage review contribution, such as emails asking people to rate/review recently purchased products, were generally seen by participants as useful reminders rather than motivators to review. None felt that these changed their minds about whether or not they were going to review/rate. E.g Participant A:

"If they sent me a reminder it means I haven't done a review, and that I probably won't do that. It doest really help. If they keep sending the reminders I would rather not review at all because it's anoying me!"

Barriers to rating and reviewing

Participants who indicated that they almost always rated and reviewed (Rv+Ra) suggested the only times they would not, would be when they did not use the product themselves (i.e. it was bought for someone else), or had not yet used it long enough when prompted to review. They mentioned sometimes forgetting. However, they did indicate that the level of detail they put into the written review changed depending on other factors, similar to the barriers mentioned by other participants. Time was mentioned by all other participants as being a barrier to leaving ratings and reviews, in particular reviews (mentioned by 8/11 participants), and as a reason for leaving only quick reviews by some of those who usually do review. Participant F talked about how off-putting it was not knowing how much longer a review was going to take him, and participant C discussed how she no longer left book reviews after spending up to 4 hours writing a review in the past.

However the time participants are willing to spend rating or reviewing seems to be related to the perceived value of this reviewing to others. Participants who only sometimes rate or review (RaOnly), and even those that usually do (Rv+Ra), describe how they are less likely to leave a detailed review when there are already sufficient reviews on the site, they don't have any specific new points to add, or their experience was neither very good nor very bad, yet they may still supply a rating in these cases. e.g. Participant G said:

"If I've got a specific point or I want to fight a review left by another person I would leave a review, otherwise I would just leave a rating and leave the review blank because otherwise I won't be contributing a lot."

Of those that reviewed (Rv+Ra), only participant B suggested that these things would not affect the level of detail of their review as he believed it was about numbers: the more reviews, the more credibility.

For those that rated but didn't review (RaOnly), ratings were seen as a quicker way of giving your opinion compared to reviewing. Participant H was concerned with personal data security:

"It's quicker just to do the star system, and I always worry about repercussion, about whether they can track you and personal data being exposed or anything like that. So I'm just a bit extra careful"

Of those that had never reviewed or rated (noRvorRa), one of them (participant I) said this was simply because they had never thought to do it. The other two (J and K) expressed that they did not see the

point. They did not feel that their reviews would sway people at all or that other people would care about their opinion. For example, when asked why she doesn't review, Participant K replied:

"I suppose it takes a long time... and I think 'why would anyone care what my opinion is?'".

Use of ratings and reviews when making online purchases

All but one participant (K) reported using the online ratings and reviews of others to some extent when making purchasing decisions. The ways in which these helped participants was similar across groups. All participants mentioned they could be useful to find out more details about the product: its pros and cons, reliability etc.; specific features to look for in this type of product, and the specific features a particular product has; to compare and contrast products, and decide between them; and to get a sense of other's opinions/the consensus view and experience of using a particular product over time. Five of the participants from across the groups (A, B, E, J and K) also mentioned that reviews and ratings were useful to find out about the seller: to choose one (especially to give you confidence in using a lesser-known seller), or to be aware of any customer service issues others have encountered.

However, our pattern coding revealed that participants differed in how valuable they reported finding other's reviews, and that this was related to how often they reviewed and rated. Participants who regularly leave written reviews (i.e. Rv+Ra group) tended to express that they highly valued the ratings and reviews of others, e.g. Participant B:

"I think it's very useful, because it gives you an idea of what to expect of a product, especially if you're not sure if you really need that"

Whereas participants in the groups that rarely leave written reviews (RaOnly and noRvorRa) varied as to how useful they found them. For example, Participant F, when asked if online reviews are useful, replied:

"I think it will not be harmful, so yes maybe useful or zero effect, but it will not be harmful"

Some participants suggested that reviews were not helpful for buying certain products (e.g TV box sets, films or books) as you would already have made your mind up about buying those things before coming to a site to purchase them, or that there are other more useful places to find out information about these things. Participant C discussed how different people could have a completely different perspective on merits of a product that could not easily be captured by a rating scale. The three participants that never rate or review (noRvorRa) all talked about wanting to make their own minds up, trusting their own opinions more, or already knowing what they want when they come to buy, e.g. Participant J said:

"It depends what it is, with films and things like that I kind of know if I want it or not. I will read them, but it doesn't influence my opinion on whether I buy them or not"

Two of them (J and K) talked in terms of distrusting review/rating systems, either because they compounded too many things to be valuable, or because other people's views might not be the same as their own, e.g. Participant K:

"It doesn't reflect the quality of the product. If I read a book and you read a book and we both give it 4 stars it doesn't necessarily mean we both have the same feeling about it."

Some that did not rate or review looked on reviews and ratings with suspicion, questioning whether contributions were actually genuine and not generated by the sellers/e-commerce site themselves.

Impact of previous reviews/ratings on own reviewing and rating behaviours

We also asked participants about the impact of previous reviews on their own reviewing behaviour. Most participants (7/11) from across all the groups, did not feel that the number or nature of previous reviews or ratings would impact either their own likelihood to review, or what they put in their review.

However, 3 of the 5 participants in the Rv+Ra group, and 1 in the noRoR group did feel it would affect their likelihood to leave a review or the content of their review. They stated that they were more likely to review if they disagreed with others or there were fewer existing reviews. Yet they would be very clear and careful about what they said if others disagreed or might write a shorter review endorsing others if there were already lots of other reviews.

E.g. Participant C:
"because so many people have done it and they've all said wonderful things, even if I'm amazed by it I may just one or two sentences then. I might say 'I'm really amazed and believe what people say about it'. If I'm under time pressure."

Views on features of reviewing systems

Throughout the interview, participants discussed aspects of reviewing and rating systems that they particularly valued as either a consumer or reviewer, and towards the end of the interview we asked them explicitly to reflect on what they liked or would make the experience better for them (Table 2). When using reviews to help them buy products, participants discussed wanting more detail, being able to ask reviewers questions or being able to separate ratings/reviews about sellers vs. those about the

products. A few of them talked about wanting to be able to search through reviews to find information about relevant features of interest, and that structured reviews were most helpful. They also wanted to know about the reviewer in order to know whether to trust them, or if they would likely agree with their opinion. Easy access to reviews, and reviews not being too long were mentioned.

Whilst participants wanted more detailed information from reviews, most emphasised easy access and speed of leaving/shortness of the reviewing process as being important. A few of them (participants A, E and C – all Rv+Ra) suggested that multiple choice or questions could be a good way to structure reviewing and make it quicker to leave more detailed information of value to the consumer.

DISCUSSION

The aims of the preliminary interview study were to inform the design of our protoype system by understanding why people do and do not leave rating and reviews in order understand the motivators and barriers to online rating and reviewing; exploring some of the differences in these factors between people who do and do not regularly review or rate; and understanding if there are any differences in these factors specifically in relation to rating or reviewing behaviours.

Overall we found that people reported motivations for reviewing and rating that were similar to the findings of previous research (Cheung & Lee, 2012; J. H. Park, Gu, Leung, & Konana, 2014). In particular, our participants suggested that the main motivation for leaving reviews and/or ratings was to help others. Also, we found evidence to support the review bias discussed in the introduction (Chevalier & Mayzlin, 2006; Hu et al., 2009; King et al., 2014), with participants reporting that they were more likely to leave reviews and ratings when they were either very happy or very unhappy with their experience or purchase.

However, we also explored further than previous research the reasons people gave for *not* leaving ratings or reviews, and the differences between people who do and do not regulalry rate and/or review. We found that those that did not leave written reviews cited that they did not expect their opinions to be helpful, or make any difference to others, as a reason for not contributing. People often said they were discouraged from making a contribution when they felt there was nothing new to add, when they though it would not be useful or helpful and when there were already sufficient reviews – especially a written review contribution. This was despite previous research (D.-H. Park et al., 2007), and our participants, suggesting that purchasers find that multiple agreeing reviews gives them more confidence in the product or service. Therefore our findings extend previous studies that suggest people contribute more when they feel they have a unique contribution to make (Godes & Silva, 2012).

In the process of pattern coding, we found similarities and differences between our participants in terms of their rating and reviewing behaviours. We organized our participants along a continuum of always leaving written reviews and ratings, through neither reviewing nor rating. This revealed a difference between the groups of participants in their perception of how useful online reviews and ratings were to them when making their own purchasing decisions. People who found online reviews and ratings more useful (and therefore of more benefit) seemed to be likely to rate and also leave written reviews more often. Again, this extends previous research, which suggests aspects such as reciprocity and moral obligations to the community are primary reasons for review contribution (Cheung & Lee, 2012; Pai & Tsai, 2016). It also further highlights that attitudes to online reviewing, and people's perceptions of the usefulness of online reviews to others *and themselves*, may play a role in predicting actual reviewing and rating behaviour.

Cost-benefit analysis

We also suggest that our findings point to users assessing the trade-off between the costs of reviewing - in terms of time, and the benefits of reviewing, when making decisions about whether or not to review. We found evidence in our study that participants chose whether and when to leave ratings and/or reviews depending on how much time and effort they thought it would take, and how useful they perceived the ratings/reviews would be to other people based on what was already contributed in the community. When asked how to improve current review systems, most participants suggested making reviews short, quick and easy to leave, with time-saving and detail enhancing ideas like including multiple-choice questions. Previous research has explored this issue to some extent – for example Tong et al. explored costs, such as cognitive effort and opportunity cost, in relation to the benefits people got from reviewing in terms of satisfaction from being able to help others, money rewards, and external recognition from others (Tong, Wang, & Teo, 2007) – however they got mixed results with neither cognitive cost nor monetary reward being found to influence customers intentions – though higher execution costs did lead to lower contributions. Pai and Tsai explored the impact of reciprocity on likelihood to review, and suggested that mixed findings of previous research on reciprocity as a motivator to leave reviews could be due to moderators which affect the cost (e.g. time, effort) of leaving a review, and benefits (e.g. motivation) showing that self-efficacy and community receptivity enhances the possitive relationship between the norm of reciprocity and information sharing behaviour. (Tong et al 2013) found that perceived time and cognitive costs of executing reviews have a negative relationship with intention to contribute. Similarly, people are more motivated to leave reviews that they feel add something or say something different to those that have gone before – as the perceived benefit to others of these reviews is higher and so worth the effort

(Godes & Silva, 2012; Wu et al., 2018). Therefore, the number and content of previous reviews and ratings can have an impact on subsequent reviews.

This understanding of cost vs. benefit to the community is also considered to be an underlying factor in contributing to the review bias discussed earlier: people are more motivated to leave reviews when they have either had a very good or a very bad experience, since the perceived benefit of these reviews to others is higher, leading to an under-reporting of moderate views (Hu et al., 2009; King et al., 2014). Combined, these issues, and the subsequent review bias caused, can present a skewed picture of the product, which can lead to bad purchases (and possibly more negative reviews from unhappy customers). A number of suggestions have been made as to how to address this, by either encouraging people to leave ratings and reviews more often and representatively, or by helping buyers interpret the reviews, and their inherent biases, more accurately.

Further to previous research, we suggest the estimation people create of the value of the reviews to others/the community may be based on *their perceptions and experience of the value of such reviews and ratings to themselves* (hence the link between people's use of reviews and likelihood to review). Therefore, approaches which make reviews more useful should also increase reviewers' likelihood to leave them.

Other motivators to review

Our findings on the effectiveness (or not) of monetary rewards were subtly different to those of previous research that suggests that rewards tend only to work when people were going to review anyway (Shipman & Marshall, 2013; Utz, 2009). We found that it was mostly our participants who were neither already very motivated to, nor deterimined not to, leave ratings or reviews who said they would be swayed by such rewards. In terms of cost-benefit, it could be hypothesised that the value added to an indvidual of the monetary reward for reviewing is only enough to overcome the cost in terms of time/effort of doing it for some people who are close to reviewing. However we did not systematically explore this issue in our research and therefore it is hard to draw conclusions. We suggest this warrants further, more nuanced investigation. Similarly our participants felt that emails and reminders to review did not change their mind about intentions to review – again we could consider that such messages do not increase perception of the value of reviews to others, though they may reduce the cognitive cost of remembering to do it, or the time cost of accessing the review site if there is a link embedded in the message.

Implications for Improving Reviewing Interfaces

Overall we found that the main motivations people reported for reviewing and rating were similar, in both cases being a desire to help other customers (and sometimes sellers), and to reciprocate for help they have received in the past. The main barriers to both rating and reviewing were time, and we found people were often discouraged from making a contribution (especially a review contribution) when they felt there was nothing new to add. Furthermore the main difference we observed between groups of participants, organized in terms of how often they review or rate, was their perception of how useful online reviews and ratings were to them when making their own purchasing decisions. People who found them more useful (and therefore of more benefit) seemed to be more likely to review and rate more often. This provides a strong indication that attitudes to online reviewing and people's perceptions of the usefulness of online reviews to themselves and others may well play a role in predicting actual reviewing and rating behaviour. It also suggests that any work done to improve the usefulness of online reviews to consumers could in turn lead to those consumers being more inclined to contribute. Therefore, in order to encourage people to leave online reviews more often, focus should be both on designing a reviewing system to make it more convenient and reduce the 'time' cost to reviewers of leaving a review, whilst increasing how useful the contributor feels their review is to prospective buyers. Based on our interview findings, previous research, and some of the comments and suggestions of our participants, we outline below some implications for improving reviewing and rating systems.

Increase reviewers' perception of usefulness of reviews to others

Our participants came up with a number of suggestions for ways in which reviews could be more useful to purchasers, including being more detailed, being able to ask reviewers questions, and being able to separate ratings/reviews about sellers vs. those about the products. Structured/not too long reviews, being able to search for detail about particular features, and information about the reviewer were also mentioned. They also talked about a consensus view being important to them when making purchasing decisions, and feeling more comfortable purchasing online products, or from sellers, that have more ratings and reviews. We have already discussed the review bias, and the issues inherent in the tendancy reviewers have to not leave reviews that are either neutral or agree with others. Hu et al. (2009) suggested that reviews should be displayed with more information, such as the standard deviation and modes of rating scores, to support purchasers in making better sense of reviews, despite their biases.

Our participants did not, of course, suggest ways we could increase their *perception* of the usefulness of reviews to others – however, previous research has suggested ways that review systems might tackle the review bias and encourage more people to leave reviews that are then more likely to be

representative of a consensus view. For example Dellarocas suggested making information about previous reviews less prominent to reviewers so they were more likely to leave a review (as it was not so clear there were already a number of reviews), and less likely to be influenced by the content of previous reviews (2010). Ling et al. (2005) suggested giving people personalised information that highlighted the uniqueness of their own review contributions. Similarly the reviewing site and any reminders sent could highlight the value to the community or the benefit of supplying written reviews, perhaps targeting reminders particularly when their contribution would be most worthwhile (e.g. for products or services that lack reviews). This may be especially important to encourage the reviewing behaviour of people who do not feel that others' reviews are always helpful.

Decrease cost of reviewing

Whilst participants wanted to read reviews that contained more information, the main reason participants gave for ever not leaving a review was the time it took to do so, and most of their suggestions for improving the reviewing process in someway related to making reviews quicker and easier to leave. We also discussed previous research which highlights the cognitive cost of writing written reviews. Approaches to making reviews quicker and easier to leave might include ways of making it easier to access the reviewing platform/submit the review, reducing the time it takes to fill in or leave the review, or reducing the cognitive effort of leaving what people consider to be useful review feedback. As some participants mentioned, using questions to structure, or providing muliple-choice answers, could both be approaches to reducing the time and cognitive cost of leaving reviews.

EVALUATION OF A PROTOTYPE MOBILE REVIEWING INTERFACE

Building on our findings from the preliminary interview study, and insights from previous research, we designed and evaluated a prototype online reviewing system, for mobile phone, intented to encourage more people to leave reviews. We now go onto describe some approaches used by existing review systems to both increase perceived usefulness of reviews, and reduce the time cost of reviewing. Following this, we describe the design of our own approach to this challenge, and then the study we designed and ran to evaluate it. We conclude with a discussion of our findings, some of the limitations of our work and implications for future research.

Current approaches to improving usefulness of reviews

Many approaches have been taken to improve usefulness of written reviews to customers. They mostly focus on helping users to discover, navigate and extract the most useful information to them. A number of online review platforms allow customers to navigate through written reviews according

to their star ratings, and ask customers to vote for how helpful they found a particular review in order to give priority to these reviews when displaying them subsequently. Other approaches extract and reorganize review content and present it in a way that might be most valuable to the customers. For example Ganu et al. (Ganu, Kakodkar, & Marian, 2013) describe a system that can derive star-ratings automatically from text-based analysis of written reviews, and is also able to cluster 'similar' reviews together. Similarly Dayan, Mokryn and Kuflik (2015) create aggregate reviews of existing review contributions through a cluster based feature extraction, and Yatani et al. (2011) extract adjective-noun pairs from reviews as a means to enable purchasers to navigate and find useful information from reviews. RevMiner (Huang, Etzioni, Zettlemoyer, Clark, & Lee, 2012) uses natural language processing techniques on restaurant reviews to provide summary information on the restaurants, clustering similar restaurants and enabling customers to search for those that have certain combinations of features (e.g. "cheap Indian food").

Reducing the 'time' cost to reviewers

Current approaches to reducing the time it takes reviewers to leave reviews include direct links from reminder emails and messages, and extending rating feedback. Direct links from reminders enable previous purchasers to leave ratings then and there in whatever spare moment they have taken to check their emails or messages with very little extra time commitment. However, whilst ratings are considered to provide useful information, customers can feel that general ratings may include weighting for features they are not concerned with (Ganu et al., 2013).

A way around this is to encourage customers to leave a series of ratings for different aspects of the product and service. Others supply a series of statements that may apply to the product in question and offer reviewers the opportunity to select from these. Both these approaches extend rating systems to provide more information to future customers without increasing the time cost to reviewers by much. However, many customers still report that they find more traditional forms of written reviews more useful (Liu & Park, 2015).

Prototype System

Based on our findings and previous research, we now offer a new rating/reviewing system that is designed to combine the benefits of both rating and reviewing mechanisms for leaving product reviews in a way that will both decrease the cost involved in leaving reviews, and increase the usefulness of the subsequent reviews to future customers, with the intention of encouraging more people to leave reviews. We propose to do this by extending existing approaches to allow users to endorse the statements of other reviewers (in contrast to voting whether a review was 'useful' or not).

In terms of reducing the 'cost' of leaving reviews, checking pre-existing statements, whilst slower than giving just a star-rating, is likely to be faster, and require less cognitive effort, than having to write a free-text review. In terms of increasing the perceived usefulness to others, this approach allows people to quickly agree or disagree with other people's statements, and so encourage them to make a small contribution even when they feel there is nothing new to add or their overall opinion is neutral. This should enable people to see what this contribution adds, and could be considered a more 'honest' approach to dealing with the influence of previous reviews than hiding them (Dellarocas et al., 2010). If effective, this could help address the review bias. In terms of actually increasing the usefulness of reviews (and in doing so also encourage more people to review), this approach may result in more structured reviews, organised around particular aspects or features of the product or service, which makes clear the consensus view. Therefore our reviewing system could simultaneously increase the value of reviews to other consumers, help people to feel they are always making a useful contribution, as well as decreasing the time cost from leaving a full written review for those who do not wish to.

Our proposed selection based review system (SRS) includes three parts: a star rating, the option to select a number of existing review phrases, and a free text section (see Figure 1).

The star rating is similar to existing systems and allows consumers to give an overall rating to the product of between 1 and 5, where 1 is poor and 5 is excellent.

<Figure 1 Here >

Our system differs from existing systems by including a phrase selection component: we propose that when there are enough existing reviews in the system, these can be automatically broken into informational phrases and given a positive or negative valence score by the reviewing system software. The reviewer can then be presented with a selection of the phrases and given the option of selecting those that they agree with.

Finally, as with existing review systems, the reviewer is also given the option of augmenting their selections with free text.

As stated, our aim was both to design a reviewing system that reduced the time cost of reviewing to the reviewer, as well as increasing the value of the review to the potential purchaser. The purchaser might therefore see a review much like the one in on the right of Figure 1. This will allow the potential purchaser to see a summary of both positive and negative aspects of the product, as well as star ratings and individual reviews (and the statements selected by each individual reviewer) if they wish.

PROTOTYPE EVALUATION

To test our design we ran a within subjects experiment whereby participants were asked to review products using our developed interface (Selection based Review System- SRS) as well as an interface similar to those commonly used on e-commerce and reviewing sites (Control Review System - CRS). We aimed to identify whether our new design impacted the time people took to review products in addition to how it affected their opinions of the usefulness of the reviewing system, their satisfaction with the reviewing experience and whether it impacted their intentions to review in the future.

Based on our design and the findings from our interviews, we hypothesise that our system will have a statistically significant impact on the time taken to contribute a review (H1). We expect that our system will lead to faster reviewing times when compared to the control system. We also expect our system to have a statistically significant impact on the perceived usefulness of the system (H2) whereby our system will be rated as more useful than the control system. We also expect our system to lead to a statistically significant difference in people's level of satisfaction compared to the control system (H3) where the SRS reviewing system will lead to significantly more positive satisfaction scores when compared to the control system. We also expect our system to lead to a statistically significant difference in people's intentions to review compared to the control system (H4) where the SRS reviewing system will lead to significantly higher intention to review in the future than the control condition.

Method

Participants

A different sample of 28 participants (15 Male, 13 Female) from the same UK University, ranging in age from 20-29 with varying levels of reviewing and rating experience took part in this part of the research. 60% of these participants reported rarely or never leaving written online reviews . The data from one participant was removed prior to analysis due to an error in the experimental procedure, leaving 27 participants. Participants were recruited via email and entered into a prize-draw for a £25 online shopping voucher for participating.

Experiment Design & Task

A within-subjects design was used, whereby participants were asked to review two products: a desk lamp and a hairdryer. Before reviewing the items participants were given time to interact and use the products. Participants were then asked to review these two different products, one with each of the

reviewing systems. The order of product being reviewed and the system used for the review were counterbalanced across the experiment.

Conditions

Two prototype reviewing systems were developed. The first was our experimental SRS and the second a control reviewing system (CRS). Participants interacted with each system using an Android smartphone.

SRS prototype:

As described above, in the SRS system the reviewer is presented with a selection of the phrases and given the option of selecting those that they agree with. In addition to this the reviewer is also given the option of augmenting their selections with free text as well as give a star rating for the product. The prototype was developed using online interactive prototyping software (https://www.justinmind.com) which displayed on the mobile phone interface we used for the study, and allowed participants to select options and enter text as though it were a real online reviewing interface. For each product we populated the interfaces with a selection of positive and negative review phrases manually extracted from existing online reviews of the products used in the study. We did this by selecting the first ten positive (5*) reviews and the first ten negative (3* and under, as these usually include negative statements) reviews of these products from an online site (Amazon.co.uk). We then broke these down into individual review phrases which expressed either positive or negative opinions on the product, and selected the three most commonly occurring positive comments and the three most commonly occurring negative comments about each of the products. We used examples of the actual review text from online reviews which represented each of these comments to feature in the respective SRS prototypes. Our intention in doing this was to mimic as closely as possible what the review system might display to participants once a number of initial reviews had been submitted (see Figure 2).

< Figure 2 Here >

CRS prototype:

The CRS interfaces was the same as the SRS interface, but without the phrase-selection options before the free-text entry box (see Figure 3). This design is similar to those currently used by many well-known online review interfaces. We developed the CRS prototypes (one for each product) using the same prototyping software.

<Figure 3 Here>

Measures

Pre Study Questionnaire: A pre-study questionnaire gathered demographics, measures of shopping enjoyment, experience with smart-phones, reviewing and rating behaviour and attitudes on scales developed for this study and based on the findings of the initial interview study. The baseline measure of people's intention to review in the future was also gathered using a 3 item subscale (similar to that in Thompson, Compeau, and Higgins (2006)), using a 5 point Likert Scale (Strongly disagree-Strongly Agree).

Review Time: Screen recording software was used to record participants' interaction with the reviewing systems. Participants' total review time was extracted using these recording. Total time reviewing is calculated as the total time they spent rating the product, selecting relevant phrases (SRS condition only) and writing a written review where this was done.

Post Review Questionnaire: After each review, participants completed a questionnaire that captured participants' ratings of *perceived usefulness* (5 items – e.g. "using this system will increase my effectiveness when leaving a review" adapted from Davis (1989)); *perceived satisfaction* (1 item - "Overall, how satisfied are you with this online reviewing system?")*;* and *intention to review* (3 items, adapted from Thompson (2006)) in relation to the review systems just used. All scales used a 5 point Likert Scale *(Perceived usefulness & Intention to Review: Strongly Disagree-Strongly Agree; Satisfaction: Not at all satisfied-Very satisfied).* At the end of the study a final 2 questions asked for users' preference between the two systems, and suggestions for an improved reviewing system.

Procedure

Participants were initially given information about the study and asked to complete a consent form. After then completing the pre-study questionnaire they were next given the first product they were going to review and allowed to explore/use the product for up to 10 minutes before being asked to review it using one of the reviewing systems (either SRS or CRS) on a mobile phone. Following this they completed the post-review questionnaire. This procedure was repeated with the other product and review system. Screen capture software on the mobile phone was used to record participants' interaction with the interface, and the time they spent on each review.

Results

All participants rated products as asked, however not all participants left a text review after rating the product (and selecting phrases in the SRS condition). More participants left written reviews in the CRS condition (26 reviews in total) than the SRS condition (22 reviews).

Total reviewing and rating times

Shapiro-Wilks tests showed that the reviewing time data for each condition did not vary significantly from normality ($p>.05$). A paired samples t-test showed that people spent more time on reviewing in the control interface condition (M=101.63s; SD=43.75s) than the selection based interface condition (M=80.41s; SD= 27.34s) [$t(27)=2.80$, $p=.010$], supporting H1 that our Selection Based Review system will lead to faster reviewing times when compared to a control system.

Perceived usefulness of the reviewing system

Internal reliability for the perceived usefulness measure (Time 1: Cronbach $\alpha=.91$; Time 2: Cronbach $\alpha=.95$) was high across the experiment. Shapiro-Wilks tests showed that the data for each condition did not vary significantly from normality ($p>.05$). A paired-sample t-test comparing perceived usefulness scores after each of the reviewing systems reveals that participant's rated the selection based system (M=17.96, S.D.=4.58) as significantly more useful than the control system (M=12.75, S.D.=4.90) [$t(27)= -3.80$, $p<.001$], supporting H2.

Satisfaction with reviewing system

Shapiro-Wilks tests show that the data significantly deviated from normality for each condition ($p<.05$). A Wilcoxon signed rank tests was therefore run to compare people's ratings of satisfaction with the reviewing interfaces. In support of H3, we found that participant's satisfaction scores after experiencing the SRS system (M=3.88, S.D.=0.97) were significantly higher than the scores after experiencing the CRS system (M=2.59, S.D.=0.97) [$Z=39$, $p<.001$].

Intention to review

In order to consider whether there was a statistically significant impact of the review systems on intentions to review, we compared the sums of the 3 measures of participants' initial statement of intention to review in the near future (from the pre-study questionnaire) with their intention to review in the near future after using each of the two systems. Internal reliability for the intention to review measures across the experiment (Pre Measure: Cronbach $\alpha=.88$; Time 1: Cronbach $\alpha=.94$; Time 2: Cronbach $\alpha=.96$) was high. Shapiro-Wilks tests show that the data do not vary significantly from normality for each condition ($p>.05$) with Mauchly's test of sphericity indicating that sphericity was assumed ($p>.05$). A one way within participants ANOVA showed that there was a statistically significant difference between the measures of intention to review [$F(2,52)= 4.73$, $p=.013$]. Although

the omnibus test is statistically significant, bonferroni post hoc tests show that there were no statistically significant differences when comparing participants intentions to review before the experiment with intentions after experiencing the interfaces (*Intentions before the experiment*: M=8.89; S.D.=2.59; *Intentions to review after CRS*: M=8.04; S.D.=3.19; *Intentions to review after SRS*: M=9.55; S.D.=2.99; all p's >.05). Therefore H4 was not supported.

Review System Preference

25 out of the 27 participants stated they preferred the SRS. Reasons given for this were that selecting existing phrases helped them write a review, that they liked not having to write phrases already contributed, and that selecting phrases saved time and made the process easier and more convenient. However, there were things that they did not like or that could be improved. These included having to read through a number of other reviews/review statements in order to leave their own review, feeling like there were not enough options to choose from, worrying that they will be too led by previous reviews, and the feeling of still needing to leave a written review at the end. There were also a number of usability issues raised with the SRS. These included the location of the check-boxes in relation to the text with difficulties encoutered in selecting the appropriate checkbox as well as not being made aware of where the statements came from. The two participants who preferred the CRS cited problems with the interactivity of SRS, that the options it offered were too long and not useful, and that the CRS was more aesthetically pleasing. Although the majority of participants did prefer the SRS, they liked the simplicity of the CRS, feeling they recognized it and knew how to use it, and that it gave them scope to leave their real opinions.

Discussion

Our prototype evaluation showed that our design significantly improves the user reviewing experience. The SRS saved participants' time in leaving a rating and review (H1), and it is perceived by reviewers as significantly more useful (H2) and more satisfying to use (H3) than the CRS. It was also preferred by the majority of participants. This preference did not directly translate to an increase in intention to review in the future when compared to people's intentions before the experiment.

We hoped that our SRS system may be preferred over the CRS system as it reduces the cost of leaving a review, whilst increasing its perceived usefulness. We suggested that it would reduce the cost in two ways – by reducing the time it took to leave reviews (supported by H1) and in reducing the cognitive effort to consider what to write and how this fits with the current state of knowledge in existing sets of reviews. This type of effort has been shown to negatively impact intentions to review (Tong et al., 2013). Based on this insight, the improved satisfaction in our SRS system may be in part due to this.

We also found that fewer written reviews were left after making selections in the SRS than in the CRS suggesting that the presence of these selections may actually *decrease* the number of written reviews left. As previous research suggests that participants still prefer full-written reviews over extended rating systems (Liu & Park, 2015), this may lead to resulting reviews and ratings from our SRS as being considered less useful from a customer perspective. Additionally, longer reviews have been reported to be considered more useful (Chevalier & Mayzlin, 2006; Mudambi & Schuff, 2010). We observed that the written reviews left after selections in the SRS were not only fewer in number but shorter than those in the CRS, potentially creating issues for the perceived usefulness of the written reviews left by users in the SRS. Yet our interview participants suggested that reviews structured in terms of features and pros and cons were more valued, meaning that our SRS system may be seen as overriding the usefulness effects seen in the literature around length, as it prioritises these types of statements for review generation. Future work may need to disentangle these effects, focusing in particular from the review reader perspective.

That said, note that the aim of our SRS, based on our qualititative findings, was to reduce the need for full-written reviews: SRS free-text reviews were supplemented by the selected phrases, and the overall time to leave reviews with the SRS was less and involved less typing. Our findings show that our SRS clearly impacted efficiency of the reviewing experience. This benefit may be driving the increased 'usefulness' and 'satisfaction' with the SRS in comparison to the CRS. Based on our qualitative results, if this translates to a perceived reduction in cost to the reviewer, whilst increasing usefulness to the potential customer, then this may also encourage customers to leave more detailed product information. Again, further work needs to be done to identify how this type of system and the reviews it generates affect customer perceptions of review usefulness.

Limitations and future research

The initial interview study was an exploratory, qualitative study to give us insight into some issues of reviewing and rating not clear from previous research, with the main purpose of helping to inform the design of a prototype reviewing system that might encourage more people to review. The number of participants we interviewed was relatively small, and we did not use gender as a factor when selecting people to interview, resulting in more female than male participants. Whilst there is not much discussion on gender differences in motivations to review or rate in previous research (Mishra et al., 2018), this may be a limitation of our work which should be taken into account when interpreting our findings. We have indicated a number of opportunities in the text for further research to investigate some of our findings more thouroughly. In particular, whilst our participants appeared to fit in a

continuum from almost always review and rating, through rating only, to almost never reviewing and rating, it is possible that others may not fit this scale (for example only ever reviewing and not rating). It would also be useful to evaluate through further interview or quantitatively our other main observations – i.e. the link between attitudes to and use of online reviews for purchasing products, and people's likelihood to review; and the relationship between monetary and other incentives to review and their evaluation of the costs/benefits of reviewing. Both of these issues could have implications for ways to encourage more reviewing.

We trialled our review system as a prototype system in lab conditions, with a limited number and diversity of participants. Related to this, although our analysis had the statistical power to detect significant effects in the data analysed, a larger sample size may have incrased our ability to detect smaller effect sizes. A further limitation is that participants did not actually buy the products they reviewed, and only had a limited time to explore them before reviewing. Participants in the study would also likely feel obliged to leave ratings, make selections and written reviews even if this is not something they would usually do. However conducting an evaluation in this way was extremely valuable as it allowed us to evaluate our idea early before full development of the solution, and to gain an insight into participants' reactions to it (Gould & Lewis, 1985).

This study enabled us to collect values for perceived usefulness of the review system from the reviewers' perspective and their intention to review in the future as a result of this. Although our results suggest that participants found our new approach more useful, it is not possible to conclude definitively whether this interface really would encourage people who would not usually leave reviews to leave more than a simple rating, or whether that would translate directly into more useful product overviews for potential customers. Furthermore, we did not directly measure the usefulness of the resulting reviews to potential customers.

We also note that our solution is currently only at the prototype stage. It is still necessary to evaluate the best ways to extract phrases and display these effectively via different interfaces, both to enable reviews to be left, and to be displayed effectively to potential customers. We also have not explored the potential value of other features suggested by our initial investigations that could be integrated into a reviewing system – for example, highlighting the value of reviews to other people within the reviewing interface. Future work should look to identify how these may impact reviewing behaviour. Although not the intention and focus of this research, future research could build on our research approach to systematically explore how each of the possible components of this or related designs might impact review variables of interest. We feel that this study provides good evidence of the potential success of a reviewing system that works along the lines of our Selection-based Reviewing

System (SRS). However, this should be validated with the full development of the system and a live trial.

Conclusions

In this paper we firstly explored the motivators and barriers to leaving online product ratings and reviews in an initial exploratory interview study, then from lessons learned we designed and evaluated a prototype reviewing system that might increase the amount of useful product information people leave after purchasing a product. We distinguish between rating and reviewing attitudes and behaviours and describe the relationship between these within our participant sample. We suggest that people do a cost-benefit analysis when deciding whether and how much product feedback to leave – where the cost is their own time and effort, and the perceived usefulness of their review/rating to other consumers, which we argue is in part based on their own opinions of the usefulness of reviews to themselves when purchasing products. Our findings suggest that our Selection-based Reviewing System cut down overall reviewing time (reduced the cost of leaving reviews) and was perceived as significanty more useful and satisfying for users. Therefore it shows potential as an approach to encouraging more people to leave review-like product information in addition to standard star ratings.

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List of Figures

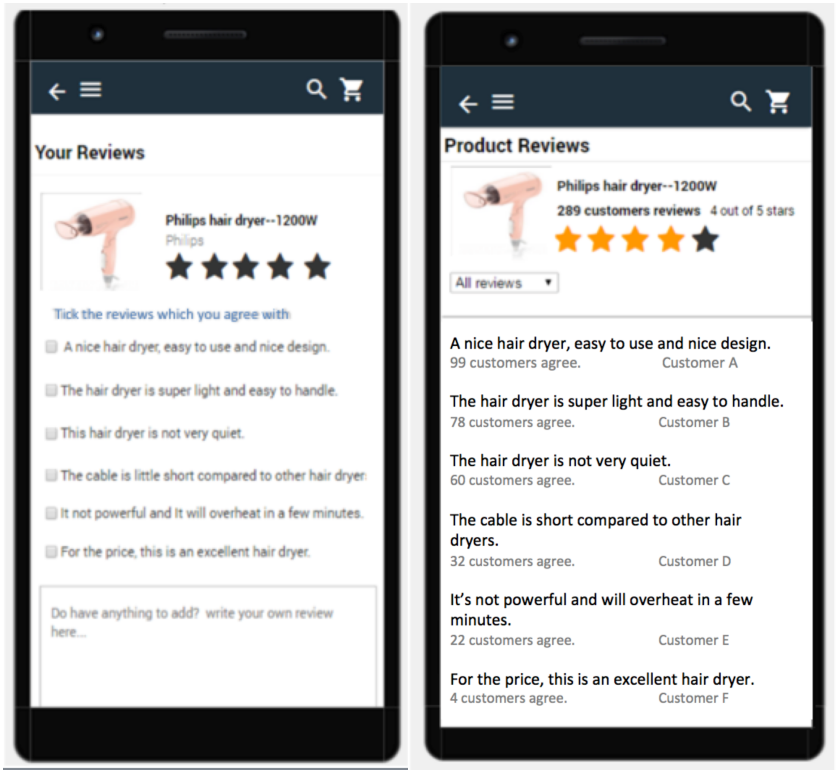

Figure 1: (left) Reviewer view of selection-based review system (SRS) and (right) potential purchaser view.

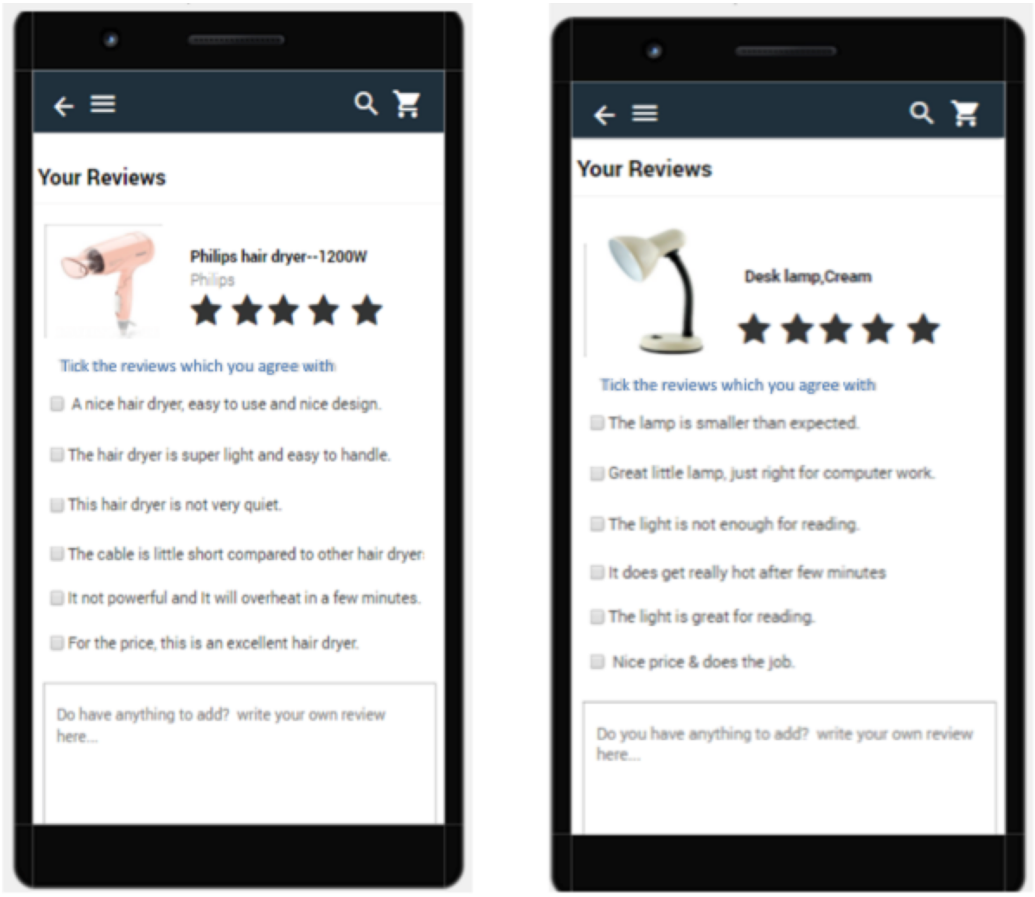

Figure 2: Reviewer view of Selection-based Review System (SRS)

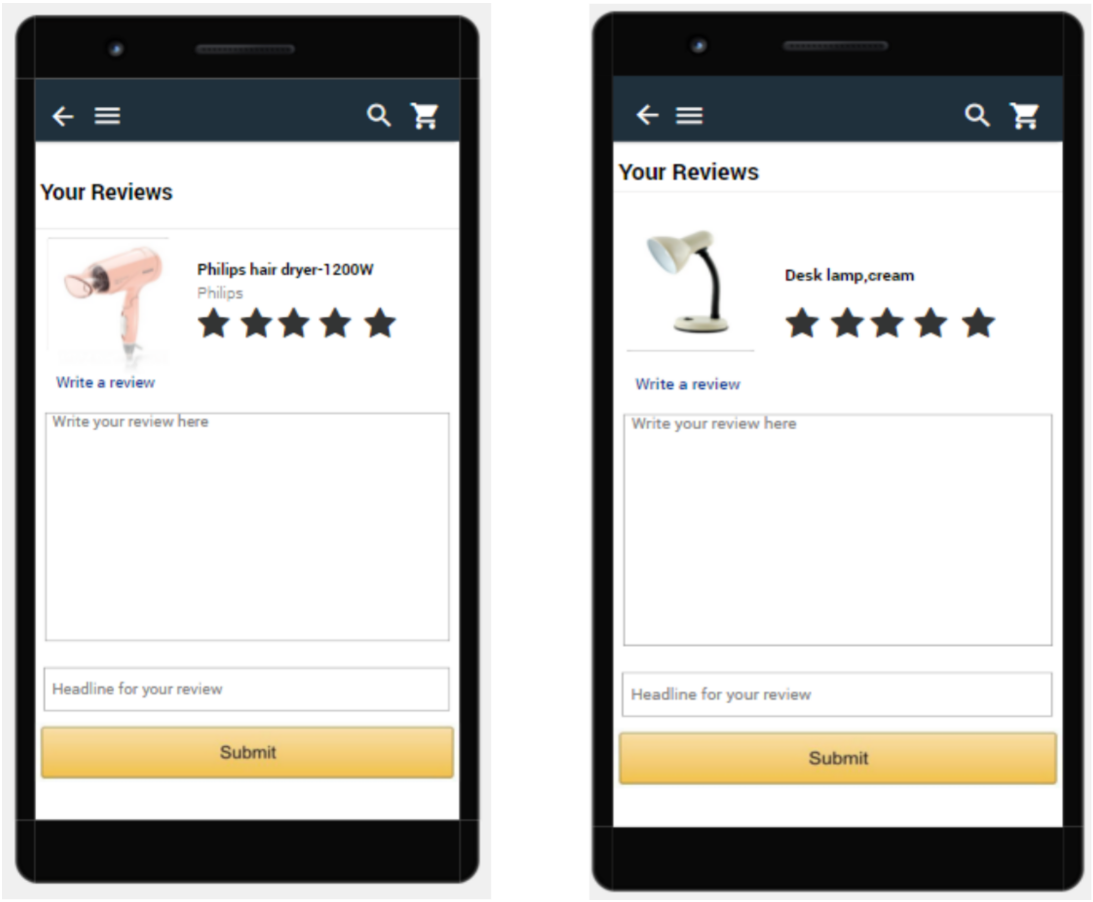

Figure 3: Reviewer view of the control review system (CRS)

Table 1: Summary of findings related to reasons people leave online reviews and ratings reported in recent literature

Author	Type of Study	Main findings
Zhu et al. (2019)	Quantitative analysis of online review and rating data	Compared reviews and ratings of consumers who received a discount to those who did not. Ratings were higher from customers who received a discount, but review word count, image count and diversity of review contents are higher from regular customers.
Wu, Fan, Zhao (2018)	Quantitative analysis of online review and rating data	Higher engagement with the online community leads consumers to generate more online product reviews and give higher ratings on their online reviews after purchase.
Moe and Schweidel (2012)	Quantitative analysis of online rating data	Positive rating environments increase posting incidence. Negative rating environments discourage posting. Less frequent posters follow rating trends, more frequent posters reveal differentiation behaviour.
Godes et al. (2012)	Quantitative analysis of online review and rating data	Rating scores decrease over time. Review frequency increases over time.
Dellacrous (2010)	Quantitative analysis of online reviewing data	Consumers prefer to post reviews for products that are less available and less successful in the market. However, they are more likely to contribute reviews for products that many other people have already commented on.
Pai and Tsai (2016)	Quantitative analysis of online review sharing and survey data	People who hold strong reciprocity norms feel obligated to reciprocate for any beneficial resources that they receive from their online communities. Self-efficacy (belief in their ability to share reviews) and community receptivity enhances this.
Utz (2009)	Quantitative analysis of online reviewing and rating and survey data	A cluster analysis revealed 5 different groups of reviewers: A small group are motivated by financial gain. Others score highly on altruism and pleasure of interaction, and differ in importance of money, generalised reciprocity/moral obligation and reputation.
Thakur (2018)	Quantitative survey of intention to review	Brand engagement, trust and satisfaction positively affect intention to review
Mishra et al. (2018)	Quantitative survey of intention to review	Looked at influence of peers and amount of internet usage on teenagers' likelihood to engage in eWOM. Male teenagers are more influenced by peer norms. Female teenagers are more affected by reliance and belief in the credibility of online information.
Cheung (2012)	Quantitative survey of intention to review	Reputation, sense of belonging and enjoyment of helping other consumers was significantly related to consumers' eWOM intention. Reciprocity, moral obligation and self-efficacy was not.
Xiang (2017)	Quantitative survey of intentions to review	Satisfaction, affective commitment and continuance commitment were key determinants of consumers intention to continue to contribute to a Chinese restaurant review platform.
Picazo-Vela (2010)	Quantitative survey of intention to review	Attitude, perceived pressure (to review), neuroticism and conscientiousness affect likelihood to leave a review (and explain nearly 50% of the variance).
Tong (2013)	Quasi-experiment of intention to review in different scenarios	Intention to review influenced by perceived satisfaction gained in helping other consumers, in helping the merchant, perceived probability of enhancing self-image, perceived executional costs (time to review). Monetary reward promotes contribution when perceived probability of self-enhancement high or perceived cognitive cost (effort) of reviewing low.
Shipman (2013)	Qualitative survey of reasons to review	5 main reasons people said they left reviews: A desire to share a positive experience, a desire to warn people about a negative experience, a desire to contribute to community knowledge, a perceived need to bolster or detract from an individual's online reputation, other (non-monetary) incentives offered in exchange for reviewing (though mostly people said they would have left a review anyway).

Table 2: Summary of results of interview study

Themes	Summary of responses (number of participants who said this).
Use of ratings and reviews when making online purchases	
• Value of reviews/ratings for making purchasing decisions	Value of reviews/ratings for making purchasing decisions: only occasionally use (1); sometimes use (2); mostly use – for particular products (4); highly value (4).
• Useful for	To understand it's pros and cons/constructive criticism (5); to make sure seller/customer service is good (esp. unknown sellers) (5); to get a consensus view on product/what other people think (4); to get a description of the product and its specific features (3); to compare products (3); to understand what is important to consider when choosing a product (1); to find out things you could only discover if you bought it (3); especially important for expensive products (2).
• Not useful for	For certain products (e.g. given by various participants: TV box sets, films, books)(3), self or other sources better (2); if have personally owned the product(1); if already know what I want (1); reviews of old products(1); if reviews of sellers rather than the product(1); if review is too long(1); if ratings cover too many aspects of product(1).
Reasons to rate and review	
• Reasons to rate	To help other customers (6); to reciprocate (3); if like the seller (1); to give feedback on unknown/small sellers/sources (1); if very good experience/products (4); if very bad experience/products (4); if offered a reward (3); prompted by reminder message (1).
• Reasons to review	To help other customers (6); to reciprocate (2); to help sellers (1); if very good experience/product (3); if very bad experience/product (2); if offered reward (2); prompted by reminder message (2); if a specific point to make or disagree with another review (1); to make some personal comments/recommendations (1); always review because its about numbers/every new review adds credibility (1); it doesn't take too much longer than rating/if have time (3); if few existing reviews (1).
Reasons not to rate and review	
• Reasons not to rate	Takes too much time (5); if don't feel rating will add value/nothing new to add (4); if already 100s of ratings (1); prefer not to leave a negative review (2); stuff bought as a gift/ haven't used (2); forget/don't think to do it (3); if form too long/too many choices (1).
• Reasons not to review	Takes too much time (8); products change over time so review will not be useful (1); don't think others would find it helpful (4); if feel not contributing much with review (1); already sufficient reviews (2); if there is a better alternate place to leave a review (e.g. online forum) (1); haven't used the product long enough/at all (e.g. bought as a gift) (3); forget/don't think to (3); can't be bothered (1); prefer not to leave negative review (1); if process too long/complex forms (2); worried about being tracked/repercussions of leaving a review (1); reviewing from a mobile phone awkward (1).
Impact of other ratings and reviews on own reviews	No impact (7); would affect likelihood to review (3); would affect review content (2). In relation to number of previous reviews and review content.
Good review features for purchasers	Indication of which reviewers to trust (2); option to question to reviewers/read conversations around reviews (2); detailed reviews (2); separation between seller and product ratings (3); be able to search reviews (2); know about relevant reviewer attributes (e.g. age) (2); structured reviews (1); easy to access reviews/ratings (3); short reviews (1).
Good review features for reviewers	Easy to access (3); short (3); quick (1); know what's expected/how long it will take (1); (multiple-choice) questions (3); structured review (1).

Table 3: Pattern coding of interview study findings

Group	Reviewing behaviour	Participants	Read Reviews?	Impact of other reviews on own
Review and Raters (Rv+Ra)	Rate and Review, for most purchases	Participant A (M, 27) Participant B (M, 28) Participant C (F, 28)	All Rv+Ra said yes – find them very useful (E – really useful for particular products)	Affects liklihood to review None Affects review content
	Rate and Review, for most purchases – though review slightly less often and only briefly	Participant D (F, 44)		Affects liklihood to review, and review content
	Rate and Review, 50% of time	Participant E (M, 29)		None
Rate Only (RaOnly)	Usually/often Rate, very occassionaly review	Participant F (M, 28) Participant G (M, 26)		No impact on any RaOnly participants
	Rate occassionally, doesn't review.	Participant H (F, 31)		
Non Review or Raters (NoRvorRa)	Don't Review or Rate	Participant I (M, 23) Participant J (M, 29) Participant K (F, 38)	Yes (mostly) Sometimes Occasionally	Affects liklihood to review None None

APPENDIX A: SEMI-STRUCTURED INTERVIEW PROTOCOL

Welcome/Introduction/Demographics: Age, Occupation
Using reviews when buying online

1. Which websites do you use the most when you buy online products?
2. Do you use the ratings and reviews of others before buying a product?
3. Are you usually looking for positive or negative reviews, or both?
4. What are your thoughts about using online ratings when buying a product?
5. What do you think about the usefulness of these systems?

Rating products

We started this set of questions by clearly explaining to participants that we were distinguishing between 'rating' and 'written reviews', and what we meant by each of these.

6. Have you previously left a rating of a product that you bought?
    a. How often do you rate products that you buy?
7. What motivates you to rate a product or service that you have experienced?
8. Why do you (sometimes) *not* leave ratings? (if/as applicable)
9. Do you ever expect any feedback/response to leaving a rating?
10. Do you think you leave more positive or negative ratings, or both?

Reviewing products

We clarified at this point that we were now speaking specifically about written reviews.

11. Have you previously left a written review of a product?
    a. How often do you leave reviews?
12. What motivates you to review a product or service that you have experienced?
13. Why do you (sometimes) *not* leave a review (if/as applicable)
14. Do you ever expect any feedback/response to leaving a review?
15. Have you ever replied to a review from others?

Impact of existing ratings and reviews on own reviews and purchasing

16. What do you think when a lot of people have already rated or reviewed a product?
    a. Does this affect your rating or review?
17. If a product has less reviews or ratings, would you be more willing leave one?
18. Sometimes sites prompt people to leave reviews or ratings - what do you think about this?
    a. Does this affect your likelihood to leave a review?
19. How does the opinion of other reviewers affect what you buy?
20. How does the opinion of other reviewers affect your reviews and ratings?
21. Do you look at the most recent reviews, or do you not mind?
22. Do negative reviews affect you?

Ideas for improved design

23. What do you think about the way that reviews and ratings are displayed in most online systems?
24. How do you think you could improve the way they are displayed?
25. What do you think about the process of leaving a review or rating?
26. Can you think of any ways you could improve it?

Thank you and debrief