

Web Appendix: The Impact of Negative Reviews on Online Search and Purchase Decisions

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Table W1: Scroll Down Decision as a Function of Individual Reviews

	Scroll Down on the Product Page	
Average of individual ratings	-.388	(.371)
# Reviews (log)	-.663	(.465)
Average rating	-.422	(.938)
Price (log £)	.996	(.984)
Product fixed effects	Yes	Yes
Day fixed effects	Yes	Yes
R^2	.061	
# Observations	357,042	

*** $p < .01$, ** $p < .05$, * $p < .1$

Note: The dependent variable is the consumer’s scrolling decision on the product page. The independent variable “average of individual ratings” indicates the mean rating of the individual reviews located on the bottom of the product page, not visible to the consumer before scrolling down. Robust standard errors clustered at the product level in parentheses.

Table W2: Text of the 10 Most Representative Negative Reviews on Functionality

Rank	Review text
1	This toaster looks good and appears to be well made, takes four standard slices of bread. BUT !!! I wanted a toaster that toasted the bread evenly on both sides, this toaster does NOT. I have tried different settings, one slice, two slices three and four slices, all poor results. The bread pops up toasted brown or burnt in parts and still white in parts .Are ALL toasters made in (...)? Why cant someone make a toaster that can actually toast a slice of bread? HardlyRocket Science
2	I know you get what you pay for. But at the same time I didn't think the company would sell a product that falls below the general expectations of what a toaster should do. Firstly, it appears this toaster is only made for tiny slices of bread. There is almost a quarter of a slice of your average bread that isn't even touched by the toaster, thus producing a piece of toast that isnt actually fully toasted. Should have taken it back to be honest. Awful.
3	I wish Id read the reviews before committing to buy this shed. Even an engineer found it difficult and said if hed have wanted a jigsaw then hed have bought one!I spent a toal of 6 hours then paid a carpenter chap just to put the roof and door on.The instructions are nowhere near as clear as they could be. I wish Id bought a wooden shed now.
4	I got exactly this item a couple of years ago..Over the past few months the Kettle leaked badly and top would not stay down.But looking at costs and this special offer it was better value to buy same new twin pack again.And friend got a new toaster!Did think of other makes etc but "better devil I know"
5	Product looks good but although it has heat settings from 1 - 7 even on the highest setting it barely toasts the bread- it needs to be toasted twice on the top setting to get any colour at all. Would not recommend this product unless you want a toaster that does not toast!
6	great value fan and works very well I would highly recommend this as its very quiet and id say quite powerful even on the lowest speed, great product very pleased and at a great price too.
7	My last toaster was a 2 slice toaster and as my family has grown I thought I would go for a 4 slice toaster, it take a while to toast the bread and does not fit all brands of bread so you have to put them in the toaster lengthways so the top bit does not get toasted. It does not toast evenly if you are only toasting 2 slices so I have to stop it half way through and turn them over which is not always easy to remember when making breakfast for all the family
8	Have always wanted a steam mop and purchased this product after viewing demonstration video, advice from others and after reading reviews but did not find this steamer to have any umph! When first bought, steam power ok but not great but then deteriorated, maybe had a faulty product. When steaming floors it left them wet through even when on higher setting.Had to return and get refund, will investigate further before and if buying another one!
9	This is a very poor substitute for the more expensive ones, in particular a certain brand who have the market on its knees. I foolishly thought it would be a good buy, but its not. It does not heat the room like the more expensive brand, and that was a 1.5kw too, so less powerful that this version. All of you that are giving this good reviews, I question your standards. This pumps out such a small amount of heat (even on high) that it take hours for the room to heat properly. Not only that but it costs more than (...) a day to run, where as the other more expensive brand uses just (...) all day and it heats the room very quickly, and maintains it. Dont waste your money folks, spend just that bit more and get (...) one
10	Chose this model because website stated that it had HDMI port.This model does not have HDMI port only video/audio out.Returned as not what I wanted, they were very good with refund but I wasted 2 hours and 30 miles because their listing was not accurate.Have since bought (...) model from (...), better spec and better value.

Note: Brand names, dates, prices, and store locations anonymized or removed from text.

Table W3: Text of the 10 Most Representative Negative Reviews on Customer Service

Rank	Review text
1	Whilst ordering online, I had missed one piece of data from the last page on the order form, I was prompted to return to this page and correct this.I did and finalized my order.My confirmation e-mail then told me I had ordered 2 of these!I called and got one of these removed (so I thought) I waited in (not earning) for the afternoon delivery 2 days later... no delivery.I rang again, no delivery scheduled, clearly the Edit of my order had cancelled the delivery. Delivery was re-arranged for two days later, I asked for a courier delivery, or at least a morning delivery as compensation for my inconvenience and loss of earnings and was told this was not available in my areaI then contacted the couriers they use, and was told they have no problem at all doing morning deliveries in my area...The Kit is great but slow, and the blades dont last long.
2	I have windows of 2 different sizes in my room so, of course, I ordered curtains in two different sizes. They both came from the same Colour. The problem was that the colours did not match. The two sets of curtains were markedly different in colour. I would have expected that curtains from the same range (...) would have been matching curtains.
3	Went to store, could not find my order number, no delivery, reordered, phone call, no delivery, phone call to head office, phone call to store, phone call from the company, no delivery, they cancelled my order
4	The order was placed on Monday and delivery was assured before 6.00pm on Wednesday. It did not arrive - allegedly the driver could not find the address and was incapable of phoning or asking a member of the public for directions. having eventually spoken to the courier company and given directions they explained that they delivered upto 7.00pm not 6.00pm as promised by the company. The delivery was subsequently made almost a week later and was then found to be 1 item short which took almost a further week to be delivered. All in all a very unsatisfactory level of service from both the company and the courier company.
5	Found item on website (computer desks). Reserved two online that morning as urgently needed for work. Arrived at allocated store early afternoon to be told they were not in stock! I queried how this could happen, was offered no explanation or apology other than "our computer says weve got them, but we havent" had somebody contacted me (phone or email) to tell me this I could have saved valuable time and money. On my request, the store manager would not come onto the shopfloor to speak to me and sent some form of "supervisor" instead. It seems the store has very poor stock control as the staff I spoke to didnt seem a bit suprised. I did lodge email complaint at the time but received an automated reply.
6	I ordered online, with a next day delivery. The day of delivery, I received a phone call informing me of ZERO stock & unsure of when new stock will be available.Two weeks of waiting, chasing & I cancelled the order. ZERO stock.And apparently I had calls throughout this two week period to keep me informed. The dates of the calls, there was someone at home & thus the landline was manned & my mobile phone (with good signal strength) had no missed calls. Never order from them ever again.....Poor show
7	I chose this phone to block nuisance calls. it does not block calls. set up to block withheld numbers. the phone says "blocked" but does not ring. the caller is unaware and calls back later, again and again, which defeats the object of having this feature. you have to charge batteries for 24 hours, then you set up the phone and then you find out the phones only silences the blocked calls. blocked means blocked. I feel duped.
8	I purchased these curtaing along with the matching pair in a different size as I have two windows in the same room. The 90x90 curtains are perfect, they hang lovely, look great and match the colour in the catlogue. The 46x90 curtains in cream colour to match are the same material but a taupe/beige colour. After a lot of running around to various retailer stores it turns out that the colour match system does not work and each batch is made from a different colour. I have never heard of anything so ridiculous and have had to result in returninhg both curtains. It is simply stupid to have a brand called (...) if nothing matches!!!!
9	I ordered 2 lots of the these curtains in different lengths in the same colour, when they arrived they were different shades of brown. Returned items to store who re-ordered one set to match, when this arrived again it was the wrong colour. I agreed for the store to try and rectify and they ordered yet another set in the hope they would match, not only were they the wrong colour they were a totally different colour to the originals. This is poor advertising.
10	Ordered two black and one colour cartridge and paid online. was given delivery date which was fine, but only the black cartridges arrived, with no note for delivery of the colour cartridge. Had to call the retailer to tell them and they then sent me the colour cartridge. Customer Service acceptable, but I should not have had to phone (at my expense) to chase up the short-delivery. Not a good experience, as I buy quite a lot of goods online, so not really tempted to use their services again, nor recommend them.

Note: Brand names, dates, prices, and store locations anonymized or removed from text.

Table W4: Text of the 10 Most Representative Negative Reviews on Matters of Taste

Rank	Review text
1	I was very disappointed with this duvet. The cover was of really poor quality and was very grey. When I put on a white duvet cover it looked really grey compared to the pillows. It would probably have been ok with a darker duvet cover, and it was pretty cheap for a double duvet to be fair!
2	Easy enough assembly, about half-an-hour. Instructions clear enough, easy to follow. A nice enough finish on the materials, although a few minor missed patches, not enough to spoil the overall aesthetic look. The door does not sit flush inside the cabinet because it is warped, a drawback inherent in cheap, thin materials. It is what it is, a cheap looking, nice enough piece of bathroom furniture - hiding in a corner. Most certainly not worth the price
3	Mirror of good quality. Sturdy. But, the oak effect frame is quite disappointing. It looks cheap because of the laminated covering...in hindsight it would of been better to get the cheaper pine mirror and stain the wood myself.
4	Bought this as the image online showed a wood effect which was nicer than cheap looking plastic laminate finish. It was easy to assemble, good size and does the job for holding books. Only negative, guess what, it doesn't have a woodgrain effect finish like the online image and looks like the cheap looking plastic laminate finish that it is!
5	The mattress cover is good but the plastic duvet cover made the person feel too hot. In addition, when the duvet scrunched up into one corner, it was difficult to shake it back into position with the plastic cover on. We, in the end, decided to remove it completely and to look for an alternative. It will be useful to use for 1 or 2 nights or for a guest/child who stays the night but as a regular plastic cover, then no.
6	OK but disappointed at the build of this kettle which is not as good as the one we had to replace after years of good service - one that felt solid and looked very stylish in our kitchen. Despite the fact that the price is a standard price for a kettle, this one feels flimsy and cheap.- But its OK since, after all. its only a kettle. Does its job, is quite stylish but is very noisy.
7	This product is very bad quality , poor , looking very cheap. Finishing is very bad and cheap looking. One screw was bended . One corner was badly scratched. Product very heavy made from REALLY CHEAP MATERIALS . Its not 100 % wood and its not pure wood at all. Looks better on the picture. Colour is not nice white and touch of colour is very poor and cheap. Easy to scratch edges.
8	Considering the original price of this cabinet I was very disappointed with the overall quality. The cabinet itself was packaged well and is sturdy but cheap wood. Certainly not solid oak quality. It also has a harsh finish, not smooth like my other oak furniture. Needed a good sanding before applying the finish in my opinion. I only paid (...) and I have kept the cupboard as it fills a gap but not worth any more than this sadly.
9	For the price it is an overall good product however for outdoor use the quality is very poor and not suitable in high exposure outdoor lighting. It wasn't too good under darker lighting either so it generally seems like that product is at its best when in correct lighting. It is easy to use and very light therefore easy to carry around. For the price does the job.
10	Although its solid pine, it is very soft wood and came with plenty of scrapes and marks, and the "finish" of the wood is quite poor quality. Holes were pre drilled in the wrong place in one of the cupboards, so the shelf inside is not straight. Once dressed with "items" it looks quite nice, and it detracts the eye from the poor quality !. and its good if you just want to fill a bare wall with a "cheaper end" product. Overall i was not impressed though!

Note: Brand names, dates, prices, and store locations anonymized or removed from text.

Table W5: Product Purchase and Substitute Search Decisions by Search Stage

	Early Stage		Late Stage	
	Product Purchase	Search for Substitute	Product Purchase	Search for Substitute
# Negative reviews	-.571*** (.197)	2.754*** (.605)	-.843** (.345)	1.266 (1.261)
Product page controls	Yes	Yes	Yes	Yes
Consumer controls	Yes	Yes	Yes	Yes
Product fixed effects	Yes	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes	Yes
R^2	.186	.248	.311	.329
# Observations	42,071	42,071	13,789	13,789

*** $p < .01$, ** $p < .05$, * $p < .1$

Note: The dependent variables are indicators of the respective consumer decisions. Observations in the early stage equations include visits to products the consumer viewed as first or second in the browsing session. Observations in the late stage equations include visits to products the consumer viewed as third or later. Robust standard errors clustered at the product level in parentheses.

Table W6: Estimates for the Product Purchase Decision in Technology and Home-and-Garden Departments

	Technology		Home-and-garden	
	Purchase	Product	Purchase	Product
# Negative reviews	-.644**	(.282)	-.625***	(.198)
<i>Product page controls</i>				
# Reviews (log)	.662	(.446)	-.080	(.382)
Average rating	.895	(.805)	.170	(.474)
Price (log £)	-2.601	(1.903)	.261	(1.227)
Newest negative review at position 2	.412	(.503)	-.010	(.336)
Newest negative review at position 3	-.665	(.553)	.943**	(.473)
Newest negative review at position 4	.345	(.644)	-.353	(.459)
Newest negative review at position 5	.028	(.778)	.507	(.612)
<i>Consumer controls</i>				
Second viewed product	.172	(.359)	-.646***	(.246)
Third viewed product	-.973**	(.432)	-.258	(.320)
Fourth or later viewed product	-.349	(.409)	-.623**	(.256)
Previous purchase in category	29.447**	(11.74)	22.139***	(7.842)
Product fixed effects	Yes		Yes	
Day fixed effects	Yes		Yes	
R^2	.140		.171	
# Observations	17,305		38,555	

*** $p < .01$, ** $p < .05$, * $p < .1$

Note: The dependent variable is an indicator of product purchase. The first column results using the sub-sample of technology products, while the second shows results using the sub-sample of home-and-garden products. Robust standard errors clustered at the product level in parentheses.

Table W7: Average Review Rating by Topic of the Negative Review

Topic	Mean Star Rating	SD of Star Ratings	N
Functionality	1.65	.85	2,270
Customer service	2.01	.89	6,498
Matters of taste	1.76	.87	2,361
Other topic	1.90	.89	323

Table W8: Estimates of Logistic Regressions - Product Purchase and Substitute Search Decisions

	Product Purchase		Search for Substitute	
# Negative reviews	-.290***	(.089)	.108***	(.022)
<i>Product page controls</i>				
# Reviews (log)	.132	(.131)	-.136***	(.042)
Average rating	.167	(.253)	-.181***	(.076)
Price (log £)	-.124	(.212)	.003	(.092)
Newest negative review at position 2	.091	(.160)	.017	(.048)
Newest negative review at position 3	.209	(.161)	-.012	(.049)
Newest negative review at position 4	-.001	(.188)	.042	(.058)
Newest negative review at position 5	.180	(.178)	.182***	(.074)
<i>Consumer controls</i>				
Second viewed product	-.176**	(.090)	.209***	(.028)
Third viewed product	-.203*	(.119)	.251***	(.038)
Fourth or later viewed product	-.257**	(.114)	.506***	(.034)
Previous purchase in category	2.603***	(.560)	.668**	(.365)
Product fixed effects	Yes		Yes	
Day fixed effects	Yes		Yes	
Log likelihood	-2492.191		-21843.426	
# Observations	55,860		55,860	

*** $p < .01$, ** $p < .05$, * $p < .1$

Note: The dependent variables are indicators of the respective consumer decisions. Robust standard errors clustered at the product level in parentheses.

Table W9: Seemingly Unrelated Regression - Product Purchase and Substitute Search Decisions

	Product Purchase		Search for Substitute	
# Negative reviews	-.501***	(.084)	1.711***	(.268)
<i>Product page controls</i>				
# Reviews (log)	.157***	(.047)	-1.577***	(.149)
Average rating	.238*	(.133)	-1.407***	(.422)
Price (log £)	-.582***	(.135)	-.004	(.427)
Newest negative review at position 2	-.137	(.216)	.043	(.685)
Newest negative review at position 3	.113	(.252)	-.590	(.800)
Newest negative review at position 4	-.240	(.278)	.101	(.882)
Newest negative review at position 5	.152	(.322)	1.930*	(1.021)
Product description length (1,000 characters)	.681**	(.342)	-.530	(1.084)
<i>Consumer controls</i>				
Second viewed product	-.271	(.166)	5.777***	(.525)
Third viewed product	-.437**	(.222)	7.303***	(.704)
Fourth or later viewed product	-.616***	(.194)	13.679***	(.617)
Previous purchase in category	20.499***	(2.073)	9.498	(6.576)
Category fixed effects	Yes		Yes	
Brand fixed effects	Yes		Yes	
Day fixed effects	Yes		Yes	
R^2	.032		.093	
Correlation of errors			-.046	
# Observations			55,860	

*** $p < .01$, ** $p < .05$, * $p < .1$

Note: Estimates from the seemingly unrelated regression model assuming correlated errors between the focal product purchase and the substitute product search equations. The dependent variables are indicators of the respective consumer decisions. Due computing constraints, we use category fixed effects, brand fixed effects, and product description length instead of product fixed effects to control for product characteristics. Robust standard errors clustered at the product level in parentheses.

Table W10: Spurious Correlation Test for Product Purchase Decision

	Product Purchase		Search for Substitute	
Forthcoming negative review	-.101	(.161)	-.678*	(.394)
# Negative reviews	-.638***	(.161)	2.365***	(.524)
<i>Product page controls</i>				
# Reviews (log)	.138	(.294)	-3.353***	(.985)
Average rating	.403	(.413)	-4.043***	(1.545)
Price (log £)	-.583	(1.039)	.062	(2.012)
Newest negative review at position 2	.119	(.279)	.355	(.983)
Newest negative review at position 3	.409	(.366)	-.407	(1.127)
Newest negative review at position 4	-.140	(.372)	.858	(1.221)
Newest negative review at position 5	.352	(.483)	3.972***	(1.355)
Product fixed effects	Yes		Yes	
Day fixed effects	Yes		Yes	
Consumer controls	Yes		Yes	
R^2	.160		.235	
# Observations	55,860		55,860	

*** $p < .01$, ** $p < .05$, * $p < .1$

Note: The dependent variables are indicators of the respective consumer decisions. Robust standard errors clustered at the product level in parentheses.

Table W11: Exogeneity Test for Review Creation and Page Visits

	Day of Review Creation		Week of Review Creation	
	Log Daily Visitors	Log Daily Visitors	Log Weekly Visitors	Log Weekly Visitors
Rating of the created review	.0004 (.0018)		.0002 (.0026)	
Rating of the created review ≤ 3		-.0027 (.0053)		-.0011 (.0080)
# Reviews (log)	-.1511*** (.0327)	-.1511*** (.0327)	-.0240 (.0394)	-.0240 (.0394)
Average rating	.1010 (.0623)	.1010 (.0623)	.0352 (.0823)	.0352 (.0823)
Price (log £)	-.0887 (.0490)	-.0887 (.0490)	-.0829 (.0660)	-.0829 (.0660)
Product fixed effects	Yes	Yes	Yes	Yes
Day fixed effects	Yes	Yes	No	No
Week fixed effects	No	No	Yes	Yes
R^2	.4621	.4621	.7172	.7172
# Observations	33,140	33,140	33,140	33,140

*** $p < .01$, ** $p < .05$, * $p < .1$

Note: The dependent variable is the logarithm of the daily number of visitors of the product page plus one (for the first two columns), and the logarithm of the weekly number of visitors of the product page plus one (for the last two columns) at the time of the review creation. Robust standard errors clustered at the product level in parentheses.

Table W12: Sales Elasticities to Negative Reviews as a Function of Average Consideration Set Size and Product Characteristics

	Elasticity of Sales
Consideration set size	.605*** (.131)
Average rating	-1.890* (1.005)
Price (log £)	1.139*** (.251)
# Reviews (log)	-.293 (.202)
#Negative reviews (on product page)	.384 (.776)
Hedonic	-4.655*** (1.120)
Consideration set size × Hedonic	1.009*** (.232)
Tech product	-.172 (.521)
Product description length	2.451*** (.924)
R^2	.597
# Observations	179

*** $p < .01$, ** $p < .05$, * $p < .1$

Note: The dependent variable is the mean sales elasticity metric (across 10,000 iterations) of the product category, in absolute values. Independent variables are characteristics of the product category. Description length is measured in thousand characters. Consideration set size is the average number of products viewed by consumers. Results are obtained using categories with at least 50 visits. Sample of consumers who scrolled to the reviews, excluding those who open the second review page or sort the reviews. Standard errors in parentheses.