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The Decoy Effect versus eWOM

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Abstract

Past research clearly shows that the decoy effect is able to change consumer preference. In recent years, studies have questioned the practical significance of the effect as the conditions under which the decoy effect occurs are so restrictive. Subsequently Huber, Payne, and Puto (2014) commented that with the emerging of digital marketplace the decoy effect could very well exist in real life situations. This thesis analyses if the decoy effect exists in a digital marketplace and if so what effect eWOM has on it.

Online surveys are used to replicate an online shopping choice sets for ice cube trays. The *control* and *treatment 1* choice-sets are used to test whether the decoy effect exists in a digital market. *Treatment 2* is used to measure the effects of a decoy with a negative review on the strength of the decoy effect and *Treatment 3* measures if the decoy effect is less strong in case the decoy has a minimum amount of reviews.

A total of 481 subjects are randomly served with one of these choice-sets. The results show that the decoy effect does exist in a digital market place. There is no clear evidence which proves that a minimum amount of reviews influences the strength of the decoy effect. The data does suggest that a decoy with a negative review reduces the strength of the decoy effect.

Keywords

Decoy Effect, attraction effect, asymmetrical dominance effect, social proof, eWOM, negative reviews.

1. Introduction

Why is it that we are willing to pay \$7 for popcorn in the cinema? Comparing this price to what one would pay in the supermarket, this sounds like a rip-off. The reason that we pay such prices is that cinemas use a very effective psychological technique called the decoy effect to take advantage of the loopholes in our brain¹.

Cinema visitors who can choose between a Small \$3 popcorn or a Large 7\$ popcorn tend to buy the Small option as the Large one sounds overpriced. However, once the cinema introduces a third option, a Medium popcorn for \$6.50, the preferences shift towards the Large \$7 popcorn. The reason for this is that consumers feel they are getting a good deal as the Large popcorn is only 50 cents more than the Medium popcorn.

The decoy effect, also called the asymmetrical dominance effect or attraction effect (Huber, Payne, and Puto, 1982), refers to a phenomenon where people tend to change their preference between two options once a third option that is asymmetrically dominated is introduced to the choice set.

The decoy effect, which was first identified by Huber, Payne, and Puto (1982), has been replicated in a wide variety of choice situations involving both commercial products (Ariely & Wallsten, 1995; Dhar & Simonson, 2003; Pettibone & Wedell, 2000; Sen, 1998; Simonson, 1989), as well as non-commercial products such as gambling (Wedell, 1991), jobs (Highhouse, 1996) and politics (Pan, O'Curry, & Pitts, 1995).

There is however also criticism on the decoy effect as Frederick, Lee, and Baskin (2014) and Yang and Lynn (2014) question the practical significance of the effect. Both articles argue that the conditions under which the decoy effect occurs are so restrictive that the practical validity of the decoy effect should be questioned. Frederick, Lee, and Baskin (2014) posit that most experiments do not reflect ordinary purchase settings as they use highly

¹ <http://india.zonestartups.com/the-decoy-effect-for-pricing/>

stylized stimuli in which the attribute levels are represented by 2 X 2 numeric indices. For example, a consumer purchasing a Television would not just choose between abstract summaries of the picture quality and price of two unspecified brands (e.g., [7.3, \$390] vs. [8.8, \$610]). Instead, they would visit a store and browse the various options, examining various models and actually experience the quality of images displayed (Frederick, Lee, and Baskin, 2014).

In 2014, Huber, Payne, and Puto published a comment in which they reflect on the documentation of the decoy effect by academics for the past 32 years. They agree to an extent that the decoy effect does not happen often in market place choices as very few completely dominated decoys continue to exist in the marketplace. However they do posit that the rarity of dominated alternatives may be reduced in the emerging digital marketplace.

“One need only visit Amazon.com, where almost every choice includes a price and a reviewer’s 1–5 “star” rating”

These ‘star rating’ scales on Amazon.com reflect the average customer review for a respective product. These reviews can be regarded as electronic word of mouth (eWOM) which is a form of social proof that regularly influences our decision making process. Experiments have shown that humans rely heavily on other people around them to give them cues on how to think, feel and act (Cialdini, 2001). People are especially prone to look for social proof in uncertain or unfamiliar situations.

Huber, Payne, and Puto (2014) believe that in a digital marketplace the possibility of decoy exploitation exist. There, choice sets exist with 2x2 attribute levels. Something which Frederick, Lee, and Baskin (2014) argue does not exist in ordinary purchases situations. Assuming that the decoy effect exists in digital market places, its effects could possibly be

distorted by the dimensions of social proof. For example, a negative review for the decoy could have spill over effects (Chiou and Cheng, 2013) to the target rendering the decoy useless.

1.1 Research question

After examination of the current literature, the research question of my thesis is:

- *Does the decoy effect exist in the digital market place and, if so, what is the impact of eWOM on the decoy effect?*

1.2 Relevance

Huber, Payne, and Puto (2014) posit that the decoy effect may occur on Amazon.com more easily as all choice sets contain two variables, a price and a reviewers rating. Until now academics have not provided empirical evidence that review ratings can be used create a decoy effect. This research aims to prove that the decoy effect can exist on a digital market place such as Amazon.com.

In conclusion of their paper, Huber, Payne, and Puto (2014) state “whenever preferences are likely to be constructed, researchers who try to measure values must be aware of the context-dependent properties of choice behaviour”. Traditional economics uses Utility theory to predict choice behaviour. Utility theory assumes that a subject will always prefer the option with the highest subjective value (Morgenstern & Neumann, 1953). In other words, subjects base their decision on the perceived value of an option relative to other options. Utility theory assumes that preferences are stable (Dhar & Novemsky, 2008) and they do not change when the options are placed in a different context. If a subject prefers A over B than adding option C to the choice set will not change a subject’s preference for A compared to B.

However, Behavioural decision theory has shown that preferences are instable. For example, adding decoy C to the example from above can influence subjects to change preference from A to B. Therefore behavioural decision theory argues that preferences are not simply read of a master list of values. Instead behavioural decision theory suggests that preferences are constructed and depend on the context in which the options are placed. Therefore context matters.

This thesis not only attempts to replicate the decoy effect and provide more evidence that preferences are constructed. It also tries to examine the context in which the decoy effect exists in a digital market place. Specifically, it examines the context social proof has in a choice set where a decoy exist.

2. Theory

2.1 Decoy effect

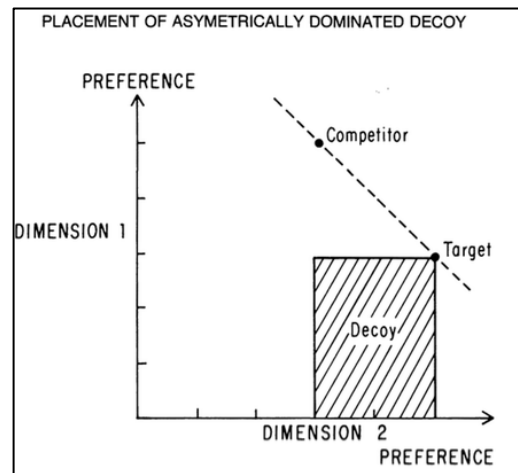
An important challenge for marketers is predicting how the introduction of a new product can influence existing market shares (Huber, Payne & Puto, 1982). By modelling choice behaviour marketers are able to tackle this important issue. Models which are used to predict choice behaviour, such as Luce's choice model (Luce, 1959), assume that adding a new item to a choice set cannot increase the probability of choosing an item of the original set. This condition is called the regularity condition and it is crucial for the validity of Luce's choice model (Huber, Payne & Puto, 1982). However, Huber et. Al. (1982) provided evidence that this important assumption of regularity can be violated by adding an asymmetrically dominated alternative (a decoy).

The decoy effect explains the effects on choices between two options, the target and the competitor, which results from the introduction of an additional option: the decoy. When

the addition of such a decoy increases the choice share of the target, then an asymmetric dominance effect is said to have occurred (Huber et al., 1982). In asymmetrically dominated choices at least two options do not dominate each other and one (not both) of those options dominates a third option.

Figure 1

The decoy is graphically displayed in figure 1. There are two dimensions represented on either axis. For example, dimension 1 could be price and dimension 2 could be quality. In the original choice set two items are present, the target and the competitor. The competitor dominates the target on dimension 1, but the target dominates the competitor



on dimension 2. To increase the choice share of the target, one can introduce a decoy into the original choice set that lies in the shaded area. Here the decoy is inferior to the target on both dimensions, but compared to the competitor it is only inferior on one dimension. Therefore, the decoy is also referred to as the asymmetrically dominated choice option.

Perceptual effects and decision-making processes are the main factors for explaining the decoy effect. By adding a dominated third option, more emphasis is put on the favourable dimension of the target than on the unfavourable dimension (Huber, Payne and Puto, 1982; Huber and Puto, 1983). As a result, the unfavourable dimension of the Target is in a smaller deficit compared to other item. When more options fall in the dimension on which the target is superior, the perception on that dimension as most important may be enhanced (Huber et al., 1982).

Consumers want to justify their choices when facing uncertainty in the decision-making process (Simonson, 1989). When facing uncertainty, the target may become more

attractive through its superiority being unambiguous or as a compromise that combines the desirable attributes of the other choices (Bateman et al., 2008).

2.2 Social proof

People facing uncertainty in the decision-making process not only look for cues within their choice-set but they also look for external cues to justify their choices. An important external cue is social proof which is the process by which we adapt our thoughts, attitudes and behaviour as a result of interaction with other individuals (Amblee & Tung, 2011). The reason why we use interaction with others as a guide is that we believe our behaviour is correct to the extent that we see others performing it (Cialdini, 2001). For example, when travellers face a choice between two similar looking restaurants they tend to choose the restaurant that seems to be the most crowded. Travelers look for social proof in this case as they are in an unfamiliar situation seeing the restaurants are unknown to them. They choose the most crowded restaurant because lots of people are going there so it must be good.

2.3 Online shopping

Another situation in which consumers look for social proof is when they are shopping online. In this case consumers face uncertainty as the amount of information that is available to them online is limited and asymmetrical. The information is asymmetric because the seller has more knowledge about the product quality than the buyer (Utz et al., 2011). In-store consumers are able to physically assess the quality of the product whereas online the consumer can only do so visually. Evaluating a product through the internet is much more difficult as its interface cannot perfectly convey the product's characteristics Dimoka et al. (2012).

2.4 eWOM

Buyers try to minimize uncertainty, due to asymmetric information by looking for social proof online. One of the most adopted forms of social proof online is online ratings and reviews (Ambler & Tung, 2011). Online ratings and reviews are a form of social interaction with other consumers and is also called electronic word of mouth (eWOM). Various studies have shown that eWOM can cause a change of sales, both positive and negative by influencing consumers (Chevalier & Mayzlin, 2006; Liu, 2006).

Leading online retailers such as Amazon.com allow customers to post these reviews on their website. The consumers that rate a product are predominantly motivated by their concern for others and the opportunity to enhance their own self-worth (Hennig-Thurau et. al., 2004).

2.5 Star ratings

Amazon.com offers reviewers the opportunity to post a numerical star rating with their review. These star ratings typically range from one to five stars. A one star rating is considered a very low rating and indicates an extremely negative view of the product, whereas five stars are given for a very high rating and reflects an extremely positive view of the product. The middle ground, a three-star rating, reflects a moderate view (Mudambi & Schuff, 2010).

Star ratings represent an attitude scale where deviation from the middle reflects attitude extremity (Krosnick et al. 1993). Kaplan (1972) identified two explanations for the middle point. Three stars could reflect a truly moderate review (indifference) or a set of positive and negative comments (ambivalence) that cancel each other out. However it has been shown that in both cases the midpoint is a legitimate measure of a middle-ground attitude (Mudambi & Schuff, 2010).

These ratings are used by online retailers as they have been shown to influence the probability of purchase. For example, Resnick (2002) showed that on eBay seller reviews influence the probability of a sale. Later Chevalier and Mayzlin (2006) proved that review ratings can increase sale as they found that an improvement in product ratings led to an increase in relative sales. Clearly review ratings reflect a form of social proof and consequently have the strength to influence purchase decisions.

Huber, Payne, and Puto (2014) posited that the decoy effect could easily exist in the digital market place with review ratings as one of its dimensions. However this suggestion has yet to be tested on an empirical level.

H1: The decoy effect exists in a digital market place with eWOM as a dimension.

2.6 Negative reviews

After buying a product consumers can either be satisfied or dissatisfied with their purchase. The level of satisfaction or dissatisfaction decides whether the consumer decides to create eWOM and if it is positive or negative. A consumer who is dissatisfied with their purchase will create negative eWOM out of concern for others or because they expect that their complaint will not be responded to properly by the seller (Hennig-Thurau et. al., 2004; Richins, 1983).

Research by Amdt (1967) concluded that negative information is more effective in dissuading people than the positive information is in persuading them. In their research, Weinberger and Dillon (1980) also found that negative product ratings have a greater influence on buying intention than positive ratings. Further support was given more recently by Hennig-Thurau and Walsh (2003) who showed that 44% of consumer who had read

negative information would not buy a product after reading whereas only 28% of consumers who had read positive information would buy the product.

Research about the effect of negative eWOM has produced similar results as Chevalier and Mayzlin (2006) found that the impact of 1-star reviews was greater than the impact of 5-star reviews. On eBay, where consumers can also rate products, Pavlou and Dimoka (2006) showed that consumers were more influenced by extreme ratings than by moderate ratings.

Bernoulli (1954) presents a possible explanation as to why consumers are influenced more by negative reviews. Consumers are mostly risk averse concerning gains. When buying a product consumers try to avoid risk as the buying of the product can be considered as a gain. Therefore consumers prefer the product with the lowest level of perceived risk. A negative review increases the perceived level of risk and as a result influences the consumer to make a different choice.

Another possible explanation can be found in the concept of loss aversion which was first demonstrated by Kahneman and Tversky (1979). Studies suggest that the pain of losing is psychologically about twice as powerful as the pleasure of gaining. Again buying a product could be considered as a gain but buying a wrong product as loss. A negative review implies a poor product which indicates a loss. As consumers rather avoid a loss, loss aversion can explain why negative reviews are more influential than positive ones.

Not only does a negative review discourage consumers to buy a product but it also influences brand attitude towards the brand under which the product is sold. In 2003 Chiou and Cheng showed that negative messages on an internet discussion forum significantly reduce consumer brand evaluation. More recently Lee, Rodgers & Kim (2009) found evidence that negative reviews are stronger than positive reviews or moderate reviews in influencing consumers' brand attitudes.

Clearly consumers are influenced more by negative reviews than positive ones. Not only does a negative review influence buying intentions for a certain product but it also reduces brand attitude. Translating this to a decoy setting in which the decoy and the target share the same brand name it is very plausible that the decoy effect is mitigated by a negative review. Thus the following hypothesis is posited:

H2a: The decoy effect is moderated by a negative review

2.7 Amount of reviews

Are you more likely to watch a video on YouTube that has 41,156 views or one that has 317 views? Besides title relevancy there are few indicators that can help you choose when looking at the YouTube search results. Again people tend to use social proof in their decision process to reduce uncertainty. In this case they follow the herd as many visitors seem to watch that video, so it must be good.

On Amazon.com the star ratings represent the aggregate attitude of the herd. Most products have a significant amount of reviews which accumulate well into the hundreds. The volume of eWOM (amount of reviews) is important as it can influence product sales. For example Duen et al. (2008) provided empirical data showing that the volume of eWOM can be predictive of movie sales. The authors posit that the volume of eWOM increased the awareness of a movie which in turn generated more sales. In many cases a snowball effect occurs as an increase in movie sales will also increase the volume of eWOM which as a result will generate more awareness for the movie which increases sales again.

Earlier studies showed similar results, as Liu (2006) found that the volume of non-electronic word-of-mouth (WOM) had the same effect on box-office sales. Not only is this

true for movies, restaurants and business services also benefit from a higher volume of WOM due to its positive effect on awareness (Godes & Mayzlin, 2009).

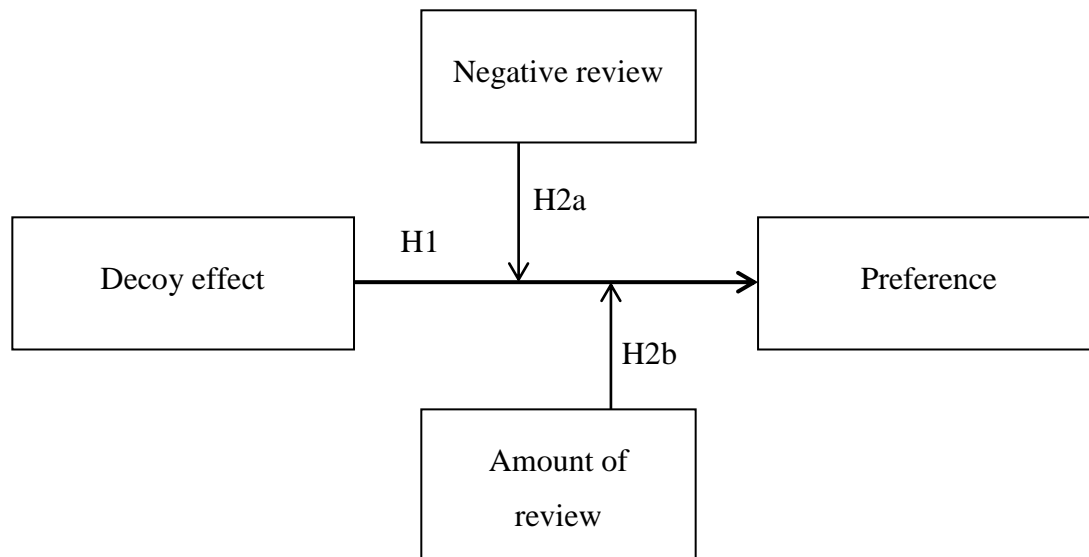
Besides increasing awareness the volume of eWOM also serves as a cue of popularity. Park, Lee & Han (2007) posited that the existence of many reviews indicates that a product is popular making it more attractive for consumers which directly increases purchase intention.

Volume of eWOM can also be used as a measure of reliability. People are known to be ambiguity averse which means they have a preference for known risk over unknown risks (Ellsberg, 1961). Review ratings that are based on only a few reviews bring an unknown risk as consumers are uncertain whether the rating is a good reflection of the average opinion of previous buyers. Using a review to make purchase decisions always carries risk as the buyer can never be sure they share the same opinion as previous buyers. Yet a low volume of eWOM makes their risk unknown as they are unsure whether it is reliable or not.

Like YouTube, Amazon.com also shows the amount of reviews in their search results. As the decoy is meant to increase sales of the target and not itself there will only be a few reviews for this product. As a result consumers might not even consider the decoy as a potential option as the limited amount of reviews makes the decoy seem unpopular. Secondly a low volume of eWOM decreases product awareness reducing its opportunity to stand out in the list of search results and thus fails to serve as a decoy. Finally a low volume of eWOM could make the reviews seem unreliable due to ambiguity aversion. . As a result consumers do not even consider the decoy as a viable option which in turn reduces its possible effect on consumer choice behaviour.

H2b: Decoy effect is moderated by the amount of total reviews (eWOM)

2.8 Conceptual framework



3. Methodology

3.1 Experiment design

To test the various hypothesis I set-up a framed field experiment. Subjects are invited to fill in an online questionnaire. After answering a few demographical questions subjects are presented with pre-fabricated Amazon.com search results with a competitor item, a target item and, depending on the experiment a decoy.

To avoid possible priming effects that could bias the subjects, I use a between-subject design. A total of four different choice sets are created to test each hypothesis. Subjects are randomly served with one choice-set for ice-cube trays. I avoid high involvement products such as TV's as the decision process for these products are more complicated than for low-involvement products. Consumers who want to buy a TV consider much more dimensions than price and review rating alone (Frederick, Lee, and Baskin, 2014).

Table I shows an overview of the experiment design. The *control* and *treatment 1* choice-sets are used to test whether the decoy effect exists in a digital market. *Treatment 2* is

used to measure the effects of a negative review and *Treatment 3* will measure if a decoy with a minimum amount of reviews has an effect on preference.

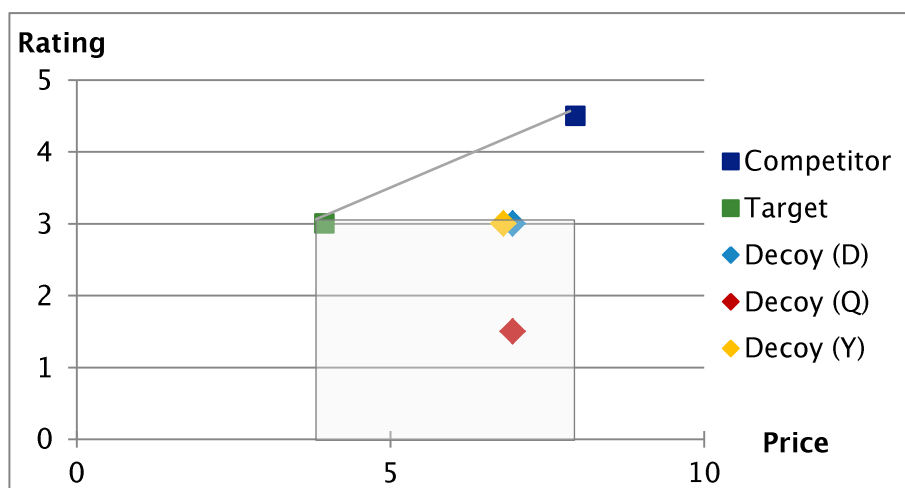
Table I
Overview of Experiment Design

Choice-set	Competitor (C)	Target (T)	Decoy (D)	Decoy (Q) 'Negative review'	Decoy (Y) 'Low # of reviews'
Control	x	x			
Treatment 1	x	x	x		
Treatment 2	x	x		x	
Treatment 3	x	x			x
Price	€ 7,95	€ 3,95	€ 6,95	€ 6,95	€ 6,95
Review rating	4,5	3	3	1,5	3
Brand	OXO	Sterilite®	Sterilite®	Sterilite®	Sterilite®
Reviews	370	421	396	396	4

3.2 Treatment design

Figure 2 displays the items of this experiment with rating and price as its dimensions. The competitor item is an ice-cube tray selling at € 7,95. The Target item is cheaper and is priced at € 3,95. Both items can be found on Amazon.com and therefore carry real brand names. The competitor item has a high review rating of 4,5 stars out of 5 and the target item has a total of 3 stars. All items have an average of 400 reviews to control for possible ambiguity aversion by subjects.

Figure 2

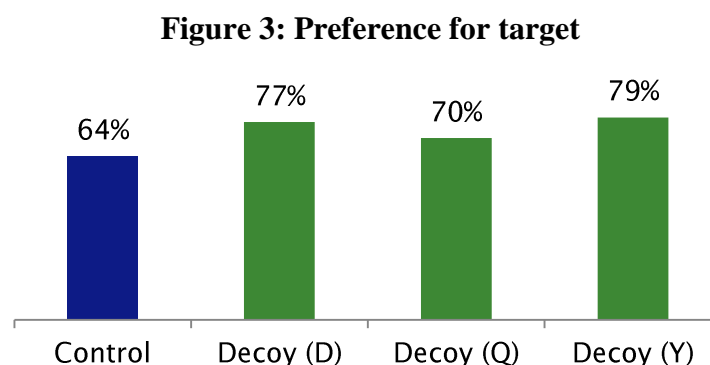


For the placement of the decoy I assume that consumers prefer the lowest price for their product. In this choice-set the Target product is clearly superior on the price dimension. By increasing the frequency of this dimension more attention will be drawn to it (Huber et al., 1982). Thus I introduce decoy (D), a similar product as the target, priced higher at € 6,95 with a review rating of 3 stars. The second decoy is used to test hypothesis H2a which states that a negative review moderates the effect of the decoy. Therefore Decoy (Q), is also priced at € 6,95 but only has a 1,5 star review rating. The last decoy will test whether the amount of reviews has any effect on the strength of the decoy effect. As a decoy is normally not sold, this item will generally have a minimum amount of reviews. As shown in figure 2, Decoy (Y) is similar to Decoy (D) but only has 4 reviews. Appendix B gives an overview of the different treatments.

4. Results

In all, 481 subjects participated in the experiment. 5 subjects chose one of the decoys and are therefore deleted from the sample. After deletion 476 subjects are left of which 271 females. The age of subjects ranges from 18 to 50 years. The distribution of age is equally divided over each treatment.

Figure 3 displays the amount of subjects that have a preference for the target item. In the control choice set where no decoy item was present a total of 64% of the subjects chose the target item.



The independent variable 'choice' is a dichotomous variable; subjects can choose either for the Target item or for the Competitor item. A dichotomous variable is by definition not normally distributed which violates the assumptions of normally distributed data needed for a parametric test. I therefore used a Kruskal-Wallis test with an alpha level of .05 to compare the means of each group and determine if the decoy effect exists in a digital market place. There is a significant increase in preference after the introduction of a Decoy, $H(3) = 8.39, p < .05$. This means that the decoy effect does exist in the digital marketplace as Huber, Payne, and Puto (2014) posited.

I used Mann-Whitney tests to follow up this finding. For post hoc tests the Bonferroni approach suggests controlling for Type I error by adjusting the alpha level, dividing it by the number of tests. I chose not to apply the Bonferroni correction as it is very conservative and increases the risk of Type II errors.

Subjects served with Decoy (D) have an increased preference for the target item, $U = 6138, p < .05$, as 77% preferred the target. Subjects presented with decoy (Y), the item with a minimum amount of reviews, also have an increased preference for the target item. This increase in preference is also significant, $U = 5816, p < .05$, with 79% of the subjects choosing the target item. This means that there is no evidence which supports the idea that the volume of eWOM influences the effectiveness of the decoy.

Decoy (Q) with a negative review rating shows a much lower preference compared to the other decoys, with 70% of the subjects preferring the target item. The difference compared to the control group is not significant, $U = 6528, p > .05$. Although this difference moves towards the control group, as expected based on the posited hypothesis, the difference between Decoy (Q) and Decoy (D) is also not significant, $U = 6804, p > .05$. Nor is there a significant difference between Decoy (Q) and Decoy (Y), $U = 7071, p > .05$.

Table II
Overview of Mann-Whitney Test Results

	Z	p
Control vs. Decoy (D)	-2.239	.019*
Control vs. Decoy (Q)	-1.011	.195
Control vs. Decoy (Y)	-2.536	.010*
Decoy (Q) vs. Decoy (D)	-1.241	.130
Decoy (Q) vs. Decoy (Y)	-.329	.428

* $p < .05$

To check if the non-significant results are due to a lack of statistical power I conducted a post hoc power analysis with the program G*Power (Erdfelder, Faul, & Buchner, 1996). The achieved power ($1 - \beta$) of the Mann-Whitney U test between Decoy (Q) and Decoy (D) is only 0.3288. The reason for this lack of statistical power is due to the limited sample size. To achieve a power of 0.8 with $\alpha = .05$ a total sample size of 650 is needed. Finally I used another Kruskal-Wallis test to check for any gender effect, with no significant differences for males, $H(3) = 3.13, p > .05$, nor any significant differences for females $H(3) = 5.29, p > .05$. For each different age group I used the same test. None of the results are significant and as a result there is no evidence for an age effect.

5. Discussion

The results show that the experiment the decoy effect exists in a digital marketplace. Online shoppers can be influenced to change their preference for low involvement products offered in a digital marketplace such as Amazon.com. These online retailers display review ratings in their search results as a form of social proof which can be used by consumers to make decisions.

Secondly the data does imply that a negative review can have moderating effect on the subject's decision behaviour. Although the difference between Decoy (Q) and the other decoys is not significant, the difference does move towards the average of the control cell. The non-significant result is mainly because of the lower power of the used test. Therefore I posit that the negative review is responsible for the reduced preference for the target item. Although the data does not enable me to pinpoint the motivation behind this behaviour directly, previous studies provide possible explanation.

Behavioural theories such as risk and loss aversion can explain why a decoy with a negative review rating is less effective than a review with an average review rating. Although academic research suggests that males and females respond differently to risk, the data does not show any gender differences. However it does seem logical that a decoy with a negative review would signal a high risk or possible loss. The negative review could reduce the brand attitude for the whole brand (Lee, Rodgers & Kim, 2009). As a result there could be spill over effects, signalling that the Target item is also a bad purchase and therefore a possible risk.

Although theory suggest otherwise there is no evidence which supports the hypothesis that a low volume of eWOM moderates the effect of the decoy. In retrospect subjects might not have noticed the number next to the review rating or it might not have been clear that the small number indicates the total amount of reviews. Unfortunately the survey did not measure how well subjects understood the manipulations or if subjects were familiar with online retail environments.

6. Implications

6.1 Theoretical implications

First and foremost this experiment replicates the existence of the decoy effect and adds to the documentation about the domains in which it exists. Secondly this thesis provides further evidence that preferences are instable and context dependent. The dimensions of the decoy serve as important context. For example, the experiment has shown that a negative review can moderate the decoy effect. This implies that preferences are constructed.

The notion that preferences are constructed and not revealed is important as researchers should be sensitive to the context-dependent properties of choice behaviour when creating choice behaviour experiments (Huber, Payne, and Puto, 2014). For example, an experiment which introduces the Prisons Dilemma (PD) as a “community game” makes subjects co-operators, whereas introducing it as the ‘Wallstreet game’ makes them defectors (Lieberman, Samuels & Ross, 2004).

On a more practical level this research provides evidence to the suggestion of Huber, Payne, and Puto (2014) that the decoy effect exists in digital market places. This is important as previous studies (Yang & Lynn, 2014; Frederick, Lee & Baskin, 2014) have questioned the practical significance of the decoy effect. This study shows that the decoy effect can happen in market place situations. As a result the decoy effect is not only a simple demonstration study testing an important theoretical assumption from rational choice theory (Huber, Payne, and Puto, 2014) but also has a purpose in marketing practice.

Finally this study shows that there are also boundaries to the decoy effect which can be measured. In a digital market place situation the decoy effect is clearly bounded by the dimensions of social proof. For example, this study shows that a negative review for the decoy item can have spill over effects on the target item when sold under the same brand name. Using negative social proof for the decoy might enhance the perception of the targets

favourable dimension (i.e. price). However at the same time negative social proof reduce brand attitude for the target item mitigating the decoy effect.

6.2 Managerial implications

Frederick, Lee, and Baskin (2014) and Yang and Lynn (2014) argued that the decoy effect rarely exists in market place choices. This surprises me, as there are enough real life examples of the decoy effect. The popcorn example in the introduction is a generic example featured in an episode of Brain Games on the National Geographic Channel. Nonetheless, cinemas use the same pricing tables in real life to push sales of larger volumes of popcorn. But the decoy effect is also used by companies such as Apple. The company sells iPod's with different storage capacities (16GB, 32GB and 64GB) and uses the iPod with the largest storage capacity as a decoy to influence consumers to buy the 32GB instead of the 16GB. Companies who have some sort of monopoly, being it cinemas where people are not allowed to bring their own condiments or Apple selling unrivalled innovative products, clearly use the decoy effect to their advantage. Therefor I find it surprising that Frederick, Lee, and Baskin (2014) and Yang and Lynn (2014) argue that the decoy effect has not practical validity.

This study adds onto the examples from above and again shows the practical validity of the decoy effect. Also, the results provide some useful implications for marketing practice. For example, online retailers can easily add decoys to their product assortment to influence purchase behaviour. Adding decoys comes without any significant cost as the decoys do not have to be available for sales but merely have to be present on the website. A retailer could simply list a decoy item as 'out of stock' to avoid having to hold any inventory for it. However, one could argue that such a strategy is slightly unethical.

Online retailers deciding to use decoys have to take the effect of eWOM and the boundaries it poses on the decoy into consideration. This study suggests that a negative

review reduces the strength of a decoy. Therefore online retailers should be careful when listing decoy items on their website. In case the decoy is sold under the same brand name it should not have a negative review and be dominated on this dimension by the target. Instead it is better if the decoy is dominated by the target on a price dimension. If the decoy is sold under a different brand name the spill over effect will probably not exist and allow the decoy to be dominated on a social proof dimension (i.e. a negative review).

7. Limitations and future research

This study has some limitations to it. The used choice sets only consisted of 3 products. Online retailers normally offer a multitude of products in one product category. With more alternatives added to the choice set the effect of the decoy may be lessened as the dominance of the target over the decoy may be harder to recognize (Huber, Payne, and Puto, 1982). However it also true that many online retailers offer consumers the option to use filters to reduce the amount of options shown. Decreasing the amount of options increases the opportunity for the decoy to have an effect. Secondly, online retailers can use algorithms to place the decoy in favourable positions within the search result. For example, the likelihood that the dominance of the decoy is recognized can be increased by placing the main target, competitor and decoy on the first row of the search results.

Another limitation is that the choices offered to the subjects are hypothetical. Subjects are asked to imagine wanting to buy an ice cube tray and hypothetically purchase one of the products. Real choices may differ from hypothetical ones as they affect a subject's real future whereas hypothetical ones do not, in result this may lead to a difference in the decision process (Kühberger, Schulte-Mecklenbeck & Perner, 2002). For example, in real-world settings, consumers have to pay for the product they prefer and thus have to part with their money in exchange for the product (Lichters, Sarstedt & Vogt, 2015). Research has provided

evidence that these binding choices influence choice behaviour significantly. Camerer & Hogarth (1999) posited that subjects faced with real choices (i.e. subjects exchange real money for real products) buy less often than when faced with hypothetical choices. In addition, Murphy et al. (2005) shows that when measuring stated preference valuation subjects tend to overstate their willingness-to-pay due to the hypothetical nature of these surveys. Furthermore, in this experiment subjects are forced to make a decision whereas in a real situation the consumer could decide to delay the decision and not buy a product. Studies have proven that including a no-buy option into the choice-set increases the strength of the decoy effect (Dhar & Simonson, 2003; Chuang & Tang, 2007). Also, for subjects who are not sufficiently motivated to construct their preference the no-buy option acts as a safeguard (Lichters, Sarstedt & Vogt, 2015). Subjects could be more inclined to randomly choose an option without the existence of a no-buy option, and as a result add noise to the results.

Furthermore, the survey did not include a scale to measure familiarity with online retail environments. I suspect that most subjects will have experience in buying goods online and thus are familiar with the layout of the treatment. However I cannot rule out that the meaning of the number next to the reviews was unclear to some subjects.

Considering the above mentioned limitations further research could increase the validity of the experiment by setting up natural field experiment. Online shoppers could be presented with a decoy in their search results. This would increase the external validity as the experiment examines real choices instead of hypothetical ones. Secondly this set-up could also shed light on the boundaries of a decoy in a digital market place. The amount of products that are included in the choice set could be increased to measure the strength of a decoy in a more natural setting where more options are available options. In such a complex situation it is also interesting to measure if the position of the decoy in the list of search results has any moderating effect. This type of research would cross over to eye tracking studies but is

interesting as displaying the product in the first line of sight could mean the decoy has a better opportunity to be seen and take effect.

Finally, the performed test to find a significant moderating effect for a negative review lacks power due to the limited sample size. The difference moves towards the control group, suggesting the negative review reduces the strength of the decoy effect. However, further analysis with an increases sample size is needed to study the effect of eWOM on the decoy effect.

Appendices

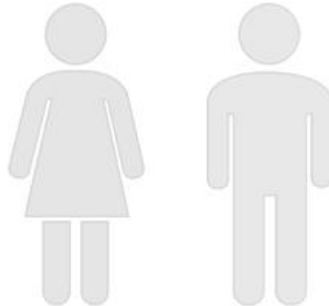
Appendix A: Survey



8%

Wat is uw geslacht?

U kunt uw antwoord selecteren door op het plaatje te klikken.



Wat is uw leeftijd?

Selecteer uw antwoord



33%

Stel u wilt zelf ijsblokjes maken en besluit daarom op internet een ijsblokjesvorm te kopen. U kunt kiezen uit onderstaande mogelijkheden.



Oxo Good Grips Ijsblokjestray
Blauw
€ 7,95
★★★★★ ▾ 370



Steriilite® - Ijsblokjeshouder,
Wit
€ 3,95
★★★★☆ ▾ 421



Steriilite® - Ijsblokjesvorm,
Blauw
€ 6,95
★★★★☆ ▾ 396

Optie A

Optie B

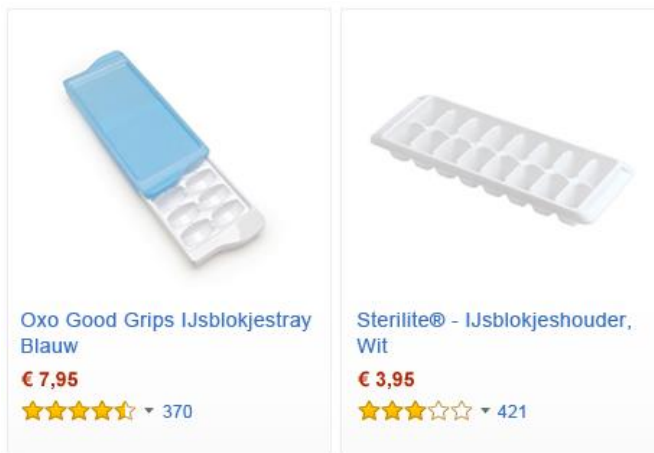
Optie C

Welk van bovenstaande producten zou u kopen?

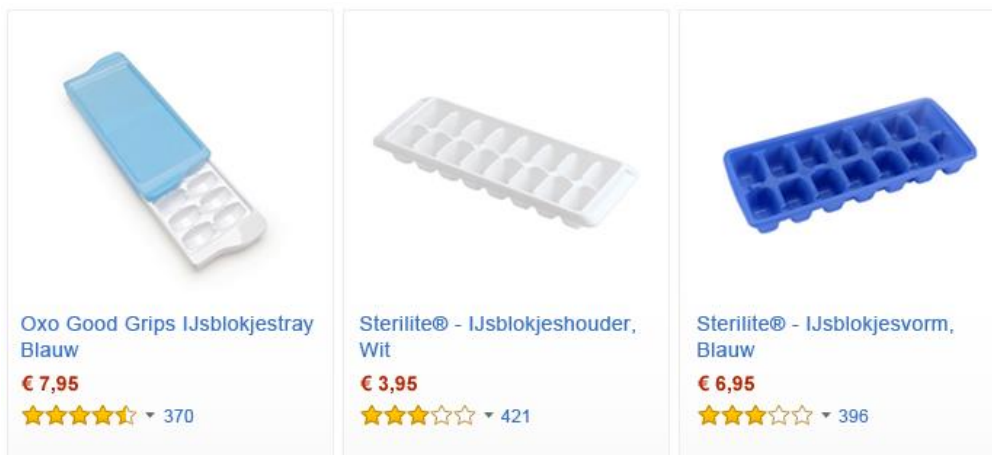
- Optie A
- Optie B
- Optie C

Appendix B: Stimuli

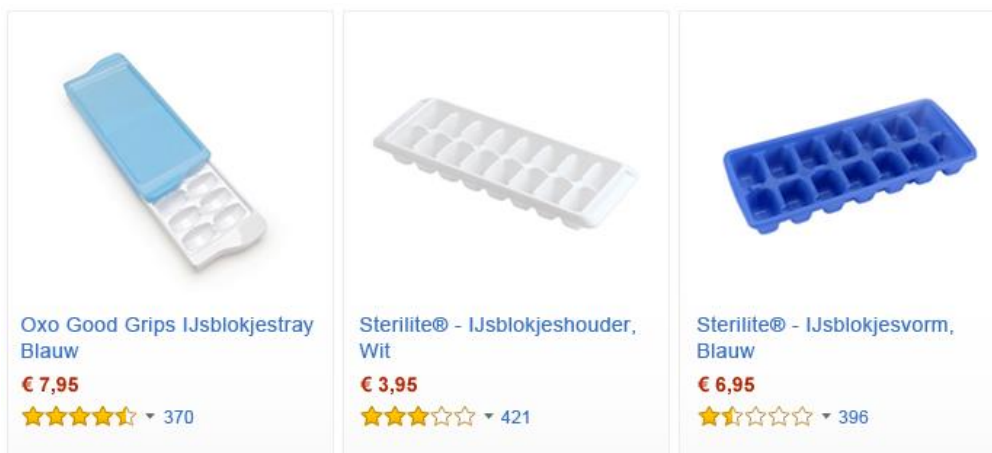
Control choice set



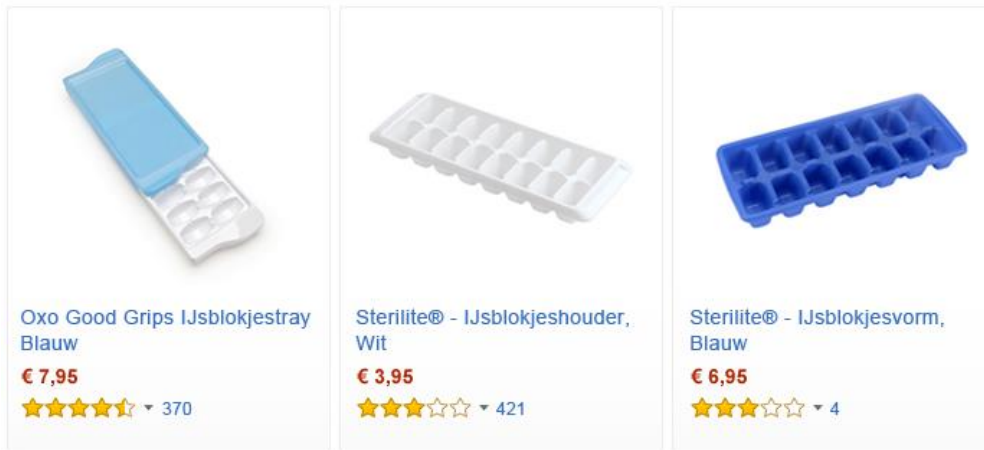
Decoy (D) choice set



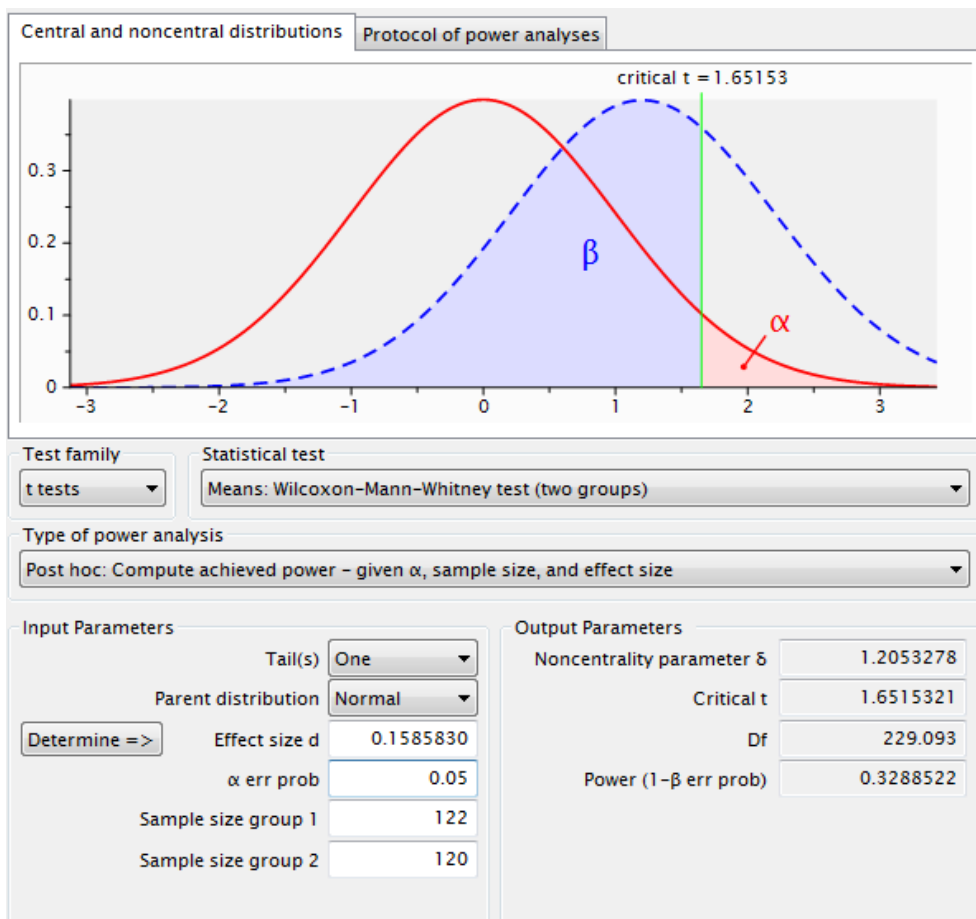
Decoy (Q) choice set



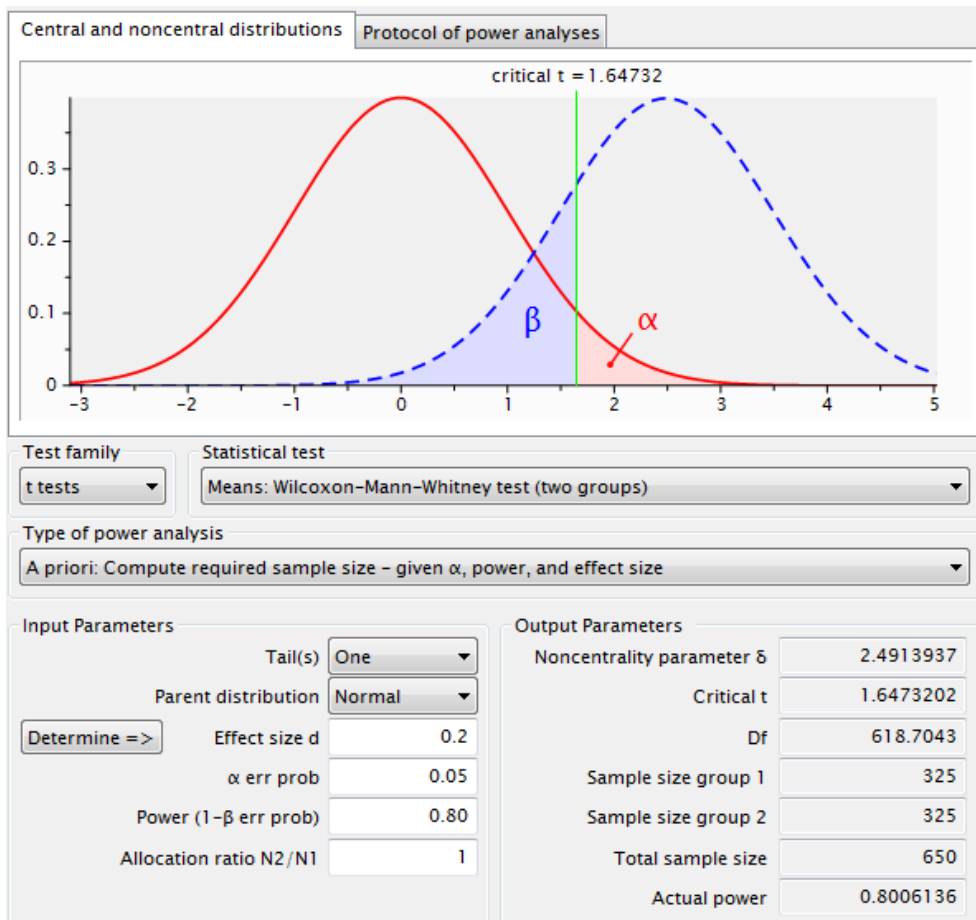
Decoy (Y) choice set



Appendix C: Power Test for Mann-Whitney Test between Decoy (Q) and Decoy (D)



Appendix D: Sample size calculation for M-W Test between Decoy (Q) and Decoy (D)



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