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Anchoring Effect and Its Application in Trade

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Abstract: Anchoring effect is one of the many heuristics or biases, which are shortcuts that help humans make quicker decisions. It affects many decisions made in our everyday lives, which might lead to the wrong choices being made. Therefore, this paper will examine one of the most influential biases that affect people's everyday life decisions, the anchoring effect. How might it affect trade between consumers and producers? Whether it affects the consumer and the producer when they are making a decision. This will be done by analyzing different articles that looked at the implications of the anchoring effect on when a trade is going to or is taking place. At the same time, it is also important to look at how might this knowledge be useful for the different stakeholders, consumers and producers, which are involved in a trade. The results of the analysis of several articles related to the effect of anchoring bias on trade show that the anchoring effect greatly affects consumers' price valuation and willingness to pay when a number is given before actually seeing the product.

Keywords: Anchoring, decision making, willingness-to-pay (WTP), pricing strategy

1. Introduction

Humans often believe in the answers that are given by their intuitions, which are correct in most cases, but there are times when our decision-making is affected by biases that lead to the wrong decisions being made [1]. The anchoring effect is one of the biases that help decisions to be made quicker, which might lead to both good and bad results. Because of the existence of biases like anchoring, it is very hard for humans to meet the rational person's assumption, that people are well informed, cognitively unbounded and profit or utility-maximizing [2], which many economics theories depend upon. Therefore, this paper will look at how anchors might affect consumers and producers when a trade is taking place, and how each stakeholder might use it to their advantage to maximize their utility or profit. This paper will mainly look at how anchors will affect consumers, how producers might use this knowledge, and how might consumers make more accurate decisions by reducing the effect of anchors.

Tversky and Kahneman [3] defined anchoring as a bias that causes people's estimate to be biased toward an "initial value" or "starting point", which may be arbitrary". So, the estimate will be based on a starting value that acts as the anchor, and the final estimate will be decided by adjusting from the anchor, but the adjustment is normally not enough. In simple terms, it is the bias which states that people put lot of emphasis on the first piece of information that they received when considering a problem.

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A very clear example given by Kahneman [1] in his book Think Fast and Slow is to ask two group of people two questions. Whether Gandhi died before or after the age of 114, and before or after the age of 35, then ask each group at what age did Gandhi die. It is very likely that the group which had the higher anchor of 114 will have a higher answer in average compared to the group with lower anchor of 35 given that none of the participants knew the actual answer. This is because, the group with the higher anchor of 114 will be making adjustment based on the anchor, so if the participants adjust down, the final estimate will be the upper bound of what they think is a reasonable range, and the group with the lower anchor will adjust upward but since adjustment won't be enough it will be at the lower bound of a reasonable range.

The two keyword Anchor and Price is put into Google Scholars, and then started searching for articles which include words which includes Anchor, and other keywords related to trade such as negotiation.

2. Analysis

2.1. Anchoring and Incidental Price

A trade normally involves two stakeholders, the buyer and the seller, and this analysis will look at how might buyers be affected by the anchoring effect when purchasing goods and services.

Nunes and Boatwright [4] experimented on how incidental price affect WTP. The participants were 60 visitors to a West Coast beach, and all 60 participants are people who wish to purchase a specific CD at a stand along the boardwalk of the beach. Along the same boardwalk there was another stand which sell only one type of plain T-shirt, that stand switched the price of the T-shirt from $10 to $80 and $80 to $10 every 30 minutes for eight hours. The 60 participants were asked to say their highest willing to pay price, and after that they are asked to draw a number from a box, if the price they offered is higher than the number picked then they are obligated to buy the CD, otherwise the CD won't be sold to them,

If people are rational, then their WTP should not be affected by any other factors not related to the purchase, in this case, the incidental price, but as shown from the result it is not the case. When the price of the T-shirt was priced at $10, the average bid for the CD was at $7.9, whereas when the price of the T-shirt was priced at $80, the average bid for the CD went up to $9. This is a between subject experiment, but since the result was statistically significant, so it can be assumed that incidental price affects consumers' willingness to pay for a good. In the experiment, the price of the T-shirt acted as an anchor, when the anchor is $10 the bid for the CD is lower, but when the anchor is at a higher price, the bid for the CD was also higher. The mechanism behind the result is that the group with higher anchor, $80, even though it might make more adjustment, but since the adjustment is most of the time not enough, it will still be relatively higher compared to the group with the lower anchor of $10.

2.2. Anchoring and Visual Temperature

In another study done on how temperature displayed might affect consumer's expectation of price [5], it shows how numbers which are simply non-related to the price of a good or service, but is displayed when the decision is being made might also act as an anchor.

In the study there were 816 participants which were guests in two hotels in the US, and the two hotels had similar accommodations and were within 10 miles from each other. The guests had a chance to win a free day of accommodation, to enter, they had to answer the question of how much would the free night worth. When answering the questions, 6 different numbers were displayed for 6 groups of people, the numbers are the current temperature in Fahrenheit, 31, 32, 39, 81, 82, 89.

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Table 1: Price valuation of accommodation with different temperature displayed [5]

Results	Mean estimate and standard deviation in bracket					
Temperature (f)	31	32	39	81	83	89
Price Valuation	$44.35 (3.62)	$51.55 (3.72)	$40.57 (3.55)	$100.65 (3.58)	$96.08 (3.85)	$103.31 (3.67)

The result of the study is shown is table 1, When the temperature is displayed at a lower number, in this case 31, 32, 39, the price valuation of the service would be lower compared to when the temperature is displayed to be 81, 82, 89. This is because the displayed number acted as an anchor for the guests, and since in winter the temperature is lower, the displayed number is lower, so for guests at that time they had a lower anchor as an initial point. Since the other group in summer had a higher anchor to adjust from, their valuation of price would be higher.

2.3. Anchoring and Purchase Quantity

Anchoring effect might also be beneficial to producers and/or retailers as it can be used to stimulate sales.

In a study by Wansink [6], he looked at how multiple-unit pricing can increase. A one-week field experiment was carried out with 86 supermarkets. They first calculated the average sale of 12 items sold in all 86 supermarkets over the 6 months before the experiment. Then, during the experiment the items were sold with a 9% to 44% price reduction, and the price reduction was shown by a shelf tag. Half of the stores showed the sales price by single unit and the other half by multiple units. For example, for bathroom tissues, it either displayed 50 cents for one unit or 2 dollars for 4 units.

The results of the study it shown in table 2. For almost all 12 products, the increase in sales when the price is displayed in multiple units is higher. The only exception is soap, and a possible reason might be that the soap is already sold in 3-Bar packs, so there is no need to purchase multiple of them.

Table 2: Impact of Multiple-Unit Pricing on Supermarket Sales [6]

Results		Percentage Change in Unit Sales	
Products	Level of discount	Single Unit	Multiple Unit
Bathroom Tissue	15%	+57	+97
Candy	9%	+24	+25
Cereal	33%	+133	+137
Cookies	44%	+306	+372
Frozen Dinners	12%	+33	+70
Frozen Dinners	20%	+133	+195
Frozen Entrees	26%	+133	+156
Paper Towels	31%	+403	+565
Soap (3-Bar)	15%	+48	+30
Soft Drinks (2 Liters)	17%	+33	+66
Soup (Canned)	20%	+200	+248
Soup (Canned)	17%	+108	+112
Tuna (Canned)	18%	+36	+66
Mean	21%	+125	+165

In this case, the quantity acted as an anchor, so the buyers had an anchor of high units, so they are more likely to purchase a higher unit. In this case, the anchoring effect also triggered the framing

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effect, as the prices are exactly the same, but displayed in a different format. So people become biased towards one option because of how the information is displayed [7].

2.4. Effect of Anchoring on Different Groups of People

However, would anchoring effect always affect people's decision making. In a study by Zong and Guo [8], they looked at how different factors such as expert knowledge and skill might affect the extent to which anchoring will affect people's decision making. In the study, there were two treatments, a low anchor, half of the original price, and a high anchor, double the original price. At the same time, everyone is asked to decide on what they think is a suitable price for the three products, VR glasses, smart body fat scale and wireless Bluetooth headset. After putting the result into the two formulas in figure 1, the result show that the group with higher expert knowledge had a lower mean and standard deviation in every treatment, therefore anchoring had a smaller effect on the group with more expert knowledge.

$$AI_{High} = \frac{\text{Median of estimated value of high anchor group} - \text{Median of estimated value of control group}}{\text{High anchor value} - \text{Median of estimated value of control group}}$$

$$AI_{low} = \frac{\text{Median of estimated value of low anchor group} - \text{Median of estimated value of control group}}{\text{Low anchor value} - \text{Median of estimated value of control group}}$$

Figure 1. Formula for calculating anchoring index.[8]

To expand on this topic, Rashimi[9] researched on how the consciousness might affect the anchoring effect. The two treatments in the experiment are thought generation and no thought generation, in addition, each treatment is either given a high anchor or a low anchor. One treatment is asked to think about the product, an automatic, 35mm – 75 mm camera with flash, and write down all the knowledge they have related to the product, and then give an estimate for the price of the product. The other treatment is also asked about their price valuation, but were not asked to think about what they know of the products. The high and low anchors are $419 and $49 respectively.

The result is shown in Table 3. It shows that when consumers think about the product that they intend to purchase before buying the product, is essential in making the accurate decisions. This is because when they actually think about the product itself, their price valuation is always relatively lower compared to not thinking about the different characteristics of the product.

Table 3: Effect of thought condition on price valuation [9]

Results	
Thought conditions	Price valuation
Thought generation	
High anchor	163
Low anchor	60
No thought generation	
High anchor	317
Low anchor	78

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3. Discussion

In the first two studies, it can be seen that unrelated numbers might affect consumers' valuation of a good or service. Incidental price and the temperature displayed both had nothing to do with the price of the good or service that the consumers are planning to buy, but they still affected consumer's decisions. By knowing about this bias, sellers might be able to offer a higher price, by displaying higher numbers, such as price of goods or temperature at the front of their store, and that higher number might act as anchor for which consumers will adjust from, therefore they might give the good or service a higher value so then they are more willing to pay a higher price. This increase in price, would not lower the quantity demanded for the good, as consumers' willingness to pay would have increased with the higher anchor. Therefore, sellers might be able to raise its revenue, or even maximize their profit by increasing the price.

In the study on quantity of purchase, it would be beneficial to sellers as sellers would be able to find a better option to increase their sales. Even though it is highly likely that a discounted price would increase sale, but it is always essential for businessman to find the most beneficial way to achieve their objective. In this case, to increase sales, other than reducing the price of goods, sellers might also show the decrease in price, and show the new price in multiple-units, which according the third study, would increase sales by even more.

By knowing the effect of knowledge on the anchoring effect, consumers might be benefited, as they might learn more about the product that they want to purchase before actually purchasing the product, gain more knowledge related to the product they wish to purchase. At the same time, think about what they know of the product they intend to purchase before the actual purchase. This would help consumers decide on whether if purchasing the good at the price it is sold in this store is the best decision, as anchoring might cause the consumers to have a higher price valuation for the good.

4. Conclusion

Overall, the researches show that anchors, that can be given in many different forms, affect consumers' decision makings, which pulls consumers away from the rations person's assumption. With higher anchors, the final estimate will be relatively higher compared to when a lower anchor is given. The anchoring effect greatly affects consumers' price judgement and might lead to the wrong decisions being made.

However, there are many different parts of trade that can still be covered, for example, the price of previous products developed by the same firm, will it act as an anchor to the consumers. Furthermore, a trade can take place as a negotiation, in this case both buyer and seller have power in deciding the price. Previous researches has gone through how a privates seller and buyer might react to anchors in a negotiation, and the results shows that "anchor point and reference point jointly influenced counteroffers in a stimulated price negotiation" [10], but sometimes negotiation also take place between large firms, will the effect of anchor be any different? As the negotiation will be carried out by experts, and the purchase will be in large quantities.

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