February 6. 2023

Behavioral Economics Theories in the Colombian Navi Market

By: Carmen Losada

Abstract

Behavioral economics is a field that combines different aspects of economics and psychology to understand human decision making. The field has applications in a wide range of settings including business, policy making, and health care. The present study tested the effect of different behavioral economics theories such as the framing effect, nudge effect, decoy effect, and default effect on consumers. We tested these theories through online surveys using a sample of 2,000 consumers of the Honda Navi Navi motorcycle in Colombia. We found that the default effect was the most effective at influencing people's purchasing decisions in the Navi market. Furthermore, because of different variables, the framing effect, nudge effect, and decoy effect were found to not influence consumer behavior or choices when personalizing a Navi motorcycle. We suggest that this happened because of the previous knowledge that the customers had and because of the question design.

Introduction

Behavioral economics is a field that views humans as emotional beings who are not always rational and whose decisions are influenced by outside factors and circumstances. The founder of this field is considered to be economist Richard Thaler who won the 2017 Nobel Prize in Economic Sciences. His contributions, however, build on the works of previous thinkers such as Daniel Kahneman and Amos Tversky, who had already started to introduce different theories connected to behavioral economics (Witynski, n.d).

For this research project we analyzed four different behavioral economics theories on the Honda Navi motorcycle clients in Colombia. We did this through online surveys that test the

framing, nudge, default, and decoy effects through questions regarding the Navi Motorcycle. This is a motorcycle and scooter hybrid that has a customizable nature and many accessories can be added or removed from it as the customer desires.

By testing these theories with the Navi consumer we were able to see how behavioral economic theories are at play in a real world business and clients. Behavioral economics experiments are useful at understanding the theories themselves and how they play out in a specific situation, but only a few of them are actually applied to the real world. The most popular behavioral economics experiments often test participants in the best possible situation that will explain a theory, and not in a real world context. Through this project the goal was to be able to understand consumer behavior in a real life business and be able to apply what we learn to increase the success of Navi sales.

Consumers have different biases since humans are emotional beings that are influenced readily by circumstantial factors. Because of this, our research aimed to understand consumer behavior when personalizing a Navi motorcycle or deciding between different options. The results of this research will be helpful for the Honda Navi concessionaires throughout Colombia to apply different strategies that will help them increase their sales of motorcycles. In addition, the findings of this research can also be applied beyond business since testing general theories in a real-world sales context will help us understand if they hold up, and if not, what might explain the lack of transferability to these contexts. This research paper will proceed in four sections: the introduction, the methodology, the results, and the conclusion.

Theoretical Background

Behavioral economics and cognitive bias

At its core, behavioral economics is the opposite of neoclassical economics. Behavioral economics originated to explain human behavior that could not be understood through the theories that neoclassical economics suggested. Traditional economics has three fundamental

assumptions that underpin its core theories. First, all people are rational; second, people always choose the option with the highest utility; and third, people take all information into account when making a decision. These assumptions are not always true when analyzing behavior in the real world. Humans are influenced by cognitive biases and heuristics that limit their rationality and make them act in ways that do not maximize utility (Bogan, n.d).

Taking this into consideration, one of the main principles of behavioral economics is that humans make mistakes due to cognitive biases. These are the tendency to simplify information because of personal experiences and preferences. This can be connected to Daniel Kahneman's idea of what he calls cognitive Systems 1 and 2. System 1 is responsible for mental events that occur automatically and require little or no effort and System 2 is responsible for mental events that require attention and are disrupted when attention is drawn away. Cognitive biases are mostly the product of System 1's fast and automatic thinking and System 2's laziness in checking if System 1 made the right choice (Kahneman, 2011). The other fundamental principle of behavioral economics is that the context in which choices are presented has a large effect on decisions. This idea spawned many different behavioral economics theories, such as the nudge, since Kahneman discovered that changing something about the context of a decision can lead people to take certain decisions.

Finally, a third important concept in behavioral economics that drives many of its other theories in bounded rationality. This is the idea that people have a limited amount of cognitive ability, information, and time which leads to making a decision which is not the best possible one. This is the basis for theories such as the framing effect, default effect, and nudge theory that attempt to explain how decisions are characterized by limited information and the circumstances in which they are made("Bounded Rationality", n.d). These are the three behavioral economics theories that we will be focusing on for this research.

Framing Effect

The framing effect describes how decisions are influenced by the way information is presented. Options can be the same in value, but be more or less attractive depending on the characteristics they display. This theory was first introduced by Daniel Kahneman and Amos Tversky after performing various studies that supported that presentation is a factor in decision making. Decisions based on the framing effect focus on the way information is perceived and not on the information itself. This is evident since a product can be the exact same in terms of pricing, quality, and characteristics, but one can be more attracted to it if it is framed in a specific way. This can cause people to choose less optimal options that are framed in a positive light over more optimal options that are not framed effectively.

The framing effect takes into account that people find it attractive when the positive features of an option are highlighted instead of the negative ones. This is connected to loss aversion and the prospect theory which explain that as human beings we avoid losses over equivalent gains. Additionally since people use shortcuts known as heuristics when presented with information, they tend to be less rational and rely on easily accessible information when presented with options, resulting in the framing of an option having a strong influence ("Framing Effect", n.d).

Kahneman and Tversky (1981) conducted a study which consisted of asking participants to choose between options of treatment for 600 people that had been infected with a fatal disease. In treatment A, 200 people would be saved and in treatment B, there would be a 1/3 probability that 600 people would be saved, and 2/3 probability that no people would be saved. These scenarios were framed positively (how many people would live) and negatively (how many people would die). When participants were given the option that 200 people would be saved, 72% chose it, versus 22% when told 400 people would die.

Nudge Theory

The nudge theory was created and popularized by economist Richard Thaler in his book *Nudge: Improving Decisions About Health, Wealth, and Happiness* (Thaler and Sunstein, 2021). This theory states that there are different ways in which people's decisions can be nudged or influenced unconsciously by making subtle changes to the environment. Nudges, however, do not eliminate options or point in an obvious direction; they are actually small changes that gently push people towards a determined choice. There is not one set nudge strategy or approach that works in all situations; they come in different forms and are used in stores, websites, businesses, advertisements, etc. In stores people can be nudged to buy healthier options such as fruits when they are placed right as they enter the store; on websites, they can be nudged to buy a certain item if it is labeled as "popular" (Weerd, 2017).

Many organizations and companies implement nudges like these in many ways to influence people's decisions by making small changes to the environment and context. Schwartz et al. (2012), conducted a study that showed that people could be nudged into down-sizing their portions of food if they are asked to do so before purchasing. This study took place at a Chinese restaurant where customers were asked if they wanted to down size the portions of their side dishes. The results showed that 14–33 percent of the customers accepted the offer and therefore ate 200 less calories on average. Just a small change in the environment while they were ordering food resulted in people eating healthier.

Another study that tested nudge theory was conducted by Gino et al. (2012) and consisted of testing dishonesty when asked to sign at the top versus the bottom of a page. Participants were asked to report how many miles they had driven their car the previous year for insurance purposes; however some were asked to sign that they were telling the truth at the top of the page and others at the bottom. The discovery was that people could be nudged into honestly declaring their mileage when asked to sign at the top since it primed honesty, meaning that it set the stage for people to be honest.

Default effect

The default effect is a theory which economists such as Cass Sunstein, Richard Thaler and Alain Samson have studied and made contributions to with different experiments. It states that when presented with a default option, individuals are more likely to stick with it since defaults do not require effort and our laziness makes us choose it. Additionally, defaults provide a heuristic or mental shortcut of what we think we are supposed to do, hence we tend not to want to change it.

A commonly known study about the default effect was conducted by Eric J. Johnson and Daniel G. Goldstein regarding organ donations in different countries. These two researchers studied 11 countries in Europe, some in which people were automatically opted into an organ donation program and some where people had to ask to be opted into the program. The default in some countries was to be an organ donor, while in the others it was not to be. The results of this study showed that the countries with the default set to be organ donors had significantly higher organ donation rates than the ones that did not have this default. An example is that in France (opt-out country), 99.98% of people are organ donors while in Germany (opt-in country) the number was much lower at only 12% organ donors (Johnson & Goldstein, 2003).

Decoy effect

The decoy effect is a behavioral economics theory that describes how adding a third, less attractive option when choosing between two alternatives can influence people's choices. This third option is "asymmetrically dominated" meaning that it is completely inferior or superior to one option but only partially inferior or superior to the other. The decoy effect can cause people to consume more than they actually need or wanted in the first place since. This is because when the decoy is added, people tend to make decisions based on what will be the best deal and not what they actually wanted in the first place. For example, if someone initially wanted a medium popcorn at the movie theater but sees that the small popcorn is $5, the

medium is $6.50, and the large is $7, they will probably opt for the large popcorn even though this is not what they wanted in the first place (" Decoy Effect", n.d).

A study conducted by Dan Ariely, an Israeli-American professor, shows the decoy effect playing out in real life. Ariely (2009), constructed an experiment regarding a print or online subscription to a newspaper. The options were as follows: $59 for a digital subscription, $125 for a print-only subscription, and finally, $125 for both print and digital access. When he presented the three options, 16% of the students chose the online subscription, 84% chose the print & web subscription, and not a single student chose the print-only subscription. However when he removed the decoy ($125 for a print-only subscription) and presented the students with the digital and print & web options only, the results drastically changed. This time around 68% of students picked the $59 online subscription, and only 32% picked the print & web subscription. When the decoy was added, the print and online subscription choice went up 52 percentage points. Without the decoy the total revenue was $8,012 while with the decoy the total revenue was $11,444. This shows how businesses can use this strategy to make more revenue by influencing people's choices.

Methodology

Overview

To collect the data we used online surveys since it was the best way to reach the most people possible. We did two surveys since some of the experiments required a control group or a slightly different presentation of the question. After the surveys were done we sent them out to 2,000 consumers that had bought a Honda Navi between January and July 2022. We chose these participants since they had experience with the Navi motorcycles and would understand what was being asked in the surveys better than someone who had never heard of the motorcycle before. In particular, they would be knowledgeable about the accessories and prices, which would give us the most accurate results. Even though the fact that all of the participants

would be Navi customers would make the group biased, the fact that the participants for both surveys were biased in the same direction cleaned out this bias. We sent one of the surveys to 1,000 of the participants, which we selected randomly, and the other one to the remaining 1,000 participants.

Experiment #1: Framing Effect

To test out the framing effect we decided to design two questions. We wanted to test out if clients would gravitate more towards choosing an option if it included the word "free". To do this we framed two options differently against the same second option. We gave participants the option of receiving $3,150,000 pesos (around 695 dollars) or receiving a Navi motorcycle with a retail price around double that amount.

In one of the surveys, clients were asked to choose between the $3,150,000 pesos cash price or a $6,300,000 motorcycle that included free accessories. In the other survey, clients were asked to choose between the $3,150,000 pesos cash price or a $6,000,000 motorcycle plus $3.000.000 on accessories. The two options were the same, but framed differently since at the end of the day the price of the second option was the same, but one had the word "free" while the other had the extra price.

The framing effect theory would predict that a higher percentage of respondents would choose the motorcycle framed as including free accessories since free items tend to attract people.

Experiment #2: The Nudge

To test the nudge theory in the Navi market we decided to design a question to analyze if adding the nudge "popular" to an option would make a person more likely to choose it. We did this by focusing specifically on motorcycle color, labeling the red one as popular to see if participants would choose it more often. This is a multiple choice question since we gave participants various colors to choose from, but tried nudging them into choosing the red one

since it has a "popular" label on it. This is a strategy that brands use in their websites with different labels such as "new", "sustainable", and "popular" to nudge customers into choosing a specific option.

With this experiment we also had a control group who received the second survey with no nudge. We asked the participants to choose the color that they want their motorcycle to be without labeling any of the colors as "popular". With this experiment we measured the percentage of people who chose the red in the experimental group vs the control group. This with the objective of seeing if adding a label to a product such as "popular" will make people choose that option more.

Experiment #3: Default effect

To test out the default theory in the Navi market, we designed two questions. In the first one participants start with a fully accessorized motorcycle and are asked what accessories they would like to remove from the motorcycle. In this case, the default would be a fully accessorized motorcycle which participants would have to personalize to make it less accessorized. In the other case, participants will start with a bare motorcycle and will be asked to add on any accessories that they want. In this case, contrastingly, the default is a bare motorcycle which participants will need to personalize by adding to it. In both options participants will be given six different accessories that they can add or remove accordingly: bumper, rear rack, motorcycle protector, visor, lateral sticker, and streetlight protector. Each of these accessories included its corresponding price to avoid participants choosing to add all accessories or remove none.

This experiment measured the difference in the added accessories in one case and the removed accessories in the other. It ultimately aimed to determine if in the case where participants have a bare default and have to add accessories, they would end up with fewer accessories than when they were given a fully accessorized motorcycle and asked to remove accessories.

Experiment #4: Decoy effect

To test the decoy effect in the Navi market we decided to create two questions, one with a decoy and one without. For the first question we gave the customer two options regarding the price and accessories of a motorcycle. The first option was to buy a Navi motorcycle without any accessories at a price of $6,000,000 Colombian pesos and the second one was to buy a fully accessorized motorcycle (6 accessories) at a price of $6,400,000 Colombian pesos.

On the other hand, the second question had three options. The first and third option were the same as in the first question, but we added a decoy as a second option. This was to buy a partially accessorized motorcycle (4 accessories) at a price of $6,300,000 Colombian pesos. The goal of this experiment was to analyze how adding a decoy affects which option most people choose. We wanted to know if adding a decoy with a price that is closer to the most expensive option will make people cave and choose the most expensive option.

Results

Demographic information

Table 1: Comparative demographic information

	Survey 1	**Survey 2**
Average age	39	35
Gender	Female: 113 Male: 71	Female: 122 Male: 72
Average NSE (Socioeconomic level)	2.7	2.6
Sample size	184	194

The demographic data collected from both surveys are balanced and this shows that differences in demographic factors were unlikely to affect the results of the experiments. The

three main characteristics that we collected were age, gender, and socioeconomic level since these could potentially have an effect on what options people choose. Socioeconomic level in Colombia is based on a stratification system that goes from 1-6, 1 being the people with the least resources and 6 being the people with the most. As we can see in regards to age the average for survey one was 35 and for survey 2 it was 39. The difference for this characteristic was only four years, or just over 10%, which is relatively balanced. In regards to gender we can see that in both surveys there were more females than males in a similar proportion. Survey 1 had 71 males while survey 2 had 72 which is almost the same and as for females survey 1 had 113 and survey 2 had 122 meaning that they are balanced and will not cause biased results. Finally for socioeconomic level survey one had a 2.7 and survey 2 a 2.6 which is also similar and can be considered not to have an effect on the results.

Experiment 1: Framing Effect Results

Table 2: Results of framing effect experiment

Frame 1: (194 respondents, 19.4%)

$3.150.000 pesos cash price	34.0% (66)
$6.000.000 motorcycle + $3.000 on accessories	66.0% (128)

Frame 2: (182 respondents, 18.2%)

$3.150.000 pesos cash price	33.5% (61)
$6.300.000 motorcycle + free accessories	66.5% (121)

p-value: 0.46

The results of this experiment were somewhat unexpected since as we can see the percentage of the two experiments is very similar. This means that the two different ways that the experiment was framed had virtually no effect on the choice that people made. We had

expected that promoting the accessories as free would attract more people to choose this option since we would think that people are more attracted to free products.

There are some possible explanations why we got these results. First of all it is important to remember that the people that were surveyed had already bought a Navi motorcycle before, hence they had pre-existing knowledge about its price. In terms of Kahneman and Tversky's "two systems" framework, the survey respondents had already run their System 2 when deciding which motorcycle they wanted to buy and what price they were willing to pay for it. Because of this the population surveyed already knew the price of the motorcycle and probably did not pay much attention to how the price was being framed. Also, since we designed the experiment as people gaining a reward they were probably more focused on which option would be better, the cash price or the motorcycle, without focusing much on if the accessories would be "free" or not. In other words, we were gifting something to them, hence it did not have much effect if it was free or not.

Experiment 2: Nudge Effect Results

Table 3: Results of nudge effect experiment (With nudge: 185 respondents, 18.5%, Without nudge: 195 respondents, 19.5%)

Color	With Nudge Red "Popular"	Without Nudge
Red	18.9% (35)	17.4% (34)
Green	15.1% (28)	8.7% (17)
Black	44.9% (83)	54.4% (106)
Orange	12.4% (23)	7.2% (14)
Blue	8.6% (16)	12.3% (24)

p-value: 0.40

The results of this experiment were also not as significant as we expected them to be. The color that was most popular in both experiments was black, while the red which had the nudge was only 1.5 percentage points more popular than the red that did not have the nudge. We had anticipated that putting the word popular next to the red would make people's System 1 have an automatic response to choosing that color since it was portrayed as more attractive.

The results we got also have various possible explanations. First it is important to understand that color is personal and before even being asked the question people already have a personal preference in the colors that they like and the colors that they do not. Additionally the surveyed population had already made this decision when choosing the Navi motorcycle that they bought. This is important to take into account because a study conducted by Bonaiuto et al. (2016) showed that, "when making decisions, people and other animals tend to repeat previous choices even if this is no longer the best course of action." In this case, similarly to the first experiment, System 2 had already been run therefore people were automatically less prone to bias. This time around people were likely to choose the color they had already chosen in the past regardless of the nudge.

Experiment 3: Default Effect Results

Table 4: Results of Default effect experiment (Adding accessories: 185 respondents, 18.5%, Removing accessories, 195 respondents, 19.5%)

	Adding accessories	Subtracting accessories
Average # of accessories	2.9	4.9
Average price	$147,201	$244,588

Percentage of people who did not remove any accessory	43.3%
Percentage of people who did not add any	7.07%

accessory	

p-value: <0.001

In this experiment we did get the results that we expected since it is evident that the way that the default was set up had a large influence on the choices people made. When the default was a motorcycle that had no accessories the average number of accessories left on the motorcycle was 2.9 and the price spent on accessories was $147,201, however when the default was a fully accessorized motorcycle the average number number of accessories left on a motorcycle was 4.9 and the total price spent was $244,588.

It is most likely that this experiment had successful results compared to the other ones since it takes more core cognitive effort to remember every single accessory and its price than it takes for example to remember the color or total price of a motorcycle. This automatically makes the sample stick to their biases. They stick to their biases which affect their choices. This is because when the default is a motorcycle with no accessories it is more work to think about which ones you want to add and which ones you do not, so you tend to either not add any or add fewer ones. On the other hand when the default is a fully accessorized motorcycle it is more cognitively straining to think about which ones to remove, so people tend to just keep them all (or most of them).

Experiment #4: Decoy effect Results

Table 5: Results of Decoy Effect experiment

Without decoy: (192 respondents, 19.2%)

Motorcycle with no accessories at a price of $6,000,000 Colombian pesos	30.7% (59)
Fully accessorized motorcycle (6 accessories) at a price of $6,400,000 Colombian pesos.	69.3% (133)

Average revenue: $6,277,200

With decoy: (180 respondents, 18.0%)

Motorcycle with no accessories at a price of $6.000.000 Colombian pesos	21.7% (39)
Partially accessorized motorcycle (4 accessories) at a price of $6,300,000 Colombian pesos	14.4% (26)
Fully accessorized motorcycle (6 accessories) at a price of $6,400,000 Colombian pesos.	63.9% (115)

Average revenue: $6,298,800

p-value: 0.86

With this experiment we also got some unexpected results. We were expecting that with the decoy the most expensive option would be the one chosen more, thereby generating more money. However, we can see that the most expensive option was chosen less in the experiment with the decoy (63.9%) than in the experiment without the decoy (69.3%).

We believe that this happened since the decoy was attractive to people in experiment 2. Because of this more people than expected chose the decoy. From this we can conclude that we need to be careful when designing the decoy since if designed in a way that is sufficiently attractive then people are going to choose it more than expected. However, the decoy is better than the cheap option so business and policy makers need to think if it is beneficial for them if people choose the decoy since it is still higher than the least cheap option or if choosing the decoy will not be beneficial. If the second option is the case then the decoy needs to be designed in a way that makes the third option look significantly more attractive than the other two options so that something like what happened in this experiment does not happen.

Comparison Between Two Populations

Since we did not get the results we were expecting in three out of four of the experiments we tested, we decided to change a characteristic in the population to see if it made a difference in the answers. We send out the survey to non-Navi consumers. The people that we sent the survey to had bought a CB160F, CB190R, CB125F, XR150L, or XR190L motorcycle in the past 6 months. The motorcycles mentioned are more expensive sports motorcycles. We decided to choose these types of clients since they were less likely to know about the Navi prices and accessories. This is important because, as we saw in the results of the previous experiments, since System 2 had already been run by Navi customers they were less prone to bias and less prone to the tested effects.

	Navi sample	Non-Navi sample
Framing effect	0% (p-value: 0.46)	-2% (p-value: 0.60)
Nudge effect	1.5% (p-value: 0.40)	-2% (p-value: 0.66)
Default effect	2 accessories (p-value: 0.001)	2.6 accessories (p-value: 0.001)
Decoy effect	-5.4% (p-value: 0.86)	-18.0% (p-value: 1.0)

As shown by the differences between the Navi and non-Navi samples, the results we got from testing non-Navi customers were very similar to the ones that we got when testing Navi customers. There is no evidence of the framing, nudge and decoy effect, while the default effect was once again the only experiment that actually made people choose more or fewer accessories depending on the default.

In regards to the nudge effect in the non-Navi sample the difference between the two frames was 2 accessories while in the non-Navi sample it was 2.6 accessories. This means that when the default was a fully accessorized motorcycle, people ended up with 2.6 more accessories than when the default was a motorcycle with zero accessories. People tend to prefer to add fewer accessories and also remove fewer accessories, which is why in both the Navi and non Navi samples this experiment worked.

On the other hand, regarding the framing effect while in the Navi sample the difference between those who chose the differently framed option was 0% in the control survey and in the experimental survey, in the non-Navi sample the difference was -2%, meaning that more people choose the less attractive frame. Additionally in the two samples the p-value is upwards of 0.4, showing little statistical significance. Also, in the Navi sample the nudge effect had a 1.5% difference and a -2% difference in the non-Navi sample, indicating that 2% less people chose the motorcycle with the popular sign in the non-Navi sample. In this experiment the results also had a p-value upwards of 0.4, once again showing that they are not statistically significant. The decoy effect also did not appear to affect people's decisions. In the Navi sample the difference was -5.4% while in the non-Navi sample it was -18.0%. In this case the p-values were upwards of 0.86 which also shows that there is virtually no statistical significance in the results.

One of the possible reasons why the results were similar to the ones of the Navi sample is the way the experiments were designed. As mentioned before, the framing effect experiment was designed as people getting a price (motorcycle or cash), hence they were not focusing on whether they were going to get free accessories in a motorcycle or not which canceled out the bias. Additionally, a reason why the nudge effect might not have been effective is because color as mentioned previously is quite a personal choice, hence people might not have been influenced by the nudge "popular". Since people from the non-Navi sample also already have a motorcycle, they might have already known what colors they liked in a new motorcycle. In the decoy effect we saw an increase in negative difference which can be because the new population that was surveyed has motorcycles that are more expensive than the Navi, meaning that when presented with only two options, a really expensive and a really cheap one more of them leaned towards the expensive one. However when a middle ground one was presented for less accessories than the most expensive one it was attractive and some people decided to choose it. Additionally it is also important to mention that the people surveyed already had previous knowledge on motorcycles hence were less prone to bias.

Conclusion

In summary the research conducted through the several experiments brings us to some solid conclusions. When testing the Framing, Nudge, Default and Decoy effect on Navi and non-Navi consumers it is evident that there is a clear Default effect and no Framing, Nudge, or Decoy effect.

The default effect was found to be very significant in both experiments, having a p-value of <0.001. Because of this, it is a strategy that can be applied not only to the Navi market, but also beyond. Other businesses that want to increase their profits can implement the default effect in their products so that people are more inclined to choose a more expensive option. However in the other industries such as the healthcare system this effect can also be applied. As mentioned before, when setting a default to opt out of an organ donor program, rather than to opt-in many more people will be considered organ donors. Additionally when a brand is coming up with marketing strategies they can set the default after purchasing something online to be to receive email notifications for discounts, new releases, etc. As shown the default effect can be applied in many areas across a wide range of organizations.

As an extension for future research it would be interesting to study the same effects but in a different setting where respondents are less familiar with the decisions so that their System 1 is more at play. This could be people like high-school or middle-school students who know little about motorcycles and their prices, which would make them more prone to bias. Additionally, in further research other behavioral economics effects can be tested to see how they can be applied in real world contexts. This could be the Overconfidence Effect, Endowment Effect, Availability Bias, Diversification Bias, Halo Effect, and many more.

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