LUISS GUIDO CARLI

DIPARTIMENTO DI ECONOMIA E FINANZA

MARKETING

PROPOSITION OF AN EFFECTIVE METHOD FOR CORRECTING CONSUMER'S MISPERCEPTION ABOUT PALM OIL AND THE COLOMBIAN PALM OIL INDUSTRY IN IBAGUÉ, COLOMBIA

CARLOS ENRIQUE CORREA VILA

ALBERTO MARCATI

2018-2019

Index

Introduction

In a country where custom is an important cultural element, it is crucial to understand the implications of this type of practice not only in daily life, but also in the construction of companies and the rise of solid industries, which support their products and services by means of truth, so that custom does not overturn the facts, which in the scenario of objectivity can add much value to the organizations of this century.

Tuñón points out: "Global communication constitutes a discipline that is as changing as it is complex within the framework of international reality, both because of globalization and because of the interdependencies created between the actors in society" (Tuñón, J. (2017). International communication: global information and disinformation in the 21st century). This suggests a world invaded by variables that affect the buyers, that drive the crises and that encourage disinformation when it is not sufficiently managed. This is why, through this document, we intend to find a way not only to control the variables that affect the image of a corporation or industry, but also to modify the effects generated by the eventual misinformation that the lack of knowledge or cultural paradigms have implanted in the conscience of the client or potential buyer.

This is how, in a practical way, we seek to deliver a tool that, based on the facts proven in the field, manages to demystify what has been mitigated and give value to the reality of the facts that the industry can provide.

Overview

This document aims to decipher from practice, how an organization or industry can positively affect their customers or stakeholders, generating influence and promoting the knowledge of the full truth about the benefits and characteristics of their product or service. The approach of an effective methodology that contributes firmly to the generation of alternatives of change, is a noble intention developed through the pages of this document, which deciphers from the theory to the practice the way how everything can be done better from the perspective of the influence and the raising of the truth.

At the end of the paper, it will be established which methodology best contributes to the transformation of consumer paradigms, through its actual application to a specific group of individuals.

Justification

The implementation of this work obeys the need to respond to a specific problem and is to find a tool or methodology that allows the correction of misperception held by the palm oil consumer about the Colombian palm oil industry in Ibagué, Colombia.

The absence of answers in this respect has ended up limiting the growth of the category and the limitation in production within an industry, which has an enormous potential for development, but which, due to misinformation and the permanent silences of the producers, has slowed down. This document ends up presenting a specific alternative that will allow the development, through research, of a methodology that will help improve the situation already presented and propose a method to alleviate the problem of misperception that has damaged the industry.

Objectives
General Objective

To propose an effective method for changing consumer's misconception regarding palm oil and the palm oil industry.

Specific Objectives

- To Identify which are the most effective methods for changing consumer's misperception.

- To apply a survey that allows to identify the effectiveness that two different methods have.

- To stablish which method is more effective in correcting the misperception related to palm oil and the palm oil industry.

Methodology

Given that the financial and human resources are limited, this investigation will only take place in a city of Colombia: Ibagué, Tolima. This city was chosen because of its particularly low growth of the palm oil consumption. The results of this investigation can be seen as a reference of the expected behavior of the consumer and the effectiveness of the selected method for correcting misperception in other cities of the country or for future investigations.

To reach the specific objectives it is necessary to realize the following activities:

1. Doing a theoretical research in order to recognize which methods to correct misperception are available and effective.
2. Choosing two of the methods with the end of applying them to focal groups.
3. Doing a research and choose the most appropriate sampling technic to obtain reliable results from the focal groups.

4. Designing a survey that allows to identify the effectiveness of each method when being tested on each focal group.

5. Doing the comparison of the results of the survey, previously tabulating and graphing the results.

6. Stablish which is the most effective method from a comparison of the results.

Literature Review

Misperception and misinformation have caused problems at many different levels and in many ways. Social networks have played an important role in making misinformation viral and therefore spreading misperception, ending with objective arguments, based on facts, upon which rumors or misperceptions wouldn't be supported. Lewandosky signals: "The widespread prevalence and persistence of misinformation in contemporary societies, such as the false belief that there is a link between childhood vaccinations and autism, is a matter of public concern" (Lewandowsky, S., Ecker, U. K., Seifert, C. M., Schwarz, N., & Cook, J. (2012). Misinformation and its correction: Continued influence and successful debiasing. Psychological Science in the Public Interest, 13(3), p106). This allows to state that misperception can harm society, industries, organizations, individuals, etc. to the point that the development of a strategy that allows the correction of misperception has been required.

In his article "In related news, that was wrong: The correction of misinformation through related stories functionality in social media" (Bode, L., & Vraga, E. K. (2015). Journal of Communication, 65(4), (619-638), Leticia points out how social media have played a fundamental role in the construction of collective misinformation and misperception. This has been a major challenge for those trying to bring users real and trustworthy information through social media.

Recently, a study aiming at evidencing the potential effect of consumer's attitudes towards environmental, health and social issues in Italy were reflected in their willingness to consume palm oil, (Capecchi, S., Amato, M., Sodano, V., & Verneau, F. (2019). Understanding beliefs and concerns towards palm oil: Empirical evidence and policy implications. Food Policy, 89, 101785). This highlights a real interest in understanding and resolving the problems associated with misinformation regarding palm oil and the palm oil industry. One of the most important conclusions of the authors Capecci, Sodano and Verneau states that: "Previous results suggest that well-educated Italian consumers –as mostly represented by the sample so far examined– are seriously concerned with the current discussion on palm oil consumption. Although the state of scientific knowledge about real effects of palm oil production and

consumption on health, environment and human rights might be further improved, given the value of the covariate Know, the general worry about palm oil topics is expressed in terms of personal beliefs, in addition to the intention to purchase, and interest in further information about the products" (Capecchi, S., Amato, M., Sodano, V., & Verneau, F. (2019). Understanding beliefs and concerns towards palm oil: Empirical evidence and policy implications. Food Policy, 89, 101785 p11). This scenario represents a challenge for the whole palm oil industry, which tries to educate about the reality, starting from facts and not from perceptions.

In 2016 Greenacre, Patrick, Yang, Jaeger, & Martin stated on their article "Correcting misperceptions about stigmatized ingredients: MSG. Food Quality and Preference" that: "In the context of MSG, our emotionally driven celebrity endorsement (by Heston Blumenthal) should be avoided as a corrective strategy because it is the least effective method of correcting misperceptions. This aligns with research by Van Kleef (Van Kleef, E., Ueland, Ø., Theodoridis, G., Rowe, G., Pfenning, U., Houghton, J., ... & Frewer, L. (2009). Food risk management quality: Consumer evaluations of past and emerging food safety incidents. Health, Risk & Society, 11(2), 137-163) which highlighted the importance of credible information sources, concise information and consistent messages in effective food communications.

It is then right to say that, according to the references found, there is a common and genuine interest in the palm oil industry and the global scenario in working towards debunking misperception and misinformation in order to give more importance to objective arguments based on facts.

Theoretical Framework

It is important to take into consideration two elements in the development of this document:

1. The theoretical research of the most effective methods for correcting consumer's misperception.
2. The investigation of appropriate sampling techniques in order to obtain reliable results from focal groups.

Numerous methods for correcting misperception have been studied and the following have been listed as the most relevant ones, as pointed out by Lewandowsky, Ecker, Seifert, Schwarz, & Cook in their book "Misinformation and its correction: Continued influence and successful debiasing. Psychological Science in the Public Interest":

Figure 1
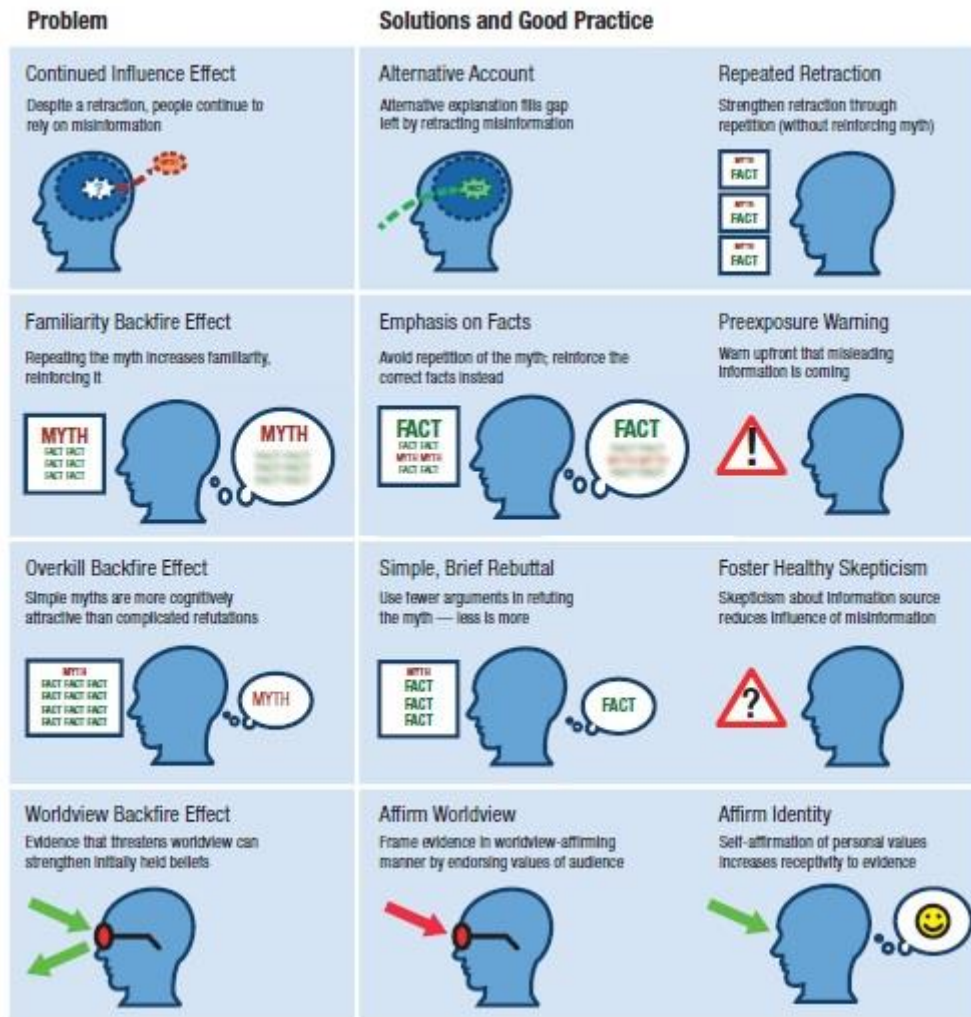
Source: Lewandowsky, S., Ecker, U. K., Seifert, C. M., Schwarz, N., & Cook, J. (2012)

In addition to the figure, the author signals the manner in which each type of misperception should be addressed in the process of correcting it:

- "Consider what gaps in people's mental event models are created by debunking and fill them using an alternative explanation.

- Use repeated retractions to reduce the influence of misinformation, but note that the risk of a backfire effect increases when the original misinformation is repeated in retractions and thereby rendered more familiar.

- To avoid making people more familiar with misinformation (and thus risking a familiarity backfire effect), emphasize the facts you wish to communicate rather than the myth.

- Provide an explicit warning before mentioning a myth, to ensure that people are cognitively on guard and less likely to be influenced by the misinformation.

- Ensure that your material is simple and brief. Use clear language and graphs where appropriate. If the myth is simpler and more compelling than your debunking, it will be cognitively more attractive, and you will risk an overkill backfire effect.

- Consider whether your content may be threatening to the worldview and values of your audience. If so, you risk a worldview backfire effect, which is strongest among those with firmly held beliefs. The most receptive people will be those who are not strongly fixed in their views.

- If you must present evidence that is threatening to the audience's worldview, you may be able to reduce the worldview backfire effect by presenting your content in a worldview-affirming manner (e.g., by focusing on opportunities and potential benefits rather than risks and threats) and/or by encouraging self-affirmation.

- You can also circumvent the role of the audience's worldview by focusing on behavioral techniques, such as the design of choice architectures, rather than overt debiasing."

(Lewandowsky, S., Ecker, U. K., Seifert, C. M., Schwarz, N., & Cook, J. (2012). Misinformation and its correction: Continued influence and successful debiasing. Psychological Science in the Public Interest, 13(3), 106-131. P 123)

With respect to the sampling technics it is fundamental to pay attention to the size of the sample in the definition of the results of the investigation. For this reason, as pointed out by De Leeuw, Hox, & Dillman, the following criteria was taken into consideration:

Figure 2
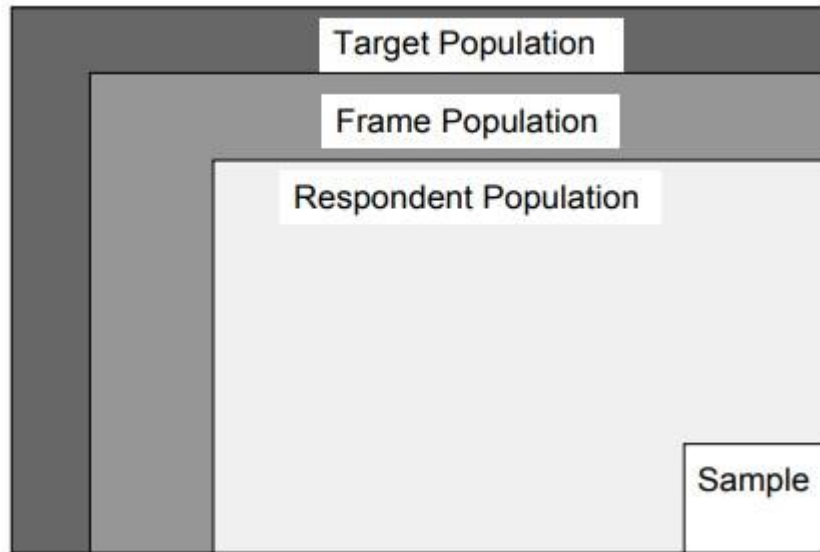
Source: De Leeuw, E. D., Hox, J., & Dillman, D. (2012)

Taking into consideration the criteria already pointed out and the importance of the choice, we go on to calculate the sample size with the following formula:

Figure 3

$$n = \frac{Z \times p \times q \times N}{e^2 \times (N-1) + Z^2 \times p \times q}$$

N = Representa la población finita
e = Es el error de muestreo que puede oscilar entre 5% a 10% donde se tomará para el caso mínimo: 5%.
p y q = Representan los porcentajes de ocurrencia de un suceso, donde su suma es 100%. Cuando no se tiene un estudio piloto previo se consideran 50% y 50%, p y q respectivamente.
Z = Valor teórico que varía de acuerdo al nivel de confianza escogido. Para un nivel de confianza del 99% el Z crítico es 9, si el nivel de confianza es del 95% el Z crítico es 4.

Source: Herrera, M. (2011)

This formula is used for the calculation of the sample size of a finite population, such as Ibagué, the chosen population.

Results of the survey (Excel)
Discussion of results

As a first measure, the sample size was calculated using the equation for sample calculation for finite populations:

Figure 4

$$n = \frac{Z \times p \times q \times N}{e^2 \times (N-1) + Z^2 \times p \times q}$$

Source: Herrera, M. (2011)

Table 1

VARIABLES	VALUE
N	529.635 (Source: DANE 2019)
e	5%
Z	1,64
Confidence level	*90%*
p	*6%*
q = 1 - p	*0,94*

Source: Correa 2020

$$n = \frac{(1,64)^2 * (0,06) * (0,94) * (529.635)}{(0,05)^2 * (529.635 - 1) + (1,64)^2 * (0,06) * (0,94)}$$

$$n = 60 \ Surveys$$

It is then estimated that a total of 60 pre-post surveys should be conducted as follows:

1. Thirty (30) surveys will be applied to individuals chose randomly in order to show their perception of palm oil and its benefits, so that later, using an emotional stimulus, the misperception that individuals may have about palm oil can be corrected. The level of change on misperception is to be measured by comparing answers before and after the stimulus takes place.
   - Each individual will be given a doughnut fried in palm oil and then the survey will be applied again to evaluate changes in the perception of palm oil.
2. Thirty (30) surveys will be applied to a different group of individuals chose randomly so that their perception of palm oil and its benefits can be shown, so that later, through the use of a rational stimulus, the misperception that individuals may have about palm

oil can be corrected. As before, the level of change in misperception is to be measured by comparing answers before and after the stimulus.

- The rational stimulus consisted in exposing respondents to three facts about palm oil. These where: 1) Palm oil is the richest of all vegetable oil in vitamin E and beta carotenoids (Rincón, 2009). 2) In Colombia, 80% of the expansion in cultivation of oil palm between 2002 and 2008 occurred in previously intervened lands instead of natural areas (which include forests and other natural environments) (Furumo, 2017). 3) Among Colombian rural communities that have suffered armed conflict, those that have the presence of the oil palm industry enjoy and GDP per capita 30% bigger than those that doesn't (DNP, 2016).

The intention of using the two methodologies is to be able to compare in similar scenarios which methodology is better or more effective in terms of correcting misperception.

As the work carried out was defined on two different groups of individuals, two analyses were made to allow a final comparison that would enable accurate conclusions to be drawn.

Emotional stimulus

For the group of people who participated in this methodology, it was identified that 37% did not know about palm oil, while the remaining 63% claimed to know about the product.

Figure 5

Source: Correa 2020

It is now important to point out the importance of the results presented and how they give an idea of what can happen at the city level regarding the knowledge of palm oil within the municipality. It is also clear that the knowledge indicated refers to conceptual knowledge and not necessarily interaction or use of the product, so a more exact definition of such knowledge is needed.

In fact, the following question makes it clear that "knowing" the product does not necessarily mean using it. Only 30% of those who know about palm oil say they have used it, leaving 70% of potential users who know about it, but for some reason claim not to have used it. This could suggest that the consumer is not informed about the presence of palm oil in the products they consume that contain palm oil. As suggested by the non-profit cooperative ethical consumer, it is estimated that over 50% of products in supermarkets contain palm oil (ethical consumer, 2019).

Figure 6
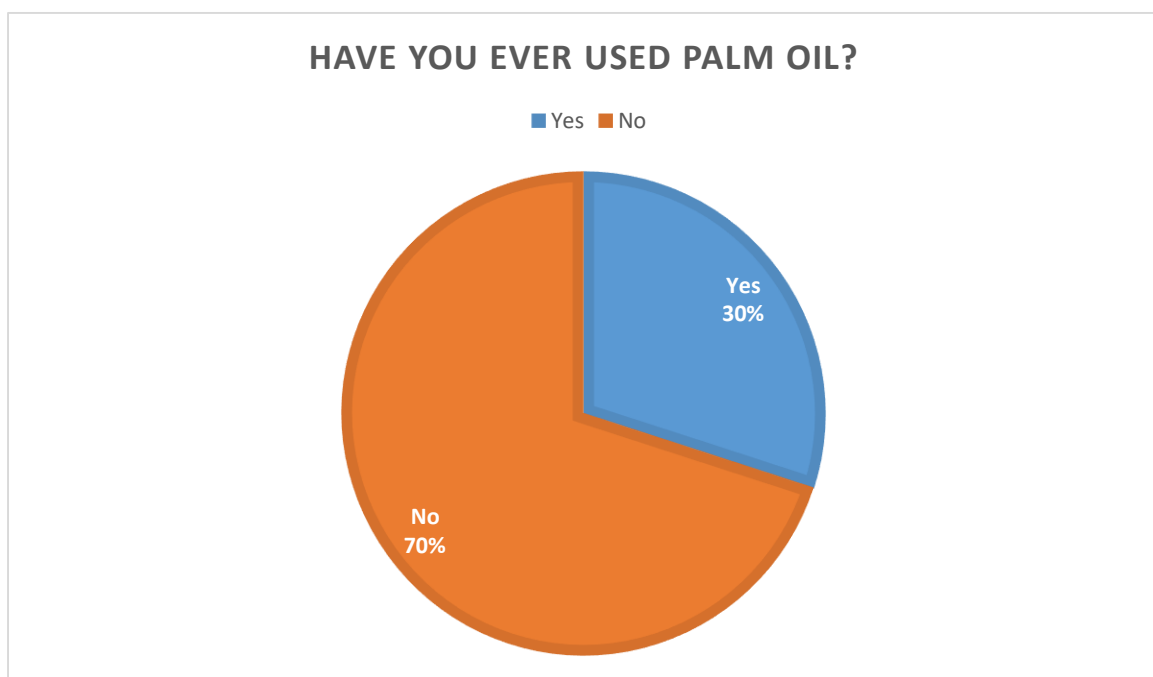
Source: Correa 2020

A possibility of action for the correction of the misinformation, as this document seeks, is then opening up.

What follows is intended to show a habit of use, which in turn allows to show an associated consumption habit.

Figure 7

Do you usually use palm oil for your preparations at home? (cooking)

■ Yes ■ No

Source: Correa 2020

As Figure 7 shows, of the total number of individuals who have ever used palm oil (30%), only 10% use it regularly in cooking, which results in an obvious opportunity for consumption, to the extent that the methodology for correcting misperception has the expected effect.

Subsequently, it is evident that, although not all individuals have used palm oil, there is a high willingness to use it in the future, as shown in the figure below.

Figure 8

WOULD YOU BE WILLING TO BUY PALM OIL FOR YOUR PREPARATIONS AT HOME? (COOKING)

Yes ■ No

17%

83%
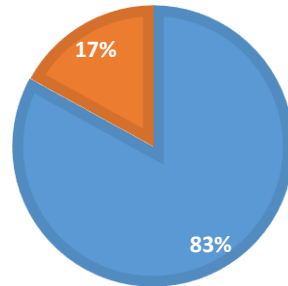
Source: Correa 2020

Thus, we have a scenario that is already favorable for the implementation of the emotional influence method, with 83% of willingness to buy the product.

An important element in the analysis is the perception of how healthy palm oil is or is not considered to be.

Figure 9

HOW HEALTHY DO YOU CONSIDER PALM OIL?

10% — NOT AT ALL
33% — A LITTLE
57% — PRETTY MUCH
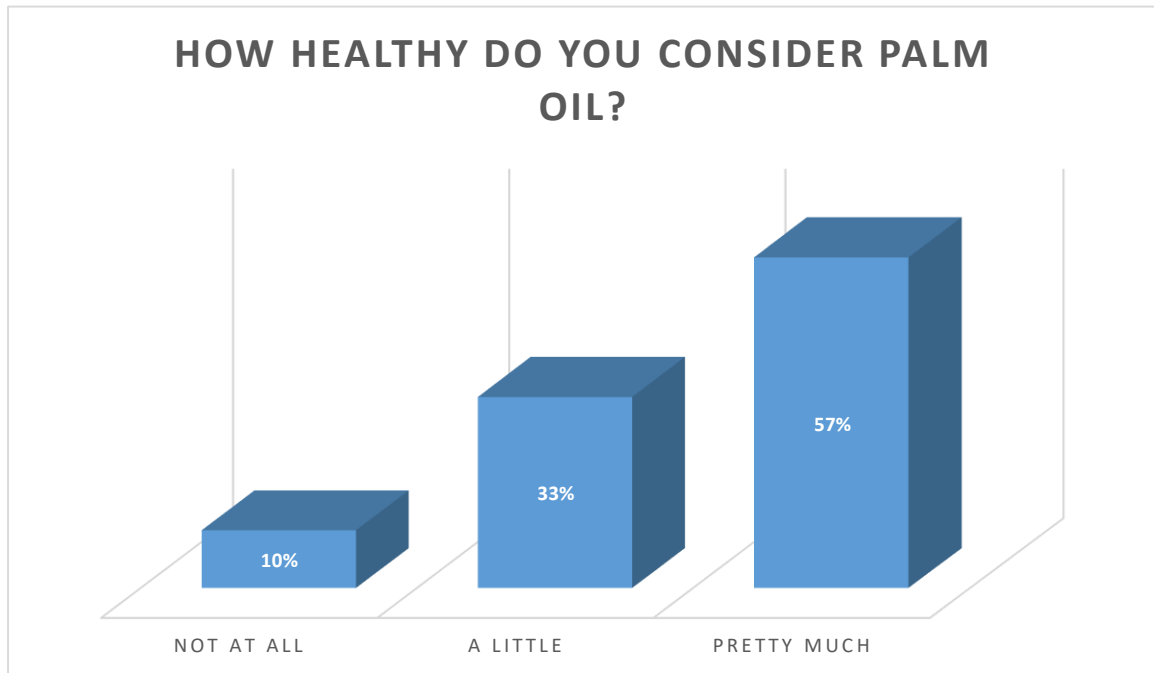
Source: Correa 2020

While 57% of the population considers palm oil to be healthy, the remaining 43% may have some type of information or pre-concept regarding the product that does not allow them to identify it as very healthy, which again allows a scenario of opportunity for influence that must now be deciphered and addressed by the methodology.

The following figure shows how the perception of sustainability of the industry is not seen in a very good light, since 53% of those surveyed consider that it does not have the necessary elements to be considered a sector with environmentally sustainable practices, building even more inputs to show how to correctly inform the population about the issue.

Figure 10

DO YOU CONSIDER THAT THE PALM OIL INDUSTRY IN COLOMBIA IS ENVIRONMENTALLY SUSTAINABLE?

Do you consider that the palm oil industry is environmentally sustainable?

NOT AT ALL	A LITTLE	PRETTY MUCH
10%	33%	57%

Source: Correa 2020

Bearing in mind that part of the palm oil production process involves the participation of local farmers in the process, it is important for the creation of this document to understand what perception the respondents have of the benefits received by the farmers who participate in the production process.

Figure 11
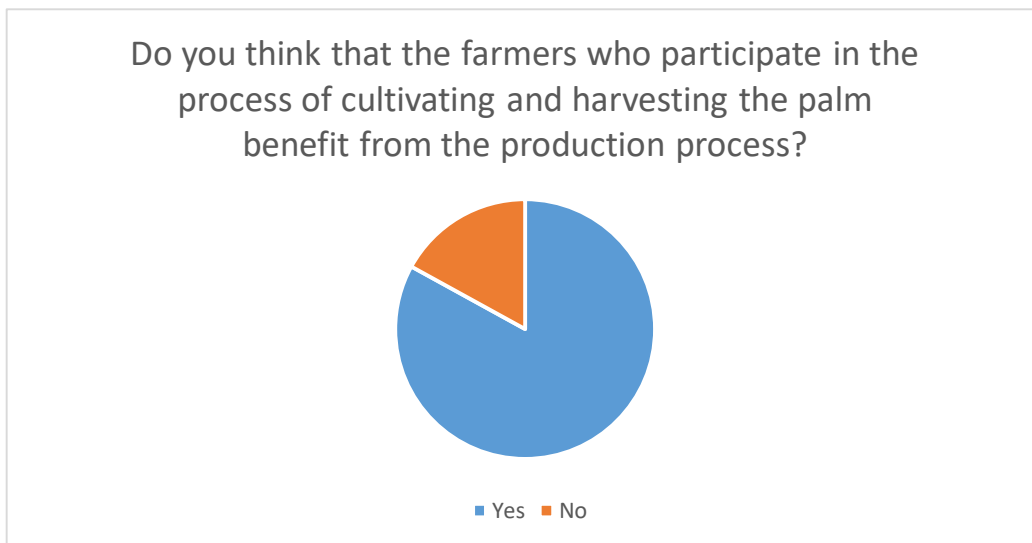
Do you think that the farmers who participate in the process of cultivating and harvesting the palm benefit from the production process?

■ Yes ■ No

Source: Correa 2020

As shown in Figure 11, 83% of the population considers that the farmers who participate in the oil palm production process have an incidence and a place within the chain, in economic terms, which means an acceptable perception by the population.

As shown in Figure 11, 83% of the population considers that the farmers who participate in the oil palm production process have an incidence and a place within the chain, in economic terms, which means an acceptable perception by the population.

Figure 12
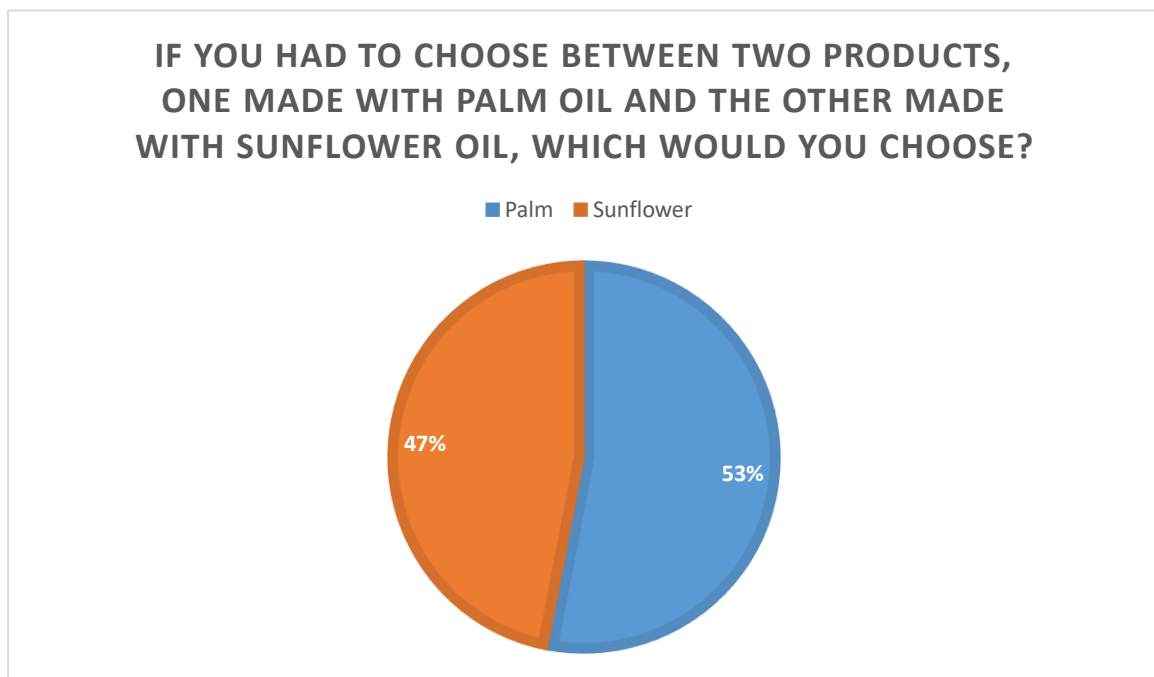
Source: Correa 2020

Figure 13

IF AT THE TIME OF PURCHASING THE PRODUCT, YOU NOTICE THAT THE PRODUCT MADE WITH PALM OIL IS 10% CHEAPER, WILL YOUR PURCHASE DECISION CHANGE?
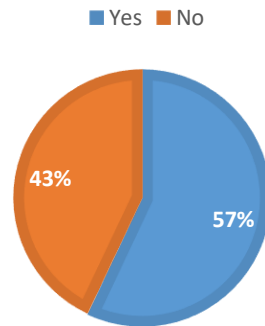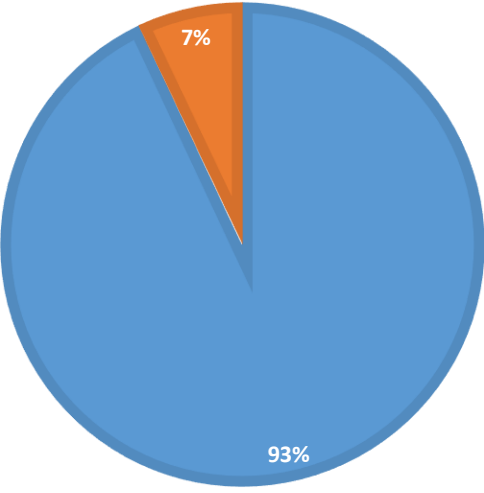
Source: Correa 2020

Although figure 12 shows a very slight difference in favour of the preference for palm oil, the possibility of improving this perception is evident, since of the 47% of respondents who chose sunflower oil, 57% would change their purchase intention with a price differential of 10%.

Once the diagnosis of the perception of the respondents, with respect to palm oil and its industry, we proceed to apply the emotional method to change some positions on the part of the respondents, offering them perfectly prepared fritters with palm oil.

After notifying the respondents of how the doughnuts were prepared, the surveys are applied again, with the following changes in perception.

Table 2

PREGUNTA	RESULT	VARIATIONS
Do you know palm oil?	**DO YOU KNOW PALM OIL?** ■ Yes ■ No 7% 93%	As a first measure, it is evident that there was a change in the knowledge of most respondents regarding palm oil, going from 37% ignorance to only 7% ignorance of palm oil.

Have you ever used palm oil?	HAVE YOU EVER USED PALM OIL? ■ Yes ■ No 40% 60%	Due to the type of intervention made to the respondents, it is natural that this question has not been modified at all, since, although the respondents interacted with the product, there was a direct manipulation suggesting a use of the product on their own.

Do you usually use palm oil for your preparations at home? (kitchen)	DO YOU USUALLY USE PALM OIL FOR YOUR PREPARATIONS AT HOME? (KITCHEN) ■ Yes ■ No 23% 77%	The consumption habit is also not affected by the intervention, since the effect on the consumption habit will only become evident later on and may be recorded in any subsequent surveys.
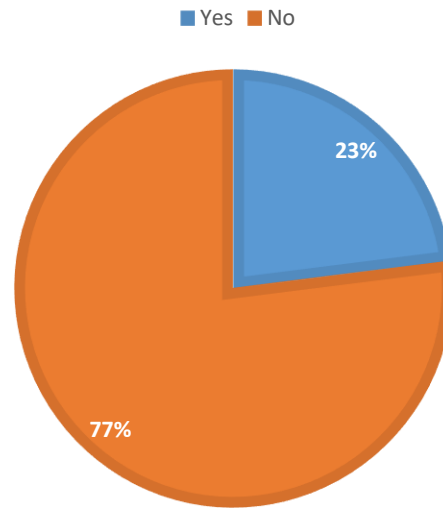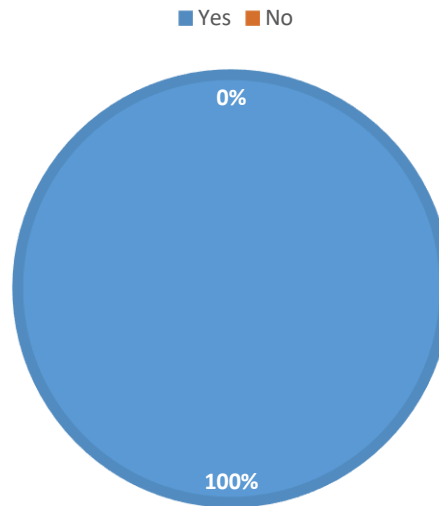
Would you be willing to buy palm oil for your preparations at home? (cooking)	WOULD YOU BE WILLING TO BUY PALM OIL FOR YOUR PREPARATIONS AT HOME? (COOKING) ■ Yes ■ No 0% 100%	This variation is key and very telling for the methodology applied, since it suggests a 100% effectiveness in transforming the willingness to buy, considering that 17% of the respondents were not willing to buy palm oil for their preparations in the kitchen and now 100% would be willing to use it for their preparations at home.

| How healthy do you consider palm oil? Please choose the option closest to your criteria | **HOW HEALTHY DO YOU CONSIDER PALM OIL?**

■ How healthy do you consider palm oil?
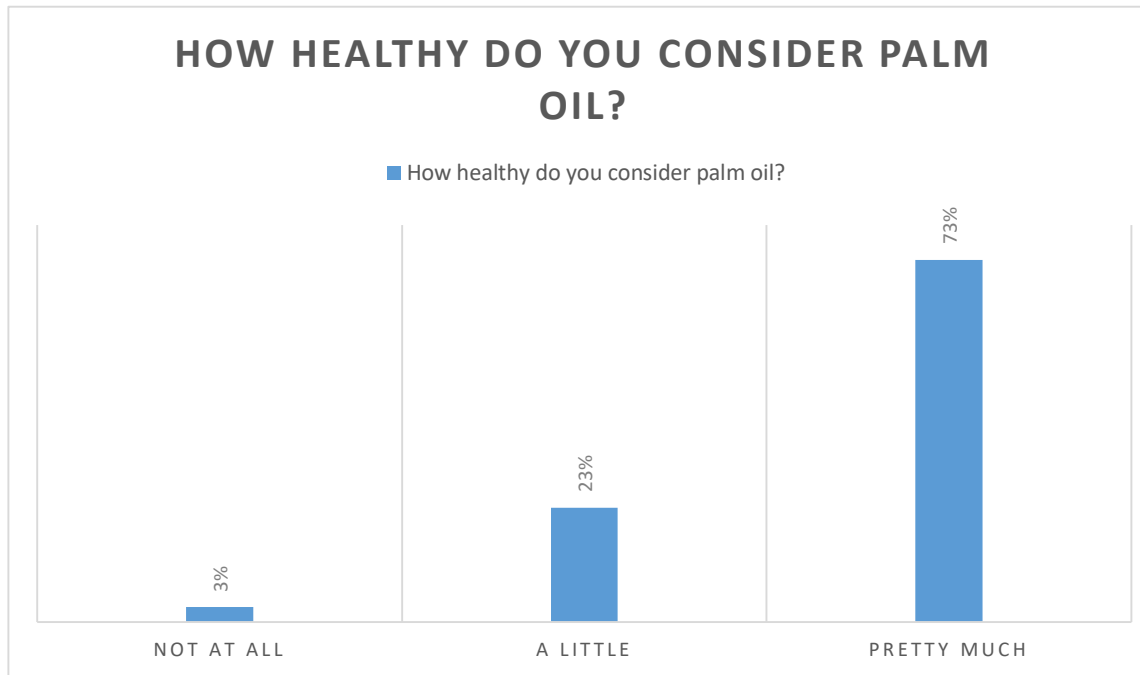
NOT AT ALL — 3% A LITTLE — 23% PRETTY MUCH — 73% | Although the experience with tasting doughnuts did not involve any rational discussion regarding the origin of the oil, its mere interaction with the product ends up improving the concept of health of the product, improving by 20 percentage points the concept that the oil is very good for health. This may be a cause of the increase in familiarity with the product. |

| **How sustainable do you think the palm oil industry in Colombia is?** | **HOW SUSTAINABLE DO YOU THINK THE PALM OIL INDUSTRY IN COLOMBIA IS?**
 ■ How sustainable do you think the palm oil industry in Colombia is?
 NOT AT ALL 7%   A LITTLE 43%   PRETTY MUCH 50% | Another element that is not directly affected during the emotional experience is the environmental awareness of the palm industry in Colombia, for which reason it is evident that there are no significant changes in the distribution of the results. It goes from 47% of those surveyed who consider the industry to be sustainable, to 50%, only 3 percentage points that also affect those who initially, with a 10% participation, considered the industry to be not at all sustainable, remaining now at 7%. |
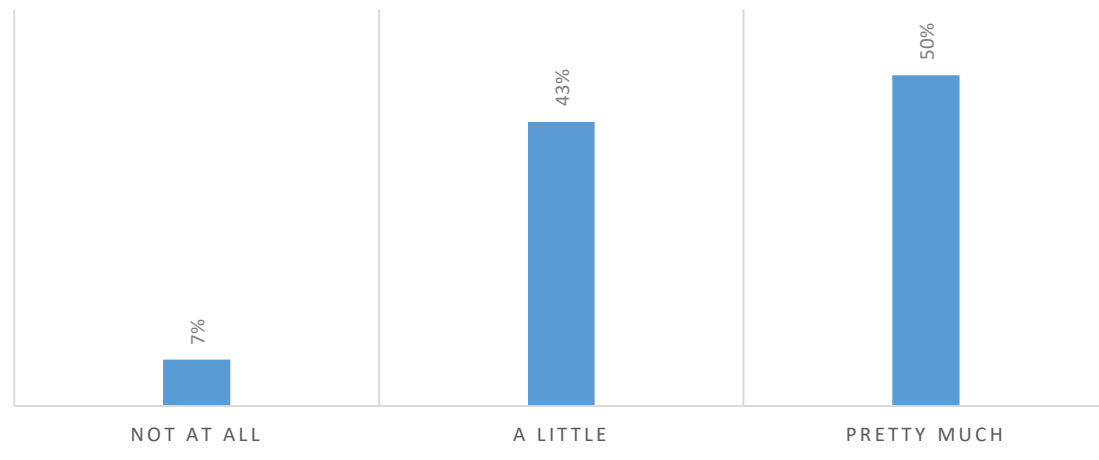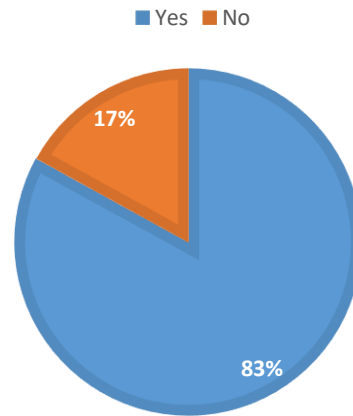
Do you think that the farmers who participate in the process of cultivating and harvesting the palm benefit from the production process?	**DO YOU THINK THAT THE FARMERS WHO PARTICIPATE IN THE PROCESS OF CULTIVATING AND HARVESTING THE PALM BENEFIT FROM THE PRODUCTION PROCESS?** ■ Yes ■ No 17% 83%	This item does not have any variation, since it was not directly influenced in this matter within the exercise of emotional intervention.
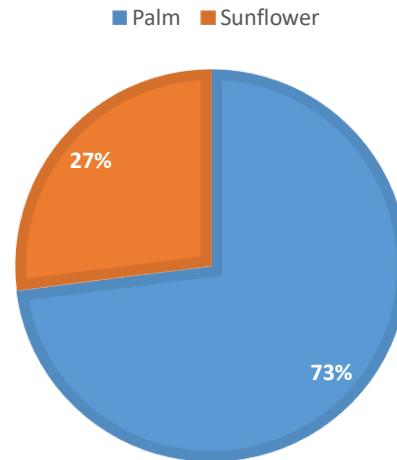
If you had to choose between two products, one made with palm oil and the other made with sunflower oil, which would you choose?	**IF YOU HAD TO CHOOSE BETWEEN TWO PRODUCTS, ONE MADE WITH PALM OIL AND THE OTHER MADE WITH SUNFLOWER OIL, WHICH WOULD YOU CHOOSE?** ■ Palm ■ Sunflower 27% 73%	It is interesting how from the emotional experience experienced by the respondents, their purchase intention changed depending on the characteristics of the product and the effect of taste on the result (doughnut). The increase of 20 percentage points in the purchase intention of the palm oil is a testimony to the impact that the experience had on the respondents after what they had experienced.

If at the time of purchasing the product, you notice that the product made with palm oil is 10% cheaper, will this change your purchasing decision?	**IF AT THE TIME OF PURCHASING THE PRODUCT, YOU NOTICE THAT THE PRODUCT MADE WITH PALM OIL IS 10% CHEAPER, WILL THIS CHANGE YOUR PURCHASING DECISION?** Yes No 25% 75%	Of the 27% of respondents who are not willing to change their purchase intention because of the emotional consumption experience, 75% would do so because of a 10% price differential, which is 18 percentage points better than the initial results.

Source: Correa 2020

Rational Method

This methodology has different implications from what was done in the emotional methodology, so the impact on respondents is different.

Since the respondents are also different, it is important to make a presentation of the baseline or initial state of the participants.

Figure 14

DO YOU KNOW PALM OIL?

Yes No

37%

63%
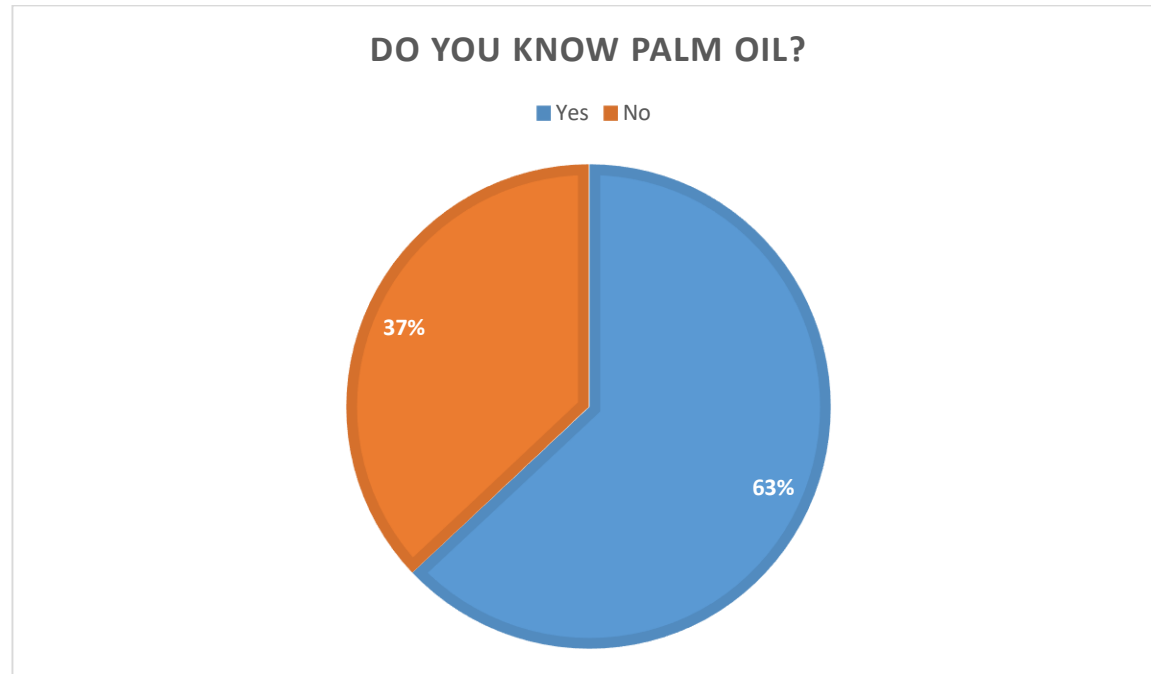
Source: Correa 2020

As a starting point, it is evident that those involved have a majority knowledge of palm oil, with a 63% recognition of the product.

Figure 15

HAVE YOU EVER USED PALM OIL?
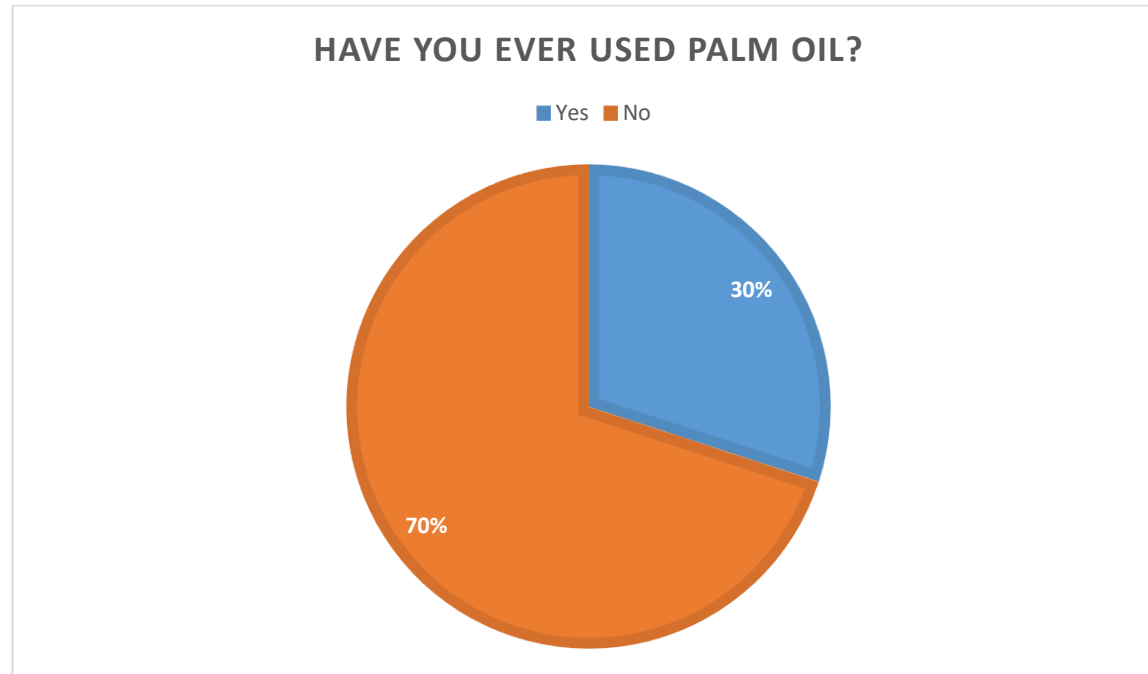
Source: Correa 2020

From this point, a very special feature of the respondents is evident, suggesting that while most know about palm oil, only 30% have had any type of interaction or use with palm oil, leaving a large majority who, although they know about the product to some extent, have not made use of it for one reason or another.

On the other hand, the definition of the use of the product is not sufficient, so it has been determined whether its use is habitual, which would mean a different context for the development of the intervention.

Figure 16

DO YOU USUALLY USE PALM OIL FOR YOUR PREPARATIONS AT HOME? (COOKING)
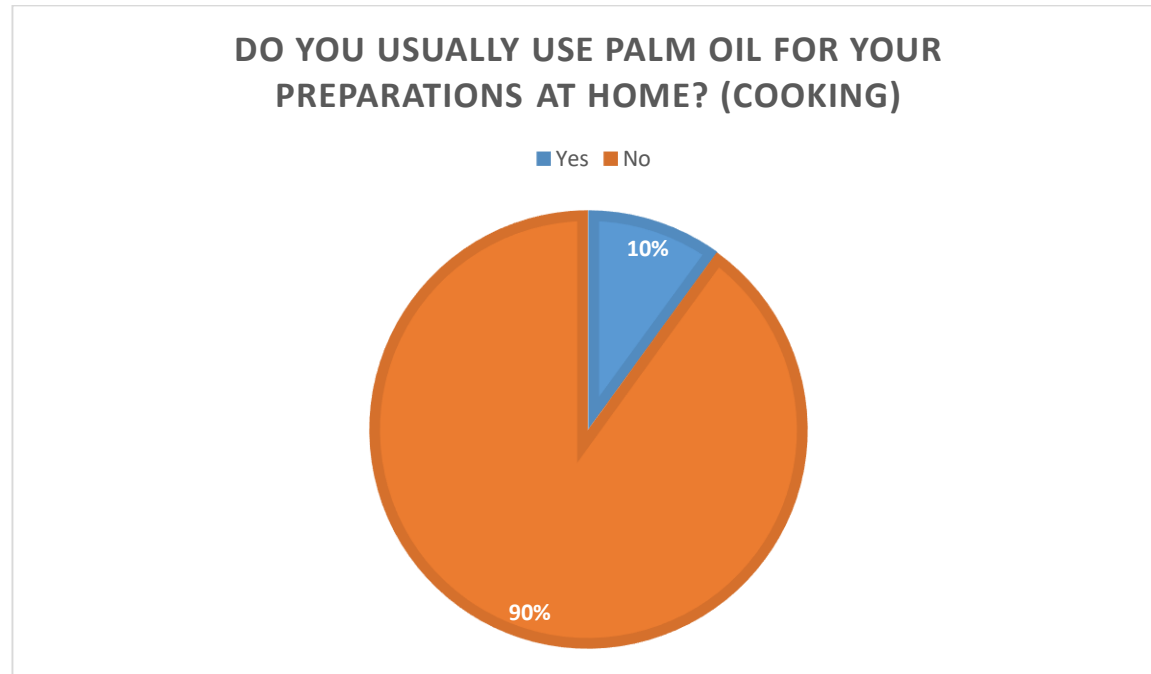
Source: 2020

Now it is important to note that the respondents who usually use palm oil as a usual alternative, is limited to 10% of those intervened, significantly increasing the possibility of correcting the misperception or prejudice of individuals who participated in the exercise.

Figure 17

WOULD YOU BE WILLING TO BUY PALM OIL FOR YOUR PREPARATIONS AT HOME? (COOKING)

■ Yes ■ No

7%

93%
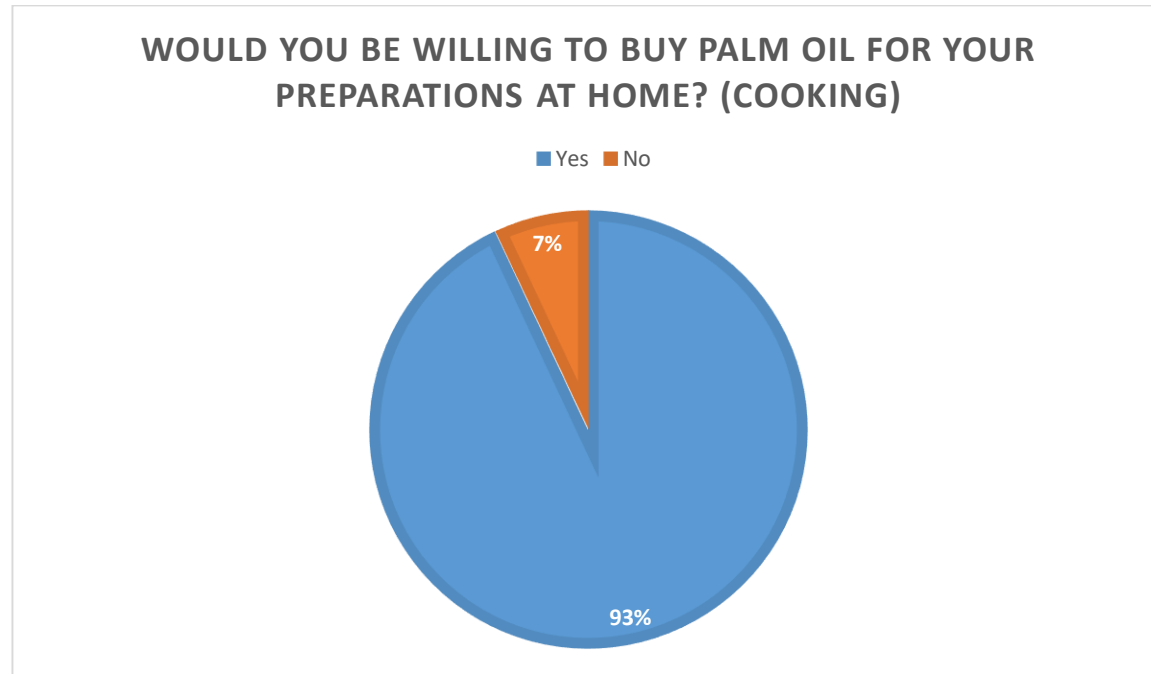
Source: Correa 2020

Although the results presented so far suggest a low acquisition of the product, there is a 93% willingness to purchase by the participants of the exercise, allowing us to understand that there is an important opportunity for correcting the misperception, given the willingness to change.

Figure 18

HOW HEALTHY DO YOU CONSIDER PALM OIL?

■ How healthy do you consider palm oil?

3%	60%	37%
NOT AT ALL	A LITTLE	PRETTY MUCH
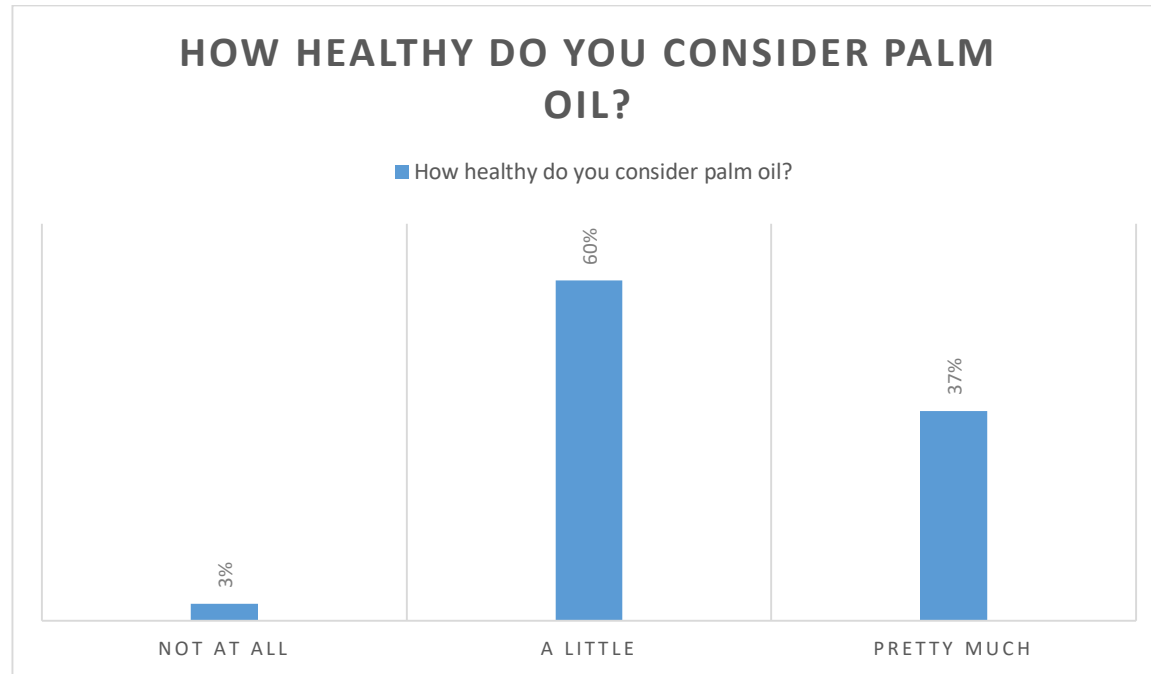
Source: Correa 2020

At this point it can be identified that most individuals consider palm oil to be unhealthy or not at all, with a joint weighting of 63%, leaving those who consider it to be very healthy, with 37% participation, and a huge challenge in the intervention, which can mean a challenge for the rational methodology.

Figure 19

How sustainable do you think the palm oil industry in Colombia is?

	NADA	POCO	MUCHO
Considera que la industria palmera en Colombia es ambientalmente	17%	50%	33%

HOW SUSTAINABLE DO YOU THINK THE PALM OIL INDUSTRY IN COLOMBIA IS?

■ How sustainable do you think the palm oil industry in Colombia is?

17%	50%	33%
NOT AT ALL	A LITTLE	PRETTY MUCH
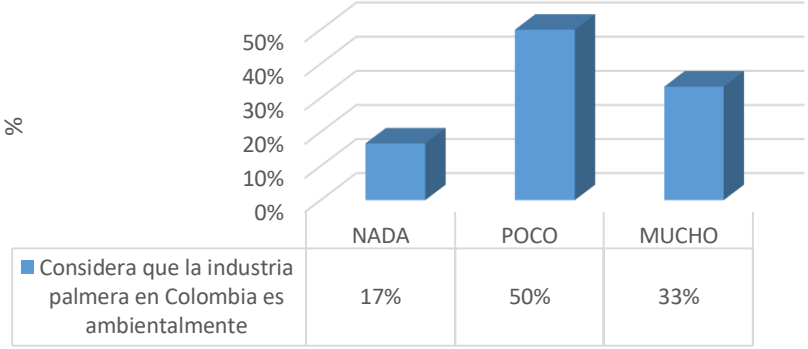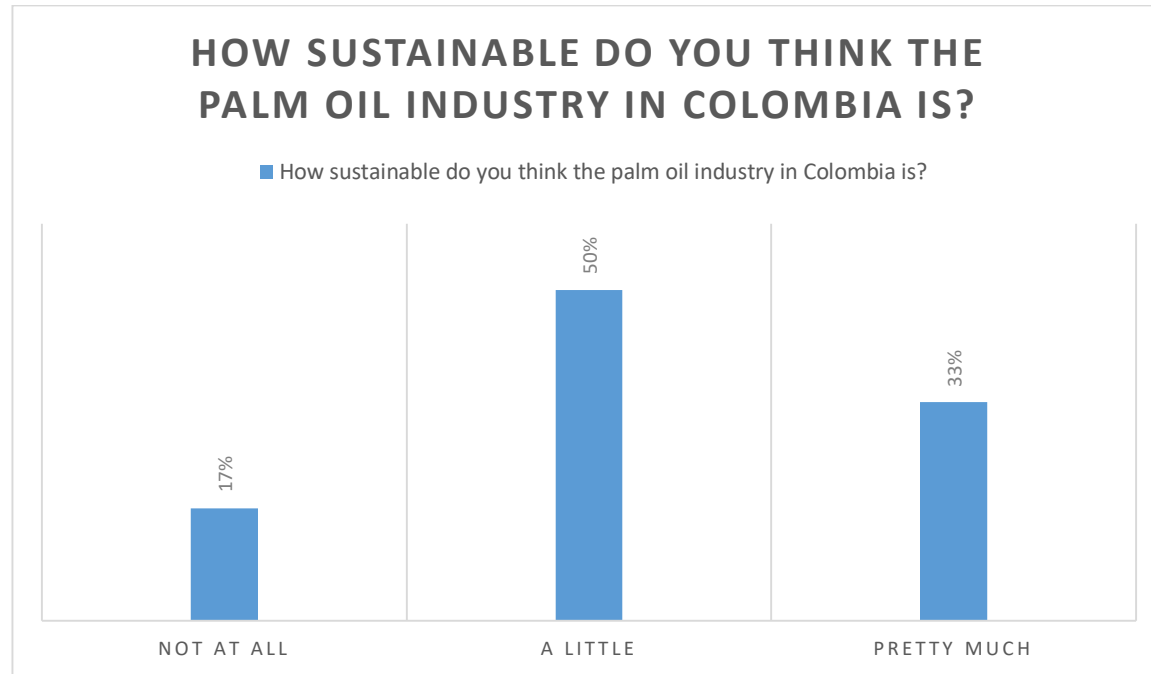
Source: Correa 2020

Again, the perception of the industry is not very favourable, with a combined 67% of respondents believing that environmental management in the industry is not at all or not very sustainable and only 33% of participants considering the work done in terms of environmental management as positive. It is important to point out that the origin of the judgment is unknown, so rational intervention should make it possible to clarify environmental issues in a clear and concise manner.

The palm oil value chain is not well known, but the purpose of the following question is to define what the perception of those involved in the process is, regarding the benefit received by the farmers within the chain.

Figure 20

DO YOU THINK THAT THE FARMERS WHO PARTICIPATE IN THE PROCESS OF CULTIVATING AND HARVESTING THE PALM BENEFIT FROM THE PRODUCTION PROCESS?

■ Yes ■ No

43%

57%
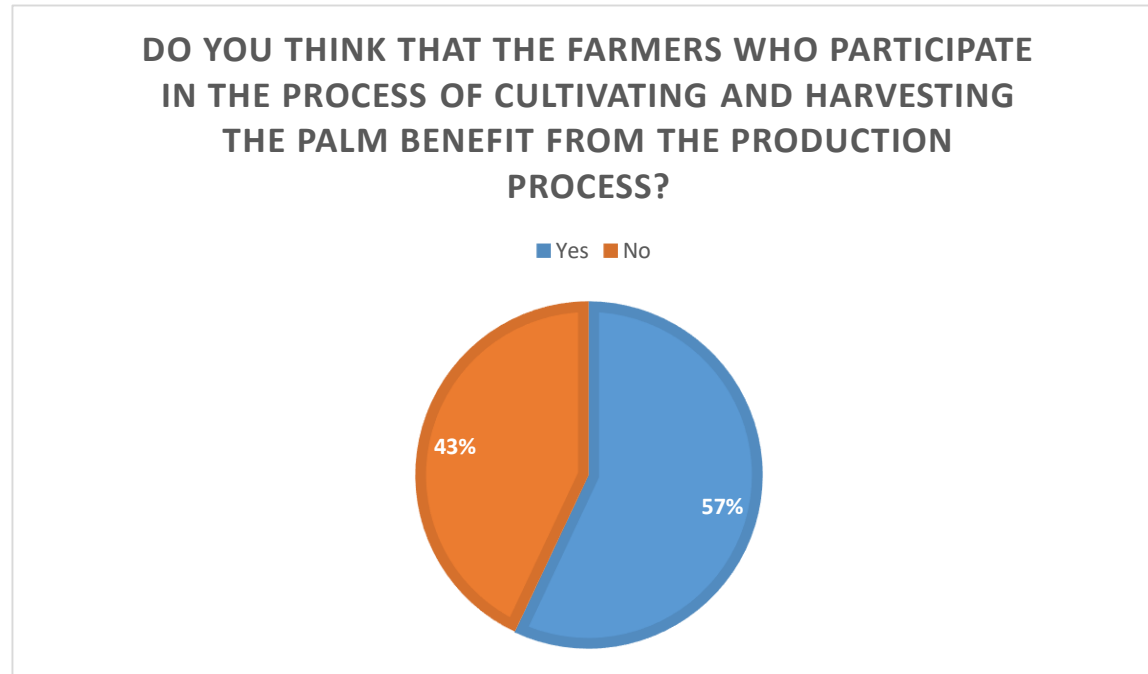
Source: Correa 2020

As shown in Figure 20, the criteria is divided, although the majority (57%) considers that if there is benefit on the part of the farmer in the process of cultivation and harvesting, this difference is not much greater than the position that they consider that there is no benefit within the process. What this suggests, as expected, is that there is no clarity regarding the value chain and the disposition of monetary benefits within it.

Figure 21

IF YOU HAD TO CHOOSE BETWEEN TWO PRODUCTS, ONE MADE WITH PALM OIL AND THE OTHER MADE WITH SUNFLOWER OIL, WHICH WOULD YOU CHOOSE?
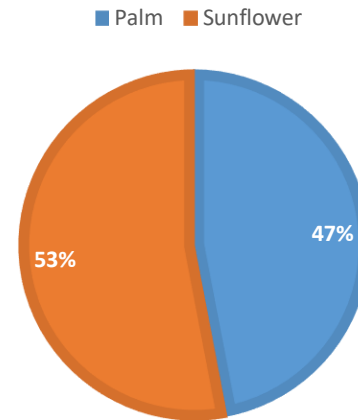
Source: 2020

There is now a divided position regarding the use of the product, indicating that 53% of respondents prefer sunflower oil in the preparation of some product, compared to the remaining 47% who prefer palm oil. This shows a market with growing availability and without any marked differences in purchasing preferences.

Figure 22

IF AT THE TIME OF PURCHASING THE PRODUCT, YOU NOTICE THAT THE PRODUCT MADE WITH PALM OIL IS 10% CHEAPER, WILL THIS CHANGE YOUR PURCHASING DECISION?
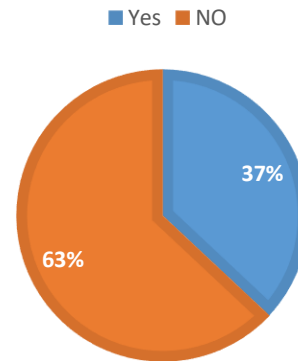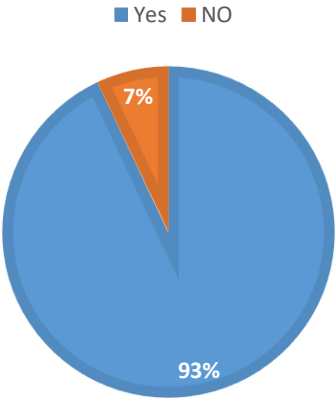
Source: Correa 2020
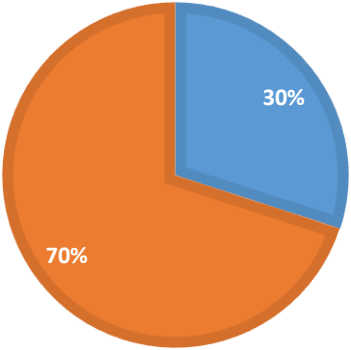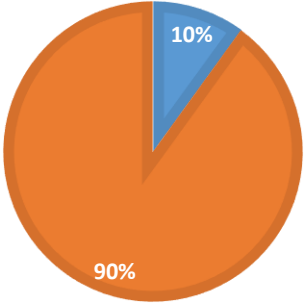
Of the aforementioned majority who prefer sunflower oil, it is important to note that 37% would be willing to change their purchase preference because of a 10% price differential, adding more alternatives to the development of the rational experience.

After the application of the initial surveys, we proceed with the informative talk and rational intervention to the respondents with the following specific elements presented based on the document of May and Nesaretnam (2014), which it points out:

1. Palm oil is the richest of all vegetable oil in vitamin E and beta carotenoids (Rincón, 2009).

2. In Colombia, 80% of the expansion in cultivation of oil palm between 2002 and 2008 occurred in previously intervened lands instead of natural areas (which include forests and other natural environments) (Furumo, 2017).

3. Among Colombian rural communities that have suffered armed conflict, those that have the presence of the oil palm industry enjoy and GDP per capita 30% bigger than those that doesn't (DNP, 2016).

Table 3

QUESTION	RESULT	VARIATIONS
Do you know palm oil?	DO YOU KNOW PALM OIL? ■ Yes ■ NO — 7%, 93%	It is clear at this point that rational intervention allowed an increase of 30 percentage points in the knowledge or recognition of palm oil because of the presentation made during the year.

Have you ever used palm oil?	**HAVE YOU EVER USED PALM OIL?** ■ Yes ■ NO 30% 70%	At this point, no change in the results occurred or was expected, since only in some eventual survey after the complete intervention exercise could a use of palm oil be evidenced. As the survey was carried out immediately after the exercise, it is not possible to show such a change.
Do you usually use palm oil for your preparations at home? (cooking)	**DO YOU USUALLY USE PALM OIL FOR YOUR PREPARATIONS AT HOME? (COOKING)** ■ Yes ■ NO 10% 90%	As recorded, there was also no change associated with the use of palm oil in the lives of the people involved in the process.

Would you be willing to buy palm oil for your preparations at home? (cooking)	**WOULD YOU BE WILLING TO BUY PALM OIL FOR YOUR PREPARATIONS AT HOME? (COOKING)** ■ Yes ■ NO 4% 96%	With respect to this item, a variation of 3 percentage points is noted in the results obtained, with an increase from 93% to 96% in the intention to purchase palm oil, making the scenario even more favorable for the industry.
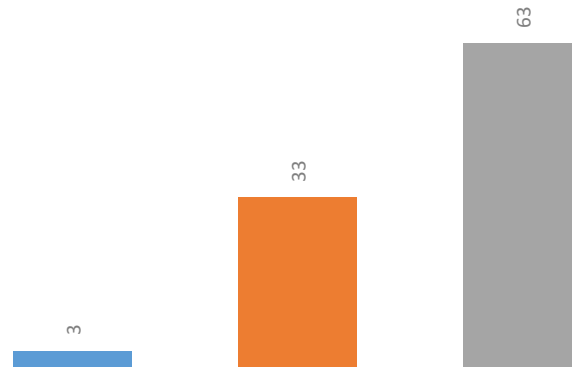
How healthy do you consider palm oil?	**HOW HEALTHY DO YOU CONSIDER PALM OIL?** ■ Not at all ■ A little ■ Pretty much 3 33 63	The influence on how healthy palm oil is considered was very important, going from 37% to 63%, with an increase of 26 percentage points of growth in those who consider the oil very healthy.
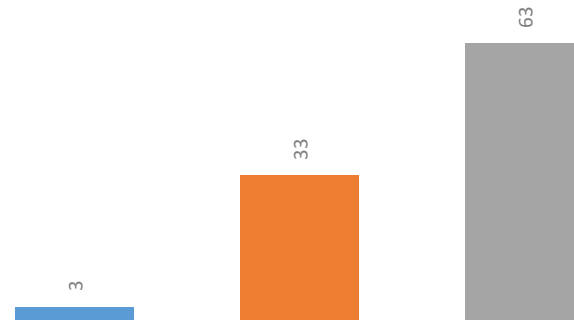
	DO YOU CONSIDER THE PALM INDUSTRY IN COLOMBIA TO BE ENVIRONMENTALLY SUSTAINABLE?	It is important to note that while the industry's perception of sustainability is not entirely favourable, it does demonstrate a significant improvement in this criterion: An increase of 30 percentage points in the criterion of those who consider the industry very environmentally sustainable, reaching 63% and decreasing from 17% to 3% for those who do not consider the industry environmentally sustainable.
Do you consider the palm industry in Colombia to be environmentally sustainable?	■ Not at all ■ A little ■ Pretty much 3 33 63	
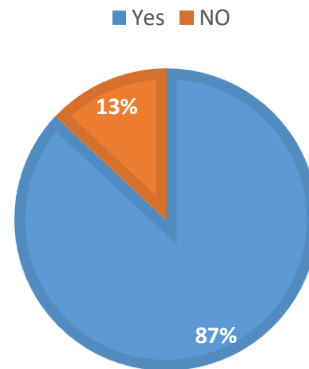
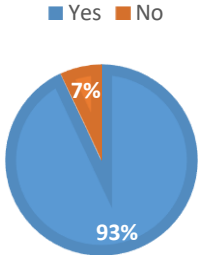|		
Do you think that the farmers who participate in the process of cultivating and harvesting the palm benefit from the production process?	**DO YOU THINK THAT THE FARMERS WHO PARTICIPATE IN THE PROCESS OF CULTIVATING AND HARVESTING THE PALM BENEFIT FROM THE PRODUCTION PROCESS?** ■ Yes ■ NO 13% 87%	It is interesting at this point to see how the rational approach to individuals demonstrates a significant paradigm shift that denotes that only 13% of those surveyed consider that farmers do not perceive any benefit within the industry's cultivation and harvesting process, generating a considerable shift of 30 percentage points of adjustment in favor of the industry.

| If you had to choose between two products, one made with palm oil and the other made with sunflower oil, which would you choose? | **IF YOU HAD TO CHOOSE BETWEEN TWO PRODUCTS, ONE MADE WITH PALM OIL AND THE OTHER MADE WITH SUNFLOWER OIL, WHICH WOULD YOU CHOOSE?**

■ Palm ■ Sunflower
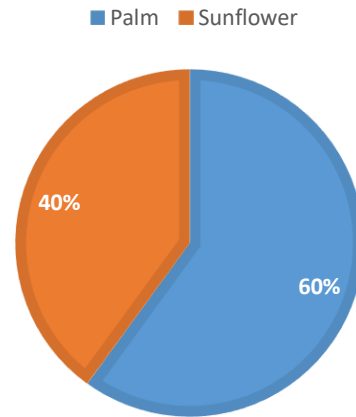
40%   60% | The rational influence exerted on the sample, showed an increase from 47% to 60% of those who prefer palm oil as when thinking about choosing between the two options presented. |

| If at the time of purchasing the product, you notice that the product made with palm oil is 10% cheaper, will this change your purchasing decision? | **IF AT THE TIME OF PURCHASING THE PRODUCT, YOU NOTICE THAT THE PRODUCT MADE WITH PALM OIL IS 10% CHEAPER, WILL THIS CHANGE YOUR PURCHASING DECISION?**

■ Yes ■ No

7%
93% | Considering that this question is addressed to those who do not consider palm oil as their main oil choice, having 100% of respondents willing to change their purchase choice because of price is a powerful idea that suggests that there was a persuasion exercise from reason that paid off. |

Fuente: Elaboración Propia: Correa 2020

Below is a table with the comparative analysis, trying to superimpose the results of both methodologies, so that it provides the necessary resources to give rise to the objective of the research.
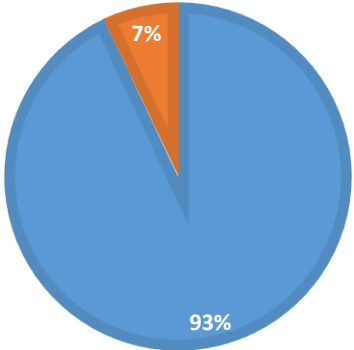
Table 4

QUESTION	EMOTIONAL RESULT RATIONAL RESULTAD	COMPARATIVE ANALYSIS

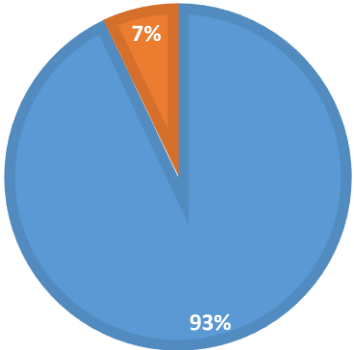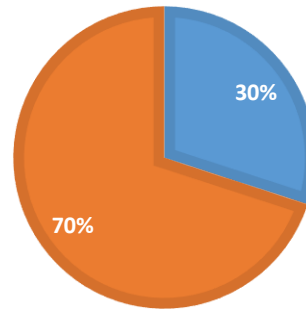|		
1	**DO YOU KNOW PALM OIL?** ■ Yes ■ No 7% 93% **DO YOU KNOW PALM OIL?** ■ Yes ■ No 7% 93%	In this case there is no evidence of any difference in the methodologies used and their influence.
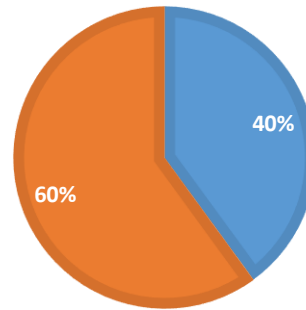
|		
2	**HAVE YOU EVER USED PALM OIL? (COOKING)** ■ Yes ■ No 40% 60% **HAVE YOU EVER USED PALM OIL? (COOKING)** ■ Yes ■ No 30% 70%	With respect to this question, a comparison cannot be established since it only allows for the collection of information from the sample, due to the type of exercise carried out. In both cases, none of the methodologies has the possibility of generating a change in the short term due to the terms of the research exercise.

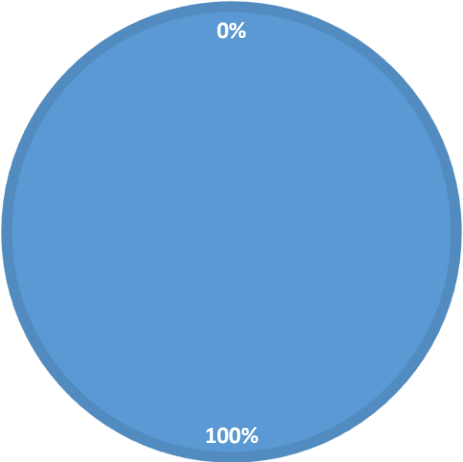| 3 | **DO YOU USUALLY USE PALM OIL FOR YOUR PREPARATIONS AT HOME? (COOKING)**

■ Yes ■ No

23%

77%

DO YOU USUALLY USE PALM OIL FOR YOUR PREPARATIONS AT HOME? (COOKING)

■ Yes ■ No

10%
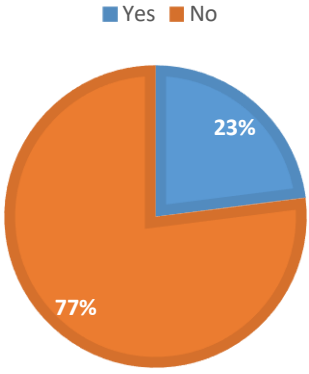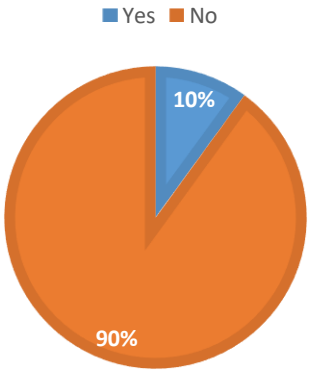
90% | Nor are consumer habits a variable that can be influenced for the time being by the terms and scope defined in this document. Therefore, a comparative analysis is not feasible. |

4	**WOULD YOU BE WILLING TO BUY PALM OIL FOR YOUR PREPARATIONS AT HOME? (COOKING)** ■ Yes ■ No 0% 100%	Since this part of the survey allows for an assessment of the respondents' willingness to buy, it is important to make a comparative analysis of the two methodologies with respect to the results. While both methods had some level of influence on the possibility of future purchase or acquisition of the product, the work done on the emotional methodology was much more

WOULD YOU BE WILLING TO BUY PALM OIL FOR YOUR PREPARATIONS AT HOME? (COOKING)
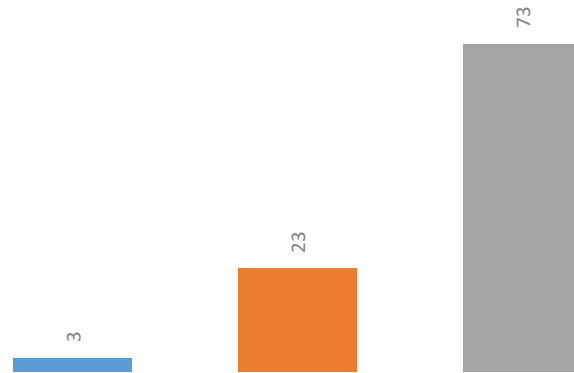
■ Yes ■ No

4%

96%
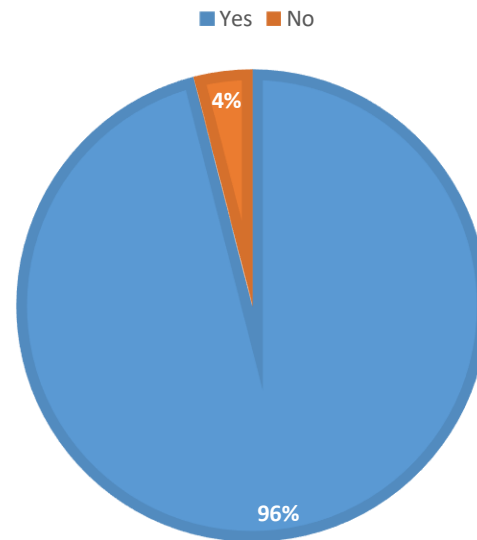
effective, which achieved 100% of the participating individuals having the intention of buying palm oil in the future, with the attenuation that the initial state of intention was 83%, which means 17 percentage points of growth. On the other hand, it is important to point out that the result of the rational methodology is not negligible, which allowed an improvement of 3 percentage points positioning the intention to buy in the future at 96%.

|		
5.1	**HOW HEALTHY DO YOU CONSIDER PALM OIL?** ■ Not at all ■ A little ■ Pretty much 3 23 73	The results on the perception of how healthy palm oil is or is not, are interesting. Although apparently the results of the emotional method are better in the final perception, they are not when the initial state of the sample and its final state are reviewed: While the positive variation of the emotional methodology was 16 points,

HOW HEALTHY DO YOU CONSIDER PALM OIL?

■ Not at all ■ A little ■ Pretty much

63

33

3
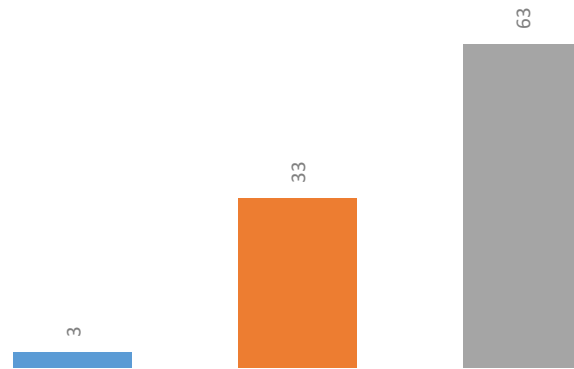
(increase of the segment that considers the product very healthy) the positive variation of the rational methodology was 26 points (increase of the segment that considers the product very healthy). As the evaluation of the best methodology is being made according to the capacity that the methodology has to transform paradigms or preconceptions, it is understood that at this point the most efficient methodology was the rational one.

| 5.2 | **DO YOU CONSIDER THE PALM INDUSTRY IN COLOMBIA TO BE ENVIRONMENTALLY SUSTAINABLE?**

■ Not at all　■ A little　■ Pretty much
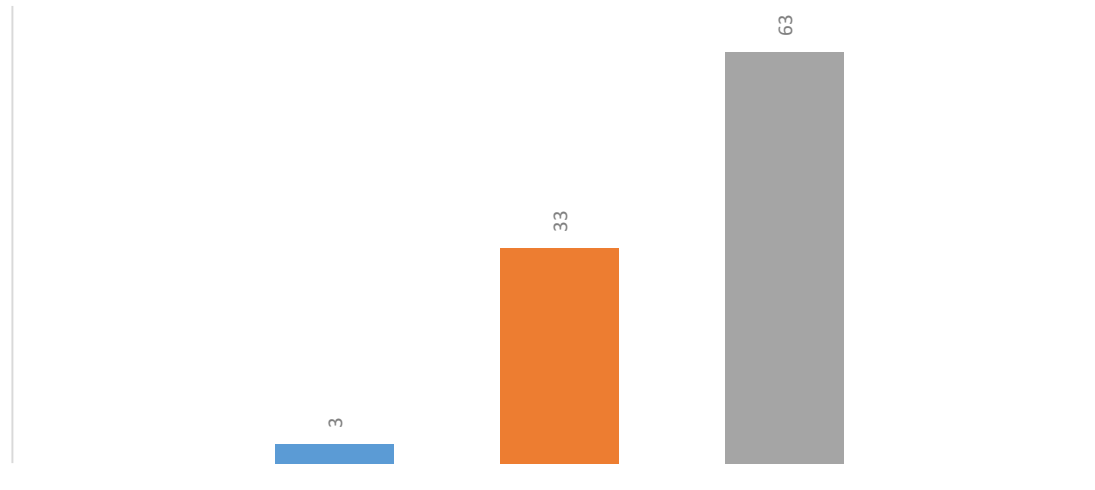
3　33　63 | When the methods of influence were applied there was in both cases an improvement in the perception of environmental sustainability, but it is evident that the rational methodology was better, not only in the percentage results of the sample but also in the positive variation of the responses of the respondents: While the emotional methodology had a positive variation in those who consider the palm industry in Colombia to be very |

## DO YOU CONSIDER THE PALM INDUSTRY IN COLOMBIA TO BE ENVIRONMENTALLY SUSTAINABLE?

■ Not at all   ■ A little   ■ Pretty much

3   33   63
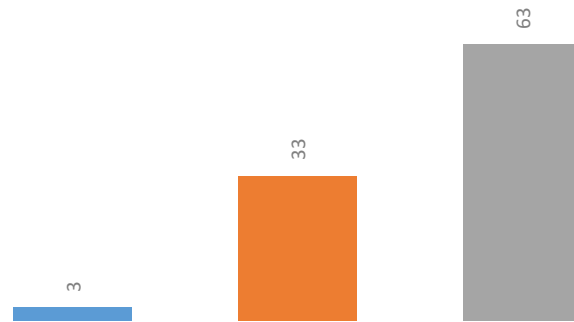
environmentally sustainable, of 3 percentage points, the rational methodology achieved a positive variation of 30 percentage points, leaving only 3% of the respondents with the conviction that the industry is not environmentally sustainable.
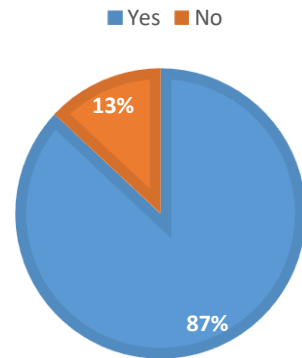
| 6 | DO YOU THINK THAT THE FARMERS WHO PARTICIPATE IN THE PROCESS OF CULTIVATING AND HARVESTING THE PALM BENEFIT FROM THE PRODUCTION PROCESS?

■ Yes ■ No
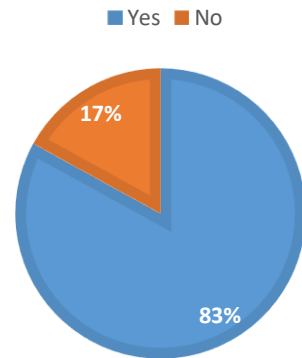
17%
83% | In this case, it is clear that the results of the rational methodology are better, but the most important thing within the definition of results, is that the only method that achieved changes in the paradigm was the rational method, achieving 87% of respondents aware that the farmers are benefited within the productive chain of palm oil, |

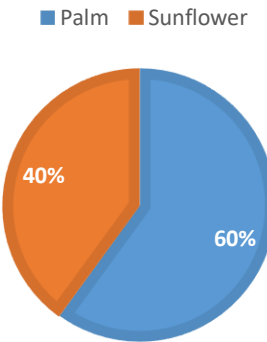|	DO YOU THINK THAT THE FARMERS WHO PARTICIPATE IN THE PROCESS OF CULTIVATING AND HARVESTING THE PALM BENEFIT FROM THE PRODUCTION PROCESS? ■ Yes ■ No 13% 87%	achieving an increase of 30 percentage points in this concept.
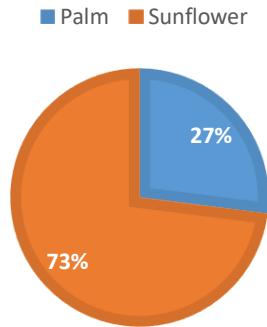
| 7 | IF YOU HAD TO CHOOSE BETWEEN TWO PRODUCTS, ONE MADE WITH PALM OIL AND ONE MADE WITH SUNFLOWER OIL, WHICH ONE WOULD YOU CHOOSE? Palm Sunflower 27% 73% IF YOU HAD TO CHOOSE BETWEEN TWO PRODUCTS, ONE MADE WITH PALM OIL AND ONE MADE WITH SUNFLOWER OIL, WHICH ONE WOULD YOU CHOOSE? Palm Sunflower 40% 60% | For this point and taking into account the experiential qualities of the emotional methodology, better results are evident as a product of the application of this method. In addition to the clear differences with respect to the rational one, it is evident that this methodology achieved an increase of 20 percentage points (from 53 to 73%) in the purchase intention between the two types of oil, while the rational method barely achieved 13 percentage points of growth (from 47 to 60%). Thus, it can be deduced that the emotional method was more efficient for this item. |

| 8 | **IF AT THE TIME OF PURCHASING THE PRODUCT, YOU NOTICE THAT THE PRODUCT MADE WITH PALM OIL IS 10% CHEAPER, WILL THIS CHANGE YOUR PURCHASING DECISION?**

■ Yes ■ No
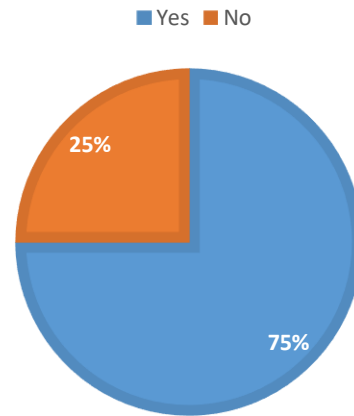
25%
75% | Finally, there is the possibility of changing the purchase intention via a lower comparative price, which is much more effective in the light of the rational method, since it achieves an increase of 63 percentage points in the sample, which means that 100% of those surveyed who are not willing to buy palm oil instead of sunflower oil, would do so if the price of the latter was 10% higher |

IF AT THE TIME OF PURCHASING THE PRODUCT, YOU NOTICE THAT THE PRODUCT MADE WITH PALM OIL IS 10% CHEAPER, WILL THIS CHANGE YOUR PURCHASING DECISION?

■ Yes ■ No

0%

100%
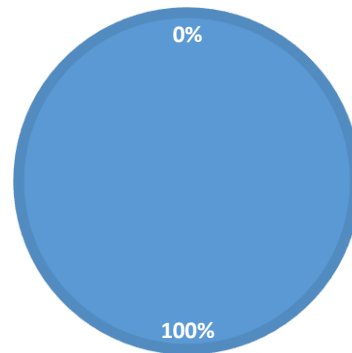
than that of the sunflower. On the other hand, the emotional method barely achieves an increase of 18 percentage points, which does not allow it to potentiate the consumption of those who in principle were not willing to buy palm oil instead of sunflower oil.

Fuente: Elaboración Propia: Correa 2020

Thus, objectively and according to the comparative results, it is interesting to see how the points made by Greenacre, Patrick, Yang, Jaeger, & Martin, in their article "Correcting misperceptions about stigmatized ingredients: MSG. Food Quality and Preference", in which they state: "In the context of MSG, our emotionally driven celebrity endorsement (by Heston Blumenthal) should be avoided as a corrective strategy because it is the least effective method of correcting misperceptions. This aligns with research by Van Kleef (Van Kleef, E., Ueland, Ø., Theodoridis, G., Rowe, G., Pfenning, U., Houghton, J., ... & Frewer, L. (2009). Food risk management quality: Consumer evaluations of past and emerging food safety incidents. Health, Risk & Society, 11(2), 137-163) which highlighted the importance of credible information sources, concise information and consistent messages in effective food communications." This means that although the results of emotional methodology cannot be undermined, they are not as effective as the results of rational methodology.

\Conclusions

Having already carried out the surveys and processed and analysed the results obtained, the following conclusions should be drawn:

- Two methods were identified that allow effective correction of misperception of the palm oil consumer in Colombia: Emotional and Rational

- It is conclusive that the most effective method for the correction of misperception around the palm oil industry is the rational method.

- As long as the two methodologies are applied simultaneously, much better results will be achieved than those presented in the current document

- It is possible to correct the misperception of the palm oil consumer in Colombia.

Bibliography

- Capecchi, S., Amato, M., Sodano, V., & Verneau, F. (2019). Understanding beliefs and concerns towards palm oil: Empirical evidence and policy implications. Food Policy, 89, 101785.

- Greenacre, L., Patrick, S., Yang, R., Jaeger, V., & Martin, J. (2016). Correcting misperceptions about stigmatized ingredients: MSG. Food Quality and Preference, 48, 93-98.

- Fischoff, B. (1981). Debiasing (No. PTR-1092-81-3). DECISION RESEARCH EUGENE OR.

- Bode, L., & Vraga, E. K. (2015). In related news, that was wrong: The correction of misinformation through related stories functionality in social media. Journal of Communication, 65(4), 619-638.

- Lewandowsky, S., Ecker, U. K., Seifert, C. M., Schwarz, N., & Cook, J. (2012). Misinformation and its correction: Continued influence and successful debiasing. Psychological Science in the Public Interest, 13(3), 106-131.

- Pischke, E. C., Rouleau, M. D., & Halvorsen, K. E. (2018). Public perceptions towards oil palm cultivation in Tabasco, Mexico. Biomass and bioenergy, 112, 1-10.

- Wansink, B., Tal, A., & Brumberg, A. (2014). Ingredient-based food fears and avoidance: Antecedents and antidotes. Food Quality and Preference, 38, 40-48.

- Jouanjean, M. A., Maur, J. C., & Shepherd, B. (2015). Reputation matters: Spillover effects for developing countries in the enforcement of US food safety measures. Food Policy, 55, 81-91.

- De Leeuw, E. D., Hox, J., & Dillman, D. (2012). International handbook of survey methodology. Routledge.

- Van Kleef, E., Ueland, Ø., Theodoridis, G., Rowe, G., Pfenning, U., Houghton, J., ... & Frewer, L. (2009). Food risk management quality: Consumer evaluations of past and emerging food safety incidents. Health, Risk & Society, 11(2), 137-163.

- Herrera, M. (2011). Fórmula para cálculo de la muestra poblaciones finitas. Recuperado el, 26.

- DANE. (2019). DANE: Demografía y Población. Colombia: taken from https://www.dane.gov.co/index.php/estadisticas-por-tema/demografia-y-poblacion.

- May, C. Y., & Nesaretnam, K. (2014). Research advancements in palm oil nutrition. European journal of lipid science and technology, 116(10), 1301-1315.

- Tuñón, J. (2017). Comunicación internacional: información y desinformación global en el siglo XXI. Fragua.

- Rincon, S. (2009). An Analysis of the Properties of Oil Palm in the Development of its Industry. PALMAS Vol. 30 No. 2, 2009.

- Paul Richard Furumo and T Mitchell Aide (2017). Characterizing commercial oil palm expansion in Latin America: land use change and trade *Environ. Res. Lett.* **12** 024008

- DNP. (2016). DNP: Departamento Nacional de Planeación. Colombia: Taken from http://web.fedepalma.org/sites/default/files/files/simon%20gaviria(1).pdf

- Ethical consumer. (2019). Taken from: https://www.ethicalconsumer.org/palm-oil.