Introduction to Neuroeconomics

Visual versus Text Attribute Representation in Choice Experiments

2019112021
2019102015

Abstract

In choice experiments, we look at how attribute representation formats affect the willingness to pay (WTP) and serial reported attribute non-attendance. Randomly selected participants were given either a Visual or Text Treatment in an online choice experiment. Participants in both treatments received the identical choice sets; however, those receiving the Visual Treatment saw images of the product alternatives as they would appear in a grocery store, while those receiving the Written Treatment only saw text descriptions.

Results from random parameters logit models that take serial stated attribute non-attendance into account reveal that more attributes were significant in the Text Treatment than the Visual Treatment, and that attribute WTP was higher in the Text Treatment than in the Visual Treatment among variables significant in both treatments. Therefore, while creating choice experiments, the attribute representation format should be taken into account.

Introduction

Researchers employ a variety of experimental techniques to discover customer willingness to pay (WTP) for various product qualities. Hypothetical and non-hypothetical choice

experiments are currently considered one of the most popular methods used to measure consumer WTP for attributes.

Our objective is to ascertain whether there is a difference in consumer WTP for food product qualities depending on whether product features are provided using a text format in comparison to a visual format that mimics the product as it would look in a grocery shop. This is a significant problem since the way that qualities or product alternatives are presented in choice experiments may have an impact on estimations of WTP.

A between subjects design with random assignment of participants to a Visual Treatment or a Text Treatment was used to assess the influence of visual vs text features in a choice experiment. Participants in the visual treatment were given option sets that included shelf simulation images of the product and its features. Participants in the Text Treatment viewed a text list of each product's qualities. Since people may interpret verbal and visual features differently, it is expected that consumer WTP would vary between these two treatments. Because it's feasible that ANA may differ depending on how the attributes are presented, we took into consideration attribute non-attendance (ANA) of the attributes in both treatments to further explore this hypothesis.

Method

Our participants (n=55) were all students and newly joined professionals between 18 to 23 years old. Participants were asked to fill a survey which had only 3 choice questions. Unlike the reference study, where every participant was given large choice sets, every participant received one of 10 visual choice questions and one of 10 textual choice questions. This was done to eliminate fatigue of the participant and also bias due to previous answers.

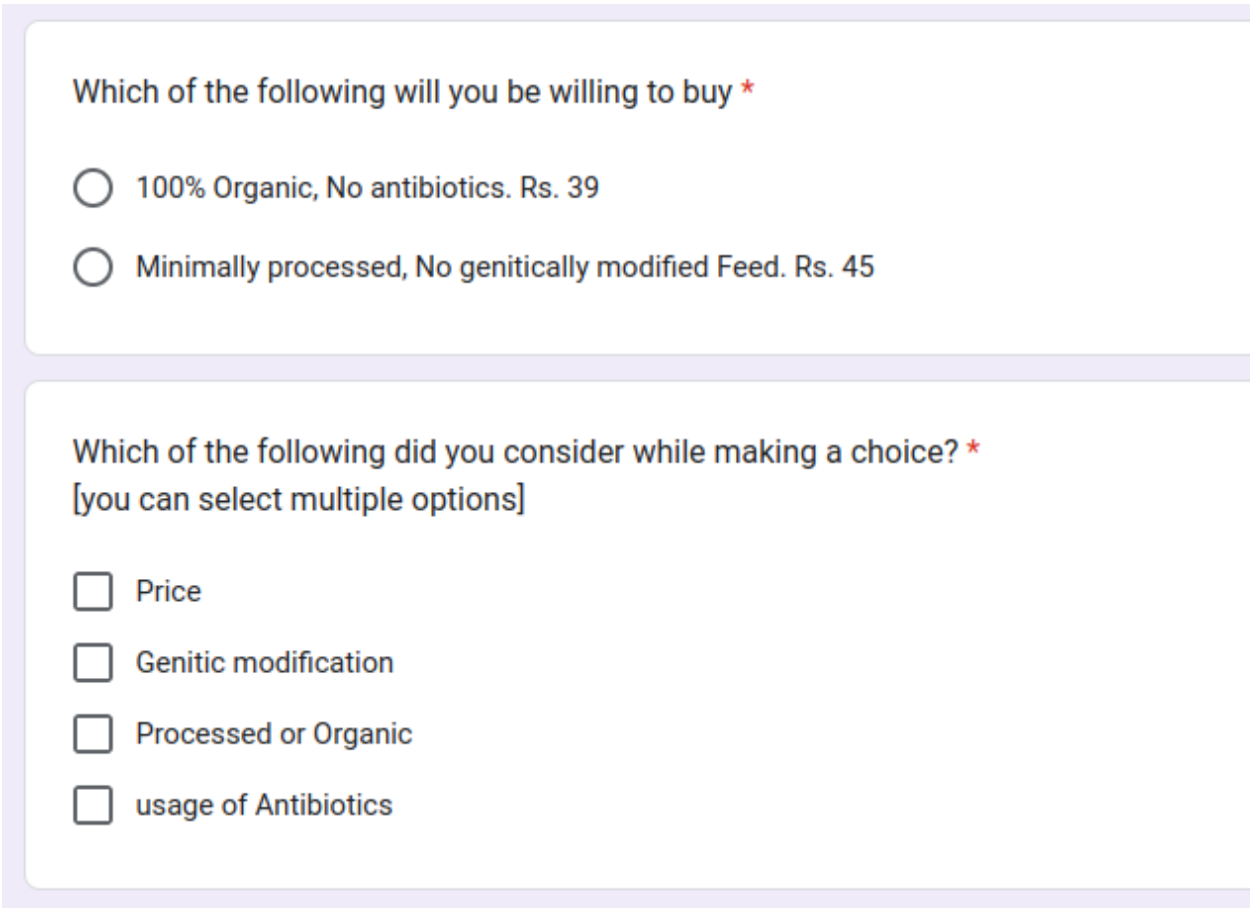
In this study, we looked at how presentation format affected WTP while taking serial stated ANA into account. We establish the following based on the reference paper(Karen L. DeLong, Konstantinos G. Syrengelas, Carola Grebitus, Rodolfo M. Nayga Jr.): preferences and WTP estimations will vary depending on the attribute representation approach (visual versus text). We further test this claim by taking ANA into consideration because it's feasible that ANA may change based on how the qualities are presented.

Which of the following will you be willing to buy? *
[if needed please zoom in]

- ◯ Left
- ◯ Right

Which of the following did you consider while making a choice? *
[you can select multiple options]

- ☐ Price
- ☐ Genitic modification
- ☐ Processed or Organic
- ☐ usage of Antibiotics



Attributes and levels

1. Price
    a. Rs. 36
    b. Rs. 39
    c. Rs. 45
    d. Rs. 48
2. Genetically Modified
    a. Yes
    b. No
3. Process
    a. Organic
    b. Processed
4. Usage of Antibiotics
    a. Yes

b. No

ANA Table:-

Attribute for Visual Attributes

Attribute/ form-ID	f1	f2	f3	f4	f5	f6	f7	f8	f9	f10
Price	3	3	1	7	3	2	1	4	5	3
Genetic	1	2	1	4	1	2	0	1	5	1
Organic	6	1	3	5	3	1	1	4	5	5
Antibiotic	0	3	1	4	1	1	1	1	6	4

Attribute for Textual Attributes

Attribute/ form-ID	f1	f2	f3	f4	f5	f6	f7	f8	f9	f10
Price	3	3	1	8	3	2	1	3	6	4
Genetic	1	1	0	3	2	2	0	1	5	1
Organic	6	3	4	6	3	1	1	4	4	4
Antibiotic	0	2	1	3	0	1	1	1	6	4

Results

Base RPL model

Y = B1*not_gene + B2*gene + B3*org + B4*Norg + B5*anti + B6*Nanti + B7*Price

Y= Utility Function

B=Factor

Variables= Either 1 or 0; 1= present, 0=absent.

We have assumed a simple linear model as we have a small sample size and the questionnaire is also small.

Text treatment

Attribute	Factor
Not Genetically Modified	0.138
Organic	0.707
Antibiotics free	0.198
Price	-0.398

Visual treatment

Attribute	Factor
Not Genetically Modified	0.104
Organic	0.834
Antibiotics free	0.146
Price	-0.483

Conclusion

From the analysis done and the factor values calculated despite different treatment,i.e., text or visual we note that the values do not change much. From this we conclude that the utility function is not very different for text or visual representation. People do not seem to make different decisions between text or visual treatment. Another important point to note is that the factor for Organic is more than others. Thus, people give a lot of importance to Organic products. As the prices are not that different there is no significant effect that can be noticed.

References

[1] Visual versus Text Attribute Representation in Choice Experiments

[2] Discrete choice

[3] Public Preferences for Exit Strategies From COVID-19 Lockdown in Germany—A Discrete Choice Experiment

[4] Discrete Choice Experiments and Conjoint Analysis

[5] What is attribute non-attendance?

[6] WILLINGNESS TO PAY: WHAT IT IS & HOW TO CALCULATE

[7] Conjoint analysis

[8] Conjoint Analysis in 10 minutes - Business Performance Management