



PERCEPTION OF CONSUMERS ON THE PRICING AND PACKAGING ASPECT OF HEALTHY FOOD (BASED ON CONSUMER BUYING BEHAVIOUR)

Ms. Babitha B.S.¹– Jain University, Center for Management Studies - Bangalore,
Rahul Chandrasekhar²– Student, BBA Jain University, Center for Management Studies – Bangalore,
Shubh Rastogi³–Student, BBA Jain University, Center for Management Studies – Bangalore,
Himanshu Jain⁴–Student, BBA Jain University, Center for Management Studies – Bangalore,
Pratham Jain⁵–Student, BBA Jain University, Center for Management Studies – Bangalore
Bhavika Jessani⁶–Student, BBA Jain University, Center for Management Studies – Bangalore
Assistant Proffesor¹, Students^{2,3,4,5,6},
Center for Management Studied, Jain(Deemed-to-be-University),
Bangalore-560027

Abstract: . A detailed analysis to identify the different elements regarding healthy foods and pricing strategies of the item. Also to gain a nuanced understanding of packaging, required to be infused in the healthy food household industry. There is a strong correlation between prices of commodities and the value it adds to a consumer. Factors like keywords, package colors can help HORECA business owners strengthen pricing strategies and use appropriate tactics to increase sales.

Keywords:

Food packaging; food policy; health; marketing; Multimodal Critical Discourse Analysis; protein; BCAA, Spearman rank, Correlation, Lay theory.

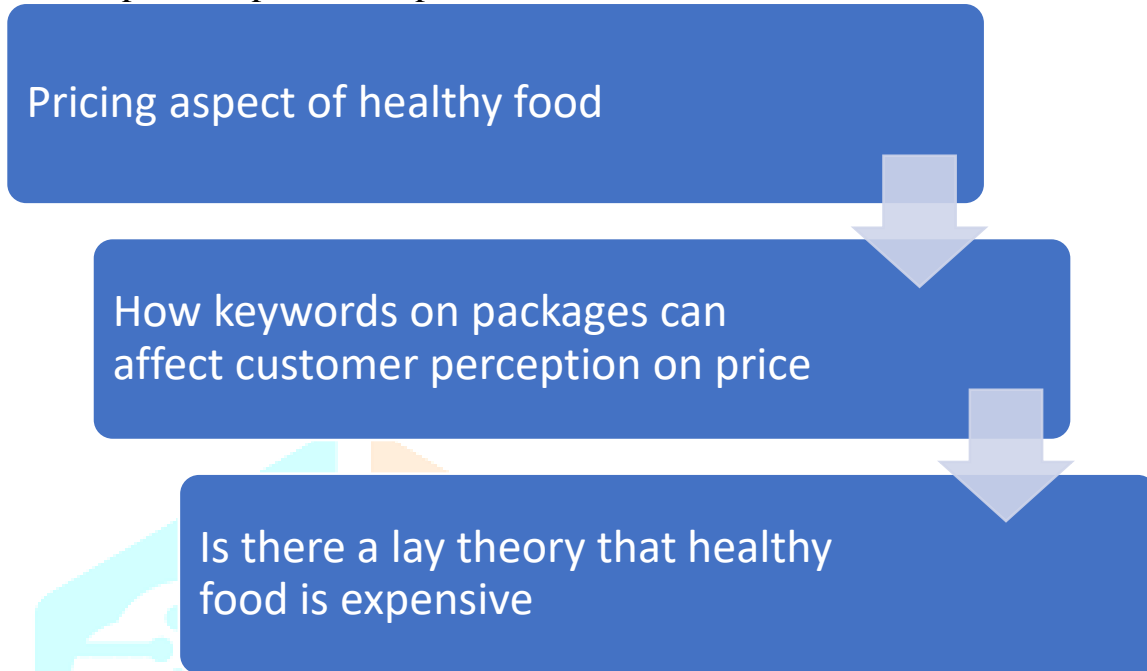
I.INTRODUCTION

There is growing need to eat healthy and be fitter with the advent of covid 19 people understood the impact of healthy lifestyle, however the lay theory that healthy food is expensive has proven to be a challenge. Hence to identify if all consumer consider this as true would help business better position themselves.

Moreover, business use terms like high protein etc in packaging does that impact perception of consumers? Do keywords like high protein cause the consumer to think it's more expensive. Creating questionnaires and sending it across general public will help quantify our findings and enable us to get conclusive findings. Healthy food is a vague term hence bifurcating it into various segments was the first challenge we faced.

II.OBJECTIVES:

The findings from this research paper will have tangible results that can help various parties; HORECA (Hotel, restaurants & Café) can be benefitted as they can understand how to position their expensive food options and what keywords to use in the menu to grab consumer attention. Supplement companies can use the finding from this paper to create stronger pricing strategies to increase sales. Healthy food producers example Yogabar can develop new packaging ideas to position product as premium to increase sales.



III.REVIEW OF LITERATURE:

Five studies are used to test our predictions. In all reviews, we analyse item classifications for which there is no unmistakable objective connection among cost and healthiness.² (Haws, (2017).) Therefore, studies 1–3 investigate situations in which either price or health information is lacking. Concentrates on 4 and 5 move past insatiate item decisions to look at how the healthy = costly instinct can act as a predisposition in the handling of introduced data about both wellbeing and cost. In particular, we show in s that when a product containing an unfamiliar ingredient is more expensive, consumers judge it to be a more important part of a healthy diet. We also show the consequences of this judgment. In study 5, we demonstrate that consumers have a higher standard of evidence for intuition-inconsistent information when processing heuristically when they choose to read more product reviews before evaluating a product that makes a general health claim than when the product is priced relatively high.

It must be expensive if it is healthy food, or it must be expensive if it is healthy food.

While there are a lot of things to think about when choosing food, health and cost are often the most important. Despite the fact that this relationship is unlikely to hold true for all product categories and contexts, we examine the impact that consumer lay beliefs about the relationship between foods' (Howse, 2018) subscribe to a general lay theory that healthy foods are expensive. This lay theory is overused beyond the categories in which it is objectively true. As a result, consumers' inferences about missing attributes of food products in a variety of categories and subsequent judgments and choices are influenced by this lay theory. In addition, we demonstrate that when processed heuristically, the intuition influences how consumers process information about health and price (as is likely the case with health claims involving unfamiliar ingredients or general health claims that lack sufficient specificity to evaluate more systematically).

Pricing aspect of healthy food

A large portion of us could do with eating more quality food sources. Unfortunately, junk food can frequently appear to be the more convenient option. Rao, (2013).)

It has discovered that foods high in healthy fats, sugar, and salt are significantly more expensive. Levels of experience growing up stoutness keep on deteriorating in Scotland and Britain, with the imbalances between the most and least denied youngsters augmenting. The report also found that the Covid-19 pandemic has only made food poverty worse and made chronic diseases related to Nutrition more common. In the list of the top 10 factors that influence dietary choices, income, the availability of unhealthy food outlets, and the amount of money spent advertising junk food were all included. It's easy to find, tastes good, and rarely needs to be prepared. Healthy foods are also thought to be more expensive than junk foods, in addition to all of these factors. Carlson, (2012).) if you must feed more people than yourself. This indicates that heavily processed junk foods, which contain more simple carbohydrates and trans fats, are more expensive per calorie than healthier options like fruits, vegetables, and lean meats. In fact, a meta-analysis of 27 studies found that a healthy diet costs about \$1.5 more per day (Zhao, 2018). These products can also be mass-produced and produced in a form that is not perishable. It is simpler to microwave something or make a quick stop at the drive-thru. Numerous people are juggling children and multiple jobs, which leaves little time for weekly meal preparation or grocery shopping.

The Increasing Disparity in Cost Between More and Less Healthful Foods: Analysis of a New Longitudinal UK Dataset

The government of the UK has recognized the significance of food prices for public health and the affordability of healthy eating. However, there are no established techniques for tracking change over time. The goal of this study was to find out how much more and less healthy foods cost (Chen, 2019). This exploration technique utilized quantitative and insightful examination procedure. The list of goods and services used to calculate the Consumer Price Index (CPI), which is a tool used to measure inflation in the UK based on a basket of goods whose prices are measured nationwide every quarter, served as the basis for the foods and beverages they included in their sample. Based on Nutrient profiling, a method that takes into account a food or drink's overall Nutritional characteristics, food items were also categorized as "more healthy" or "less healthy."

IV. RESEARCH METHODOLOGY:

Research methodology is a way of explaining how a researcher intends to carry out their research. It's a logical, systematic plan to resolve a research problem. A methodology details a researcher's approach to the research to ensure reliable, valid results that address their aims and objectives. It encompasses what data they're going to collect and where from, as well as how it's being collected and analyzed.

The method of research used by us is primary research.

Primary research is defined as a methodology used by researchers to collect data directly, rather than depending on data collected from previously done research. Technically, they "own" the data. Primary research is solely carried out to address a certain problem, which requires in-depth analysis.

Why is primary research suitable

One of the most important advantages is, data collected is first hand and is accurate. In other words, there is no dilution of data. Also, this research method can be customized to suit personal requirements and needs of organizations or businesses.

Primary research focuses mainly on problem in hand, which means entire attention is directed to find probable solution to a pinpointed subject matter. Primary research allows researchers to go in depth of a matter and study all foreseeable options.

Data collected can be controlled. Primary research gives a means to control how data is collected and used. It's up to the discretion of businesses or organizations who are collecting data how to best make use of data to get meaningful research insights.

Primary research is a time-tested method; therefore, one can rely on the results that are obtained from conducting this type of research.

V.DATA ANALYSIS:

The data acquired through the tools we used via questionnaire's and Focus groups has led to the development of many new findings.

In contemporary western society, food has become a cultural item that signals a (Jetter)This context has created a good opportunity for food producers and marketers to profit from the cultural value of healthiness. The objective of this study was to identify if there is a lay theory healthy food is expensive. Moreover, to use statistical tools to identify if there is any correlation between healthy food and price. Post this an additional study was created to gain a better understanding on the impact of keywords on the packaging of healthy food items, have on the consumer.

To gain proper insight our hypothesis had to be tested in a systematic method. This was achieved via 3 carefully curated experiments. The objectives of each experiment was different. However, they all worked towards the same hypothesis. Let us dive deeper into each experiment to get a more nuanced understanding.

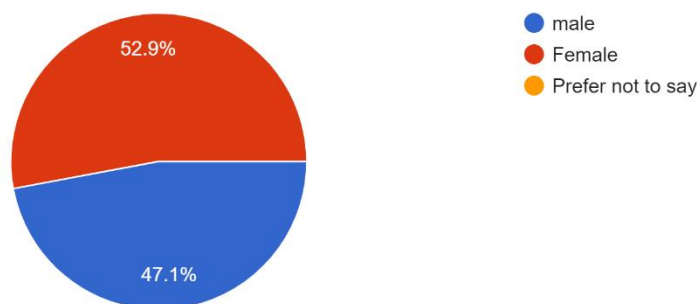
Experiment 1

In study 1, we demonstrate that consumers infer that a healthier food item is more expensive and that a separate quality cue does not explain the healthy = expensive findings.

The primary purpose of study 1 was to establish the influence of the healthy $\frac{1}{4}$ expensive intuition on consumer inferences and to demonstrate that this influence operates over and above independent product quality cues.

A survey was conducted using a questionnaire whereby, 17 young adult Indians participated. The demographic was 52.9% Female and 47.1% Male.

what is your gender
17 responses



The subjects were shown images of 2 similar unbranded packets of salted nuts and dry fruits and the following details were provided:

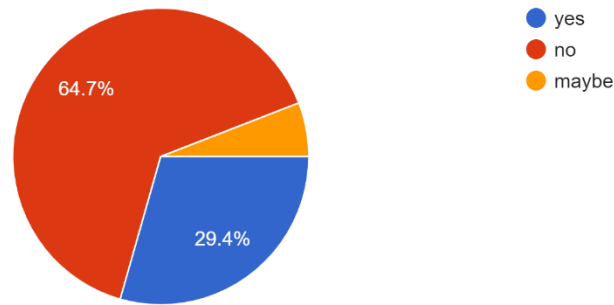
Packet 1 has Nutri grade score of a and packet 2 has a Nutri grade of c.

The participants were then asked to choose the more expensive dry fruit package.

Prior to the question each participant was asked if they had any prior knowledge on the concept of Nutri score. Those who were unaware were provided information regarding the topic to make a more informed decision. Data showed more than 64% of participants were not aware of the concept.

are you Aware of nutria grade score

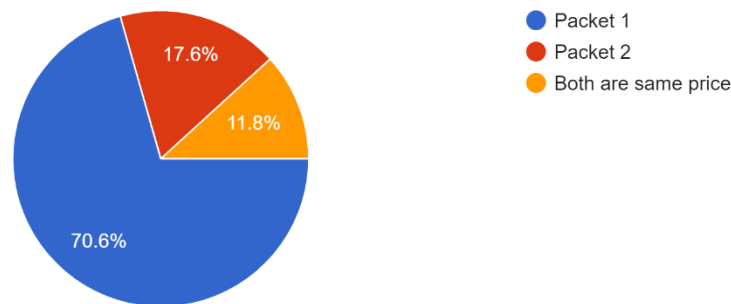
17 responses



The exact figures are as follows.

Below are pictures of 2 packets of salted nuts and dry fruits both of similar weight. Packet 1 has nutria grade score of A and packet 2 has a nutria g...ou which is the more expensive dry fruit package?

17 responses



A minority of the populous chose package 2 as the more expensive option. We tried to find the reason as to why they chose the package 2 and the findings are as follows:

Packaging of the product deviated the mindset of the participants. They identified package 2 as more premium.

Colors used in package 2 felt premium and better quality.

However, from a more wholistic point of view it can be inferred that These results indicate that consumers rely on the intuition that healthy =more expensive when making inferences of missing food product attributes and that this effect is not driven by simple differences in the perception of quality, as the effects hold both in the presence and absence of an independent quality cue. Further, these results suggest that additional information alone (i.e., the presence of a high-quality cue) did not lead to greater perceptions of expensiveness, suggesting the specific impact of healthiness information.

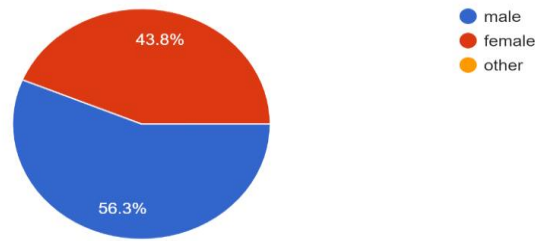
Experiment 2:

The purpose of study 2 was to replicate the findings from study 1 using a different product and procedure and real food consumption. Further, we explore whether the healthy $\frac{1}{4}$ expensive intuition is bidirectional, testing whether consumers will both use health information to infer price and use price to infer healthiness in a manner consistent with the intuition.

The results helped us understand the concept of bidirectionality and how it impacts the perception of people .This experiment laid the foundation for future analysis and interpretation.

To examine the possibility of bidirectionality among healthy and expensive food a questionnaire was sent to 16 respondents. With the median age being 20 and 43.8% being female respondents. This helped get a balanced understanding from our target audience which are young adults.

what is your gender
16 responses



The questionnaire was designed in a such way to get clarity on bidirectionality between healthy food and price.

This was achieved by asking participants to choose the healthier option between 2 packets of salted nuts and dry fruits of similar weight. Additional details given were:

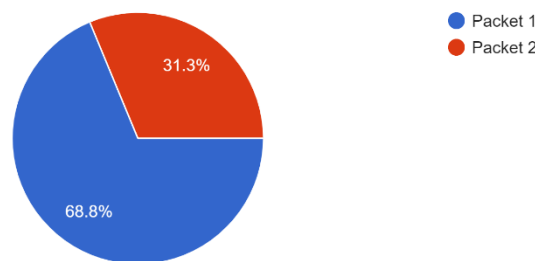
Packet 1: ₹300

Packet 2: ₹220

Moreover, two unbranded packets of salted nuts were shared with the participants labelled Packet 1 and packet 2 were presented to the respondents. The results were as follows:



Below are pictures of 2 packets of salted nuts and dry fruits both of similar weight. Packet 1 has an MRP of ₹300 and Packet 2 has an MRP of ₹220. Accordingly, which is the more healthier dry fruit package.
16 responses



The pie chart indicates that nearing 70% of the respondents chose the more expensive packet as healthier. However, there were some outliers which chose the less expensive packet (Packet 2) as the healthier option.

A minority of the population chose package 2 as the more expensive option. We tried to find the reason as to why they chose the package 2 and the findings are as follows:

The packaging had green color which gave an impression that it was a healthier option

The packet had details of the ingredients mentioned in the packaging.

Keywords mentioned like less processed gave impression that it was healthier. The outliers of this experiment negated the lay theory of bidirectionality of healthy food is expensive by a significant margin almost 30% and the reasoning behind their decision was valid, leading to more unanswered verticals.

To get answers to these verticals of the study a more systematic approach had to be created backed by data, research and numbers. Hence a data set consisting of popular breakfast cereal option available in the market with their corresponding Nutri score and price were created. To identify the correlation between price and healthiness of a product.

However, since the nature of this experiment was qualitative in nature many of the traditional correlation techniques were impractical. Thus, the most suitable method was the Spearman Rank Correlation. In this method the Nutri score of each breakfast cereal (A,B,C,D,E) were ranked based on their healthiness.

For example, a breakfast cereal having a Nutri score of A the highest on the scale was given the lowest rank i.e. Rank 1 and so on.

Moreover, the corresponding prices of each cereal were also ranked. The most expensive option was given the lowest rank. The data sets focused only on breakfast cereal as comparison of Nutri scores is only similar types of products.

The Nutri score of ice-cream and froot loops are both D however, they are not the same as it has different ingredients. Nutri score ranks similar product lines based on healthiness on a scale of A,B,C,D,E where A being the healthiness and E being junk.

Post ranking spearman's correlation comes into factor. It measures the strength and direction of association between two ranked variables. It basically gives the measure of monotonicity of the relation between two variables i.e. how well the relationship between two variables could be represented using a monotonic function.

The correlation is found using the formula:

$$r_s = 1 - \frac{6\sum d^2}{n^3 - n}$$

Where r is the coefficient of correlation, D is the difference or deviation between both ranking and n is the number of observation in the data set.

The coefficient of correlation varies anywhere between -1 to 1

A value of +1 means a perfect association of rank.

A value of 0 means that there is no association between ranks.

A value of -1 means a perfect negative association of rank.

After understanding the working of spearman ranking, it became easy to extract relevant data to test the hypothesis of the research paper.

table1

Types of cereal	Nutri score	Price	Weight	Ranking of Nutri score	Ranking of price	D(R1-R2)	D ²
Special K protein Nuts	A	1689	330g	1	1	0	0
Kellogs Coco pops	C	420	250g	3	4	-1	1
Kellogg's Frosties	D	900	375g	4	2	2	4
Kellogs Muesli Nuts and seeds	B	660		2	3	-1	1
Froot Loops	E	349		5	5	0	0

1. The sum of D² is 6.
2. N is 5.

From this data we can replace it in the formula and find out correlation.

- Correlation is $1 - ((6*6)/53-5)$, giving the value 0.7.

A correlation of 0.7 is considered as highly positively correlated. Indicating that if the healthiness of a product increases by 100 the price also increases 70.

Hence, they are positively correlated to a high extent.

We tried to repeat this outcome using the same product in the questionnaire i.e. identify the correlation between Nutri score and price of packaged nuts and dry fruits.

table 2

Type of packaged dry fruits	Nutri score	Price	Ranking of Nutri score	Ranking of price	D(R1-R2)	D2
Nature valley salted nuts	D	315	3	2	1	1
Blue diamond almonds	B	350	1	1	0	0
King size peanuts	C	142	2	3	-1	1
Paper boat roasted salted nuts	E	110	4	4	0	0

- The sum of d2 is 2
- No of observations is 4
- Correlation is $1 - (6*2/43-4)$ which is 0.8

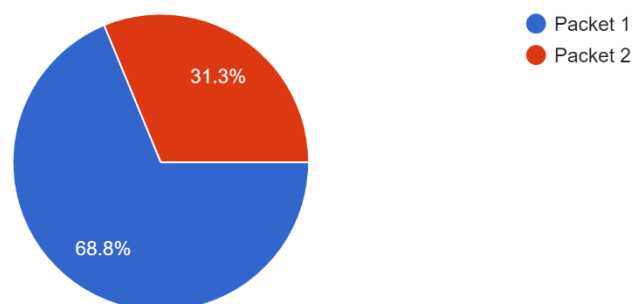
A correlation of 0.8 is considered as highly positively correlated. Indicating that if the healthiness of a product increases by 100 the price also increases 80.

Hence, they are positively correlated to a high extent.

However, this does not support the results given by the questionnaire. The results from the questionnaire show that price and healthy food are correlated by 0.706 (70.6%) and 0.608 (60.8%).

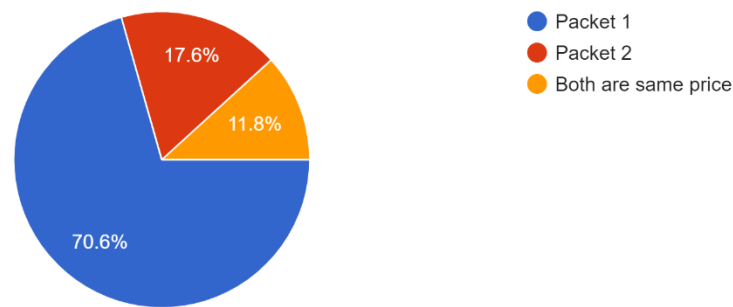
Below are pictures of 2 packets of salted nuts and dry fruits both of similar weight. Packet 1 has an MRP of ₹300 and Packet 2 has an MRP of ₹220. Accordi...hich is the more healthier dry fruit package.

16 responses



Below are pictures of 2 packets of salted nuts and dry fruits both of similar weight. Packet 1 has nutria grade score of A and packet 2 has a nutria g...ou which is the more expensive dry fruit package?

17 responses



The logical reason for this deviation has to be the impact that packaging has had on the perception of consumers. More specifically the impact keywords, and colour of packaging.

These conclusions helped us device another experiment. To measure the extent of deviation or impact packaging has on the perception of consumer, in the healthy food segment.

Experiment 3

In order to demonstrate the impact of inferences driven by the healthy $\frac{1}{4}$ expensive intuition on consumer choice, in study 3 we examine choice between alternatives varying in price in the presence or absence of a health goal. To do so, we use a projective technique in order to (1) minimize responses being based on differences in preference for the specific options provided, and (2) make any budget-related goals less salient.

In this study, we asked 17 participants (52.9% female, average age 19) to read one of the versions of the following scenario that either an explicit health goal:

The objective of this experiment was to identify if health related keywords can alter the decision making of consumers. Ideally based on previous experiments a rational consumer will choose the most expensive option as the healthiest, however by adding the element of keywords in the packaging will it change their decision making if yes then by how much?

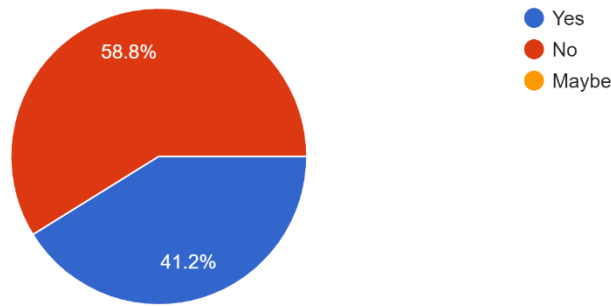
To get this results a questionnaire was created which focused on the impact keyword "Protein" and "BCAA" has on the decision-making process of a consumer.

The reason why BCAA and protein was chosen is because both Branch chain amino acids (BCAA) and protein have similar Nutritional potency and effects on the body which is help the muscles recover at faster rate after any form of resistance or weight training. However, the average consumer is not aware of the term called BCAA which will refrain them from venturing with the option they have less knowledge about.

Yet, there will be a certain populus who live an active lifestyle and would have encountered the term BCAA. This could potentially desecrate the purity of the test hence we had to sub group those respondents who were aware of the term BCAA and those who were not.

The data shows 58.8% of the respondents were not aware of the term BCAA.

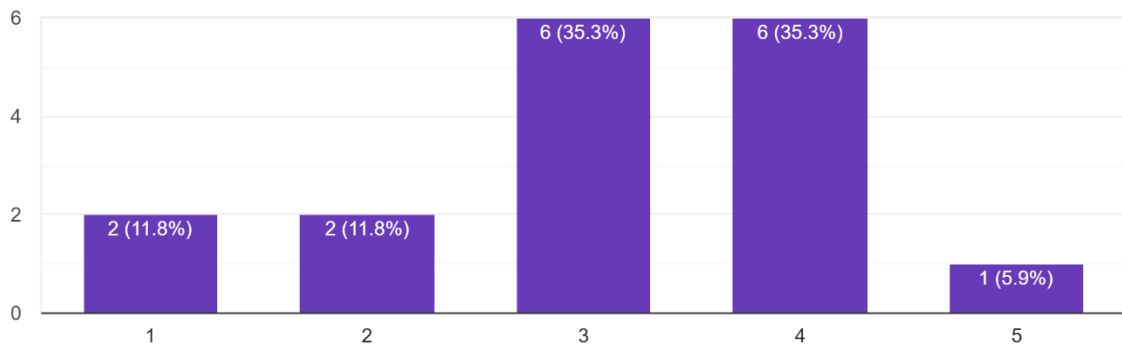
Have you heard of the term BCAA
17 responses



We also asked each respondent to rank themselves based on their physical activity on a scale of 1-5 1 meaning rarely working out, and 5 being working out or doing exercise at least 4 times a week.

The data showed almost 70% of the audience rated themselves between 3 and 4

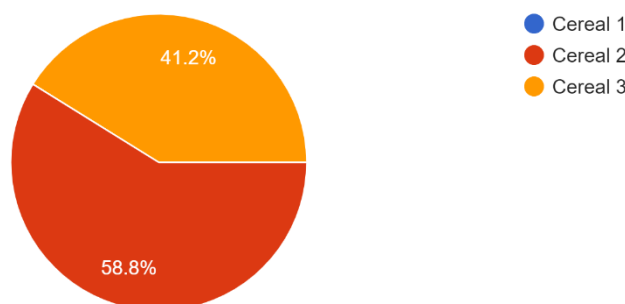
How physically active are you on the scale of 1-5
17 responses



With this data we asked the following question to the respondents

You need to purchase a breakfast cereal for your friend who is health conscious. In the grocery store there are 3 cereals of similar quantity available 1,2&3 respectively. Cereal 1 is a generic brand with no creative branding. Cereal 2 is a packaged with a keyword “Rich in protein” and cereal 3 has the keywords “rich in BCAA”. Prices of the cereal brands are Cereal 1: ₹320, Cereal 2: ₹380 and cereal 3: ₹400. Which cereal will you choose.

You need to purchase a breakfast cereal for your friend who is health conscious. In the grocery store there are 3 cereals of similar quantity availab... and cereal 3: ₹400. Which cereal will you choose
17 responses



This data shows that each respondent who did not go the term BCAA chose packet 2 (“Rich in protein”) even though it was not the most expensive option available. Which goes against the lay theory that if it is expensive, it is healthy. This is because human psychology dictates that consumers are wary of the unknown. Since they did not know the Nutritional value of BCAA they decided to go with a known option of protein.

The data also highlights those who knew about the term BCAA and the fact that it has similar benefits as protein decided to go with package 3 because it was the more expensive option. Which completely coincides with the lay theory if it is healthy, it is expensive.

VI.SUMMARY:

1. From the first experiment we understood that there is a **strong relationship between healthy food choices and corresponding prices**. Almost 70% of the respondents agreed that if it is healthy it must be expensive
2. The second experiment was designed to check the **bidirectionality between healthy foods and prices**. The second experiment proved the interchangeability. If it is expensive then it has to be healthy. 68.8% of the respondents agreed with the theory.
3. Statistical data derived using **Spearman rank correlation** showed that correlation between healthy foods and price ranges between **0.7-0.8**. This is higher than the results from the questionnaire.
 - a. This leads to the conclusion that the images of the packages of the products has caused a deviation in the decision making of the respondents.
4. To quantify the impact of keywords in packaging the third experiment was designed. This experiment yielded in the result that:
5. Keywords used on the packaging which are for the right target audience reinforces the lay theory that Healthy=expensive Moreover, the study showed that the correlation between healthy food and price increased from 0.7 to 0.9.
 - a. However, the reverse is also true those keywords that are not aligned with the thought process of the target audience can negate the lay theory of Healthy=expensive. At times it can also cause a negative correlation.

VII.CONCLUSION:

In conclusion it can be understood that there is a nuanced understanding of packaging required to be infused in the healthy food household industry. There is a strong correlation between prices of commodities and the value it adds to a consumer. Factors like keywords package colors can help HORECA business owners strengthen pricing strategies and use appropriate tactics to increase sales.

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