

A Study of Nutritional Labelling Impact on Consumer Preferences

¹Sushant Bajaj,

¹Research Scholar

¹School of economics,

¹ Sarla Anil Modi School of Economics, NMIMS University, Mumbai, India

Abstract

This study investigates the role of nutritional labelling in shaping consumer food choices in India amidst a growing shift toward health-conscious consumption. Employing a mixed-method approach, the research combines quantitative survey data from over 100 diverse respondents with qualitative case studies of popular food products to assess both awareness and deception in food labelling. Findings indicate that while a significant portion of consumers are increasingly attentive to nutritional labels, widespread issues of misleading claims and information asymmetry persist—particularly regarding sugar content, artificial additives, and ambiguous health claims. Case studies such as Bournvita and protein bars highlight how brands exploit consumer trust through deceptive labelling. The study concludes that although nutritional awareness is rising, insufficient regulation and vague labelling practices can undermine informed decision-making. It emphasizes the urgent need for stricter regulatory oversight, consumer education, and transparent labelling practices to protect public health and promote informed food choices.

I. INTRODUCTION

Economic expansion shifts in consumer preferences, and the rise of urban living have resulted in a shift in consumption trends from conventional food items to processed goods and higher end products (Morisset & Kumar, 2011). In India, dietary habits and preferences are undergoing a notable transformation, influenced by several factors such as evolving food markets, rapid urbanization, fluctuations in food prices, unpredictable agricultural production, and uneven distribution over the past decade (Pradhan, Taylor, Agrawal, Prabhakaran, & Ebrahim, 2013). According to data published on Statista, (Minhas, 2023) during 2022, the projected market worth of packaged food in India surpassed four trillion Indian rupees. The market value of packaged food is anticipated to exceed five trillion Indian rupees by 2026. In India, numerous ready-to-eat food items and beverages contain significant amounts of added sugar, sodium, and refined carbohydrates. Overconsumption of such products and highly processed meals escalates the risk of obesity and related non-communicable diseases. (Singh, et al., 2022).

Now the health and wellness trend are not unique to the West but is also gaining pace in India. As more people become health conscious, there is an increasing demand for healthier food options. The market is witnessing a trend towards healthier and organic food goods. The consumer has become wiser during COVID and has recognized the effect of food on numerous elements of health particularly. It has been discovered that there is going to be a major movement to foods featuring reduced sugar and greater Fiber levels. (Bector, 2023). As per the report by Avendus Capital (2022). Exhibiting a remarkable rate of expansion, the industry is forecasted to experience a Compound Annual Growth Rate (CAGR) of 20%, significantly surpassing the global average by three times and outperforming India's entire packaged Food and Beverage (F&B) market by 1.5 times. Forecasts suggest a twofold increase in per capita expenditure on health foods by 2026, primarily driven by the heightened interest among millennials and their families. The use of nutritional labelling on food products helps bridge the gap and reduce information asymmetries between the producer and consumer (Tarabella & Burchi, 2016). Consumers believe health-related information on food labels is credible and supported by scientific evidence. Product packaging includes comprehensive nutrition information, outlining the specific content of each nutrient within the product. Termed as nutrition marketing, commonly employed 5 strategies encompass health claims, structure/function claims, nutrient content claims, and factual statements, such as low-fat or high-protein indications. (Soni & Kaur, 2023). Governments all across the globe utilize or at least aim to utilize different front-of-package (FOP) food labelling systems to advise consumers about nutrition. (Roberto, et al., 2012). The usage of nutritional labels affects buying behavior because it alters product evaluations and perceptions. (Drichoutis, Lazaridis, & Nayga Jr, 2006). Enterprises utilize misleading assertions regarding the health effects of products to reshape perceptions surrounding unhealthy food items (Verma, Aggarwal, Nath, & Kakkar, 2023). This has sparked concerns about deceptive labels, hidden production information, and incomplete ingredient disclosures. As a result, the impact of uneven information on how Indian consumers shop

has become a major worry. It could lead to unhealthy eating habits, risks from unsafe products, and difficulty in buying according to ethical or religious belief.

II. RATIONAL AND RESEARCH QUESTION

II.A Research Questions

- Does nutritional labelling play a vital role in consumer decision making while purchasing food items?
- What are the common types of incomplete or misleading nutritional information found on food labels, and how do these discrepancies impact consumers?

II.B Rationale

In recent years, there has been an evident shift in consumer preferences towards healthier and more nutritious food choices, typically portrayed as good for one's well-being. However, certain hidden ingredients within these products can possibly be detrimental to the health of customers.

This study intends to explore the influence of front-of-pack labelling and the resulting information asymmetry on consumer preferences. The major purpose is to show that inadequate nutritional information greatly affects consumer decisions, perhaps leading to the unintentional ingestion of products considered 'healthy' or 'nutritious,' which may include hazardous ingredients not appropriately highlighted by producers. The research underlines the crucial function of clear and accurate food labelling in helping consumers make informed and smart choices. By investigating frequent misleading tactics on food labels and their effects on customer confidence, this research tries to offer practical insights for supporting healthier consumer decisions and enhancing public nutritional awareness in India.

III. LITERATURE REVIEW

III.A Shift-in Trends

Historically, Indians have been consuming traditional home-cooked meals with few manufactured and packaged goods (Jones, et al., 2017). This consumption trend has been one of the main reasons why nutrition labelling and awareness is a relatively new phenomenon amongst Indian citizens (Bhawan, 2023). However, in recent decades, consumption of processed, packaged, and fast foods has expanded substantially in metropolitan areas due to urbanization, higher standards of living, the rise of supermarkets, and the convenience of getting goods delivered through technology (Soni & Kaur, 2023). Research conducted by Khondoker Abdul Mottaleb and Ashok K. Mishra in (2022) reveals a significant surge in the average per capita monthly expenditure on processed foods, showing a substantial 77% increase from 1990–1991 to 2011–2012. This rise was predominantly fuelled by heightened total consumption expenditure and the increasing urbanization of Indian households. Furthermore, individuals with consistent income sources, such as salaried employees, exhibited a higher likelihood of incorporating processed foods into their diets compared to other household types. India stands as a significant global hub for packaged food products. With aggressive marketing, affordable pricing, and enhanced accessibility, pre-packaged goods are increasingly captivating a larger consumer base. (Bera, Singh, & Bhattacharya, 2023), which is why the desire for comprehensive food labelling standards has risen. (Limbu, et al., 2019) This rapid rise in consumption is being met by a larger increase in obesity & noncommunicable diseases (Gupta & Dharni, 2016) which is one of the biggest reasons why there has been a shift in preferences favoring nutritional and healthy snacks that claim to be healthy for the consumer. When consumers consider these items to be nutritious, they frequently substitute them for regular meals, leading to an imbalance in energy and nutrients. Nutritious food items have emerged as a relatively recent addition to the human diet, with the global population displaying a favorable inclination towards functional meals (Shamal & Mohan, 2017).

III.B INFORMATION ASYMMETRY

People cannot make informed decisions if they are not aware of the nutritional value of their diet (Spiteri Cornish & Moraes, 2015). Customers often rely on claims to guide their food selection; therefore, these statements may serve to reduce their desire to learn more about the meal's nutritional makeup (Soni & Kaur, 2023). The inability of buyers to ascertain the presence of credibility attributes during purchase, without supplementary information like labels, implies that

certain parties in the market transaction, notably the producers, possess more information than others, such as retailers and consumers. This situation is called as information asymmetry. (Schrobbach, Zhang, Loechel, Ricketts, & Ingham, 2023). Most consumers tend to make purchasing decisions based on the more condensed front-of-pack claims. This aligns with recent literature which indicates that labelling significantly influences consumers' purchasing decisions. (Shamal & Mohan, 2017). Studies have shown that consumers can effectively assess a product in relation to other choices in the market based on labelled information components. (Drichoutis, Lazaridis, & Nayga Jr, 2006). Findings from a study conducted in 2017 indicated that, apart from the price, all product attributes impacting consumer health were deemed highly significant by young individuals in India. This demonstrates the rising worries for the nutritional content of food and the possible health risk associated with the consumption of food (Kumar & Kapoor, 2017). Nutritious food items have recently gained popularity in consumer diet plans, with the global population displaying a favorable inclination towards functional meals (Shamal & Mohan, 2017).

III.C THE FSSAI

“The Food Safety and Standard Authority of India” (FSSAI) was established in 2006 to address food-related issues, consolidating various regulations. FSSAI's main goal is to establish science-based standards for food products, ensuring the safe and wholesome availability of food to consumers (Bera, Singh, & Bhattacharya, 2023). Nutrient content claims serve the purpose of offering details about vital nutrients required by FSSAI, alongside extra nutrients that marketers choose to disclose voluntarily. The assertion 'zero trans-fat' is frequently displayed on food packaging. FSSAI mandates the revelation of energy, protein, overall carbohydrates, total sugars, added sugar, total fat, saturated fat, trans-fat, cholesterol, and sodium on food labels. (Soni & Kaur, 2023) In the study conducted by Pavleen Soni and Kiranjot Kaur (2023), various assertions were recognized for FSSAI-mandated nutrients, including terms like low cholesterol, low fat, low sugar, and products without added sugar. These claims are predominantly found on the front and rear of food packaging, as well as on the sides. However, many word claims on food packaging do not adhere to FSSAI regulations and include prohibited claims or fail to meet the prescribed criteria (Soni & Kaur, 2023).

III.D INDUSTRY MANIPULATION

Attributes of food quality related to human health, including safety and the absence of harmful additives, are fundamental and anticipated by all consumer segments as part of fundamental human needs, yet they are not consistently fulfilled. (Schrobbach, Zhang, Loechel, Ricketts, & Ingham, 2023). A serious concern raised in the study posed by Fernan (2016) was the potential for industry manipulation of ingredients and product context is a worry related to FOP labelling misunderstanding. Manufacturers can make changes to the components and nutritional content of items to raise their health ratings without really improving the product's nutritional value. The issue of information comprises of two distinct subtopics: incompleteness and asymmetry. Incompleteness pertains to the inherent limitation that not everyone possesses all the pertinent knowledge. Conversely, asymmetry highlights the unequal distribution of information, with certain individuals holding confidential data that remains inaccessible to others. (Socoliuc, Grosu, Ciubotariu, Brinzaru, & Cosmulese, 2022). A considerable portion of claims featured on food packaging remains unclassifiable and unverifiable due to the regulator's lack of precise definitions. (Soni & Kaur, 2023). The absence of perfect information concerning product quality gives rise to consumer challenges, including moral hazard, which occurs when sellers determine product quality (endogenous quality), and adverse selection, which involves offering goods of varying and undisclosed qualities to buyers (exogenous quality). (Socoliuc, Grosu, Ciubotariu, Brinzaru, & Cosmulese, 2022).

III.E SUGAR CONTENT

Taking RiteBar's Max Protein as an example, it was found that the company claimed 'Zero Added Sugar' but added a sugar alcohol called Maltitol which contains 90% of the sweetness of sugar. In one 67gm bar, there is ~13gm Maltitol and ~4gm Other Sugar. So ~25% of this bar is Sugar. The same is shown in Fig. 1 & Fig. 2 in the appendix. This highlights the hints of misleading information from the producer's perspective as well as lack of awareness from the consumer's perspective regarding nutritional labelling.

An additional instance of misleading nutritional details can be observed in the case of Coke Zero, now rebranded as Coca-Cola Zero Sugar. Marketed as a healthier substitute for the original sugar-infused beverage, Coca-Cola Classic, it boasts

zero calories and sugar content while retaining the distinctive Coca-Cola taste, appealing to individuals aiming to reduce their sugar consumption or manage their weight (Bantilan, 2023). Coke Zero Sugar, a widely favoured zero-calorie soft drink option, consists of a blend of carbonated water, caramel Colour, phosphoric acid, aspartame, potassium benzoate, natural flavours, potassium citrate, acesulfame potassium, and caffeine. However, some of these additives, such as artificial sweeteners like aspartame and acesulfame potassium, have been linked to significant health hazards, including weight gain and alteration of gut bacteria. Phosphoric acid, another component, has been connected with bone density loss and an increased risk of kidney disease. (Chintapalli, 2022). Zero-calorie soda delivers zero nutritional benefit, typified by a 300-ml can of Coca-Cola Zero Sugar includes no calories, carbohydrates, protein, or Fats, and has no sugar, delivering only 7.5 mg of sodium. While the beverage is devoid of the traditional components adding to nutritional value, its usage of artificial sweeteners. (Bantilan, 2023). The same is shown in the appendix Fig. 3 & Fig. 4

The consumption of artificially sweetened beverages, including sugar-free ones like Coke Zero, has been associated to an elevated risk of type 2 diabetes, as demonstrated by multiple long-term studies. In a 14-year study including 66,118 women, a correlation was identified between the intake of artificially sweetened beverages and an elevated risk of acquiring type 2 diabetes. (Fagherazzi, et al., 2013). These findings collectively underline the possible downsides of depending on sugar substitutes in diet beverages as a method to decrease the risk of diabetes and obesity.

III.F CONSUMER KNOWLEDGE AND PRODUCT AWARENESS

The front-of-pack label with simplified nutrition information is preferred by consumers over packaging with extensive nutrition information on the back of the products. These consumers lack the knowledge necessary to compare products and interpret the nutrient table and also lack the time to read the food's more complicated nutrition label on the back. (Grunert & Wills, 2007). In a 2013 study, an important finding surfaced regarding consumers' understanding of product labels. Despite an urban literacy rate of 84% nationwide, a substantial 99% of survey participants received an education. Approximately 45% of respondents reported buying pre-packaged goods on a weekly basis, with around one in five making daily purchases. The primary drivers for these purchases included factors such as taste, quality, convenience, and user-friendliness. Notably, the key revelation was centered around how consumers engaged with product labels. Although a significant 90% reported reading food labels, the majority (81%) primarily concentrated on details such as the manufacturing date or the expiry/best before date. Surprisingly, among those who did focus on labels, less than one-third paid attention to nutritional facts and ingredients. Nutrient information provided on labels often went unnoticed, primarily due to consumers either lacking nutritional knowledge or perceiving the information as overly intricate. (Vemula, Gavaravarapu, Mendu, Mathur, & Avula, 2013). According to a survey conducted in Bihar, India, approximately 40% of the participants cited food price as the primary motivator for reviewing food labels before making a purchase, with brand name following closely at 30%. Surprisingly, health consciousness is ranked as the least significant motivating factor. Only 10% of the respondents expressed interest in the nutritional value of the products. Furthermore, the survey revealed that half of the respondents, or 50%, found the use of technical or scientific language to be a barrier in understanding food labels, while 25% were hindered by small font sizes, and 15% were deterred by unfamiliar language. Consequently, there is a clear need for a comprehensive mass awareness campaign aimed at enhancing nutritional awareness among consumers (Pandey & Kritika, 2022). A study by Pavleen Soni and Kiranjot Kaur (2023) emphasizes the role of multinational corporations (MNCs) in safeguarding consumer health by promoting accurate nutrition information in India. It underscores the need for MNCs to actively engage in responsible information dissemination rather than evading regulatory measures. Aligning India's regulatory framework with global standards, especially those set by the Food Safety and Standards Authority of India (FSSAI), is recommended for improved oversight and compliance. Specific measures, such as clear guidelines for food claims, reformulation of products, and a comprehensive rating system highlighting harmful nutrients, are proposed to enhance consumer awareness and facilitate informed food choices. The existing literature highlights the lack of consumer awareness pertaining to pre-packaged foods and beverages. Our study aims to bridge the gap between deceptive labelling and consumer purchasing decisions. Owing to the swift surge in the promotion and manufacturing of processed foods, protein-based snacks, and beverages without added sugar, there has been a notable surge in the demand

for these health-oriented snacks. Consumers tend to snack on these packaged foods without knowing the underlying threats posed by them. Awareness must be spread on a large-scale basis to regulate consumption and safeguard public health.

IV. METHODOLOGY

This paper employs a mixed method approach combining both quantitative and qualitative analysis to understand the impact of nutritional labelling on consumer preferences in India following the recent consumer preferences shift towards nutritional and healthy snacks and how it can be misleading in certain scenarios.

IV.A Quantitative Data collection

Sample size

A sample size of more than 100 people belonging to different age groups and parts of the society was taken. These participants, selected via convenience sampling, represent a wide demographic spectrum in terms of age, gender, and socio-economic status, ensuring diverse insights and results.

Methods of Data collection

The quantitative data collection on consumers of different age groups and occupation on their food purchasing habit and preferences was done by conducting a survey through a questionnaire created via google forms. The questionnaire involved basic information about the consumer in the first section and included MCQ questions about consumer preferences and various factors that affect their choices while buying a product focusing mainly on healthy food products.

Analysis of results from this survey will help in answering the first research question of the paper and give information about consumer awareness about various nutritional aspects of the food products they are purchasing and the impact of nutritional labelling and packaging on consumer preferences and purchase decisions while buying a food item.

The questionnaire is more focused on comparing healthy and non-healthy snacks in order to check if the current trend of following a healthy lifestyle gaining popularity is accurate in Indian population as well which can help us evaluate the impact of nutritional labelling and their awareness about the same a lot better.

IV.B Qualitative Data

To address the second research question of how misleading information affect consumer choices and its consequences qualitative analysis was conducted. This qualitative analysis delves into the tactics employed by food manufacturers, explores the impact of misleading labels on consumer choices, and examines the resulting consequences for health and well-being. It utilizes existing research, reports from reputable sources, and articles by qualified nutritionists. Techniques such as textual analysis and case studies are used. Real life case studies of various products and instances of misleading labels have been incorporated into the qualitative analysis to back the claims of the research and the analysis and show examples where consumers have actually fallen into the trap and made purchases based on false information given by reputed brands.

V. DATA ANALYSIS AND RESULTS

V.A Quantitative Analysis and Implications

- Consumer Nutritional awareness level

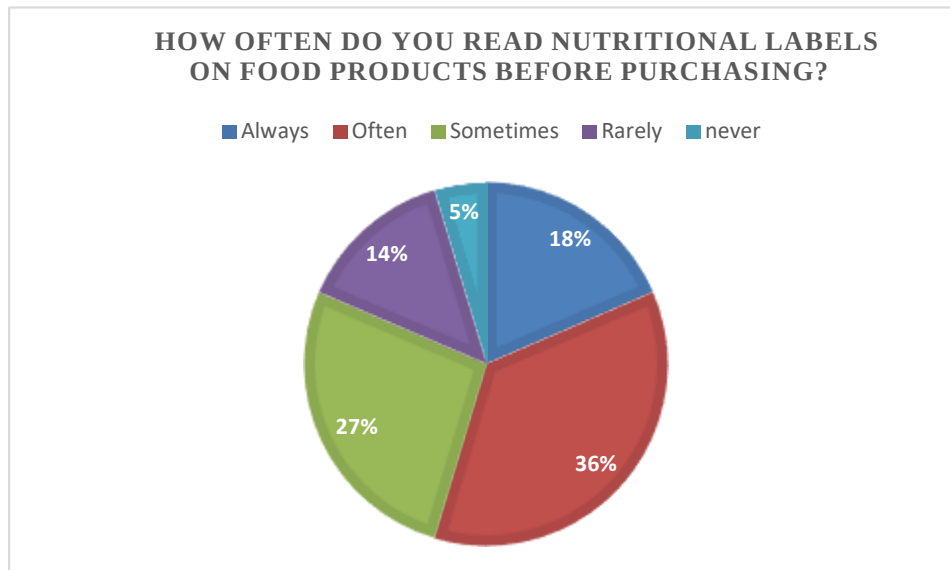


Figure.1 This graph depicts the survey responses regarding consumer engagement with nutritional labels on packaged food products. The data suggests a prevailing trend of moderate to high nutritional awareness. The highest response category (36%) falls within the "often" category, indicating a frequent consultation of nutritional information. This is further supported by the combined percentage (63%) of respondents who reported reading labels "often" or "always." While a smaller segment (18%) reads labels "always," the overall distribution suggests a consciousness regarding the nutritional content of the products being purchased.

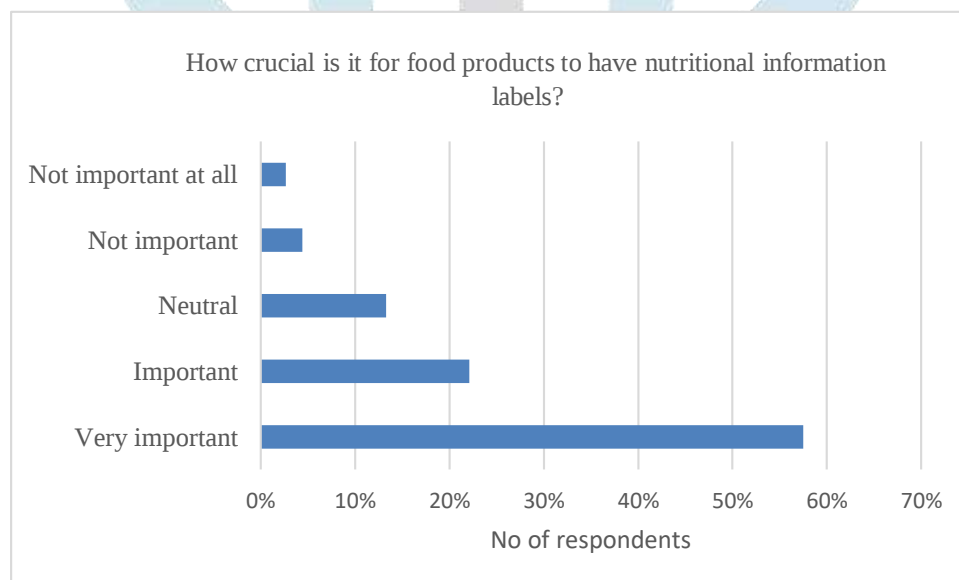


Figure-2 This graphs shows how various survey respondents rate the importance of food products having nutritional labelling on a 5 unit scale from not important to very important

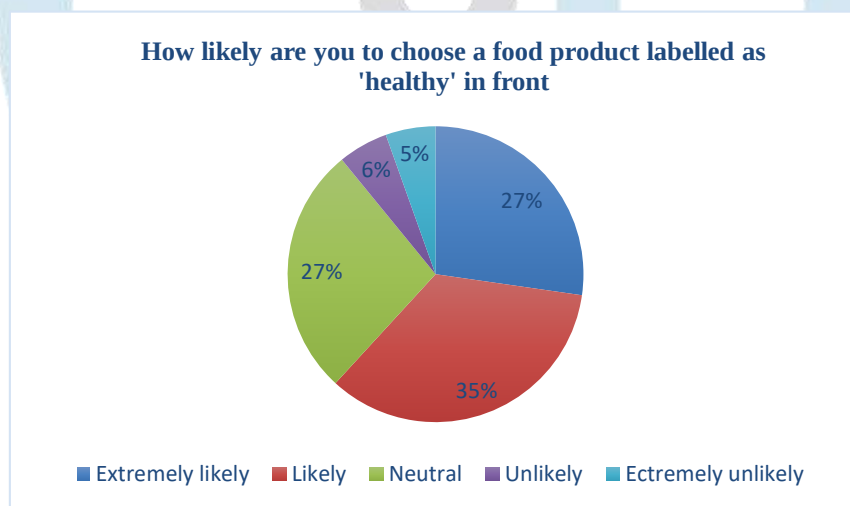
In line with the research objectives of understanding consumer awareness of nutritional labels, the survey data revealed a positive trend. A line graph analysis showcased that a significant majority of respondents (approximately 80%) acknowledge the importance of nutritional information labels on food products. These findings suggest a successful survey in gauging consumer awareness, with a clear indication that a substantial majority of participants find nutritional labels to be a significant factor influencing their food choices.

- Impact of nutritional labelling on consumer decision making

Price		Brand		Nutritional content		Taste		Packaging		Ease of access	
Mean	3.481481	Mean	3.623853	Mean	3.885596	Mean	3.970642	Mean	3.12945	Mean	3.542202
Standard E	0.121632	Standard E	0.111205	Standard E	0.109125	Standard E	0.123402	Standard E	0.118906	Standard E	0.115502

Table 1

In this data collected from a particular question in the survey asking respondents to rate the influence of various factors on their decision to purchase packaged food products (on a scale of 1 to 5), nutritional content emerged as a significant factor (3.89), ranking second only to taste (3.97). This highlights the growing importance consumers place on the information provided on food labels. Price (3.54) also plays a considerable role, indicating a value-conscious mindset. Brand reputation (3.42) and convenience (3.21) round out the factors influencing consumer choice, demonstrating the multifaceted nature of purchasing decisions. It's important to acknowledge that this data may not represent the entire population due to sample size limitations. However, it aligns with existing research emphasizing the impact of nutritional labels on consumer behavior. Studies have shown that clear and concise nutritional information can empower consumers to make informed choices, potentially leading to healthier dietary patterns (Pathiraja and Ariyawardana 2003)



In analyzing the above pie chart, a clear connection between nutritional labelling and consumer decision-making is evident. The survey question asked respondents: "Considering various factors, how likely are you to choose a packaged food product labelled as 'healthy'?" A significant majority (62%) of respondents indicated a high likelihood (extremely likely or likely) to choose such a product. This highlights the fact that consumers are actively looking for and prioritizing nutritional information when making purchasing decisions. The strong preference for "healthy" labelled products demonstrates the impact of nutritional labelling on consumer choices. The label acts as a quick indicator, influencing purchasing behavior towards options perceived as more health conscious.

Result:

Through the findings of quantitative analysis performed by interpreting the responses from the google forms we can conclude that most consumers nowadays are aware about nutritional value and contents of the food products they are consuming and it also impacts their perception of products and, hence purchasing decisions. It is also important to acknowledge the presence of consumers that don't look at labelling as seen as a result in the survey and emphasize on the importance of government initiatives to increase knowledge of consumers and ensure information symmetry.

V.B Qualitative Analysis and Result

The Muddy Waters of Misleading Labels:

The supermarket aisle – a battlefield of brightly coloured packaging and persuasive marketing claims. Consumers, armed with grocery lists and a desire for health, navigate a seemingly straightforward system. However, beneath the surface lurks

a troubling truth: misleading information on food labels which can create a confusing and unhealthy landscape for consumers.

The Art of Deception: A Look at Common Misleading Tactics:

Food manufacturers employ a variety of tactics to manipulate consumer perception and promote unhealthy products. These tactics can be subtle or blatant, but all contribute to a system that disadvantages consumers seeking to make informed choices. Here's a closer look at some prevalent strategies:

- **Hidden Sugars:** "Sugar-free" might sound like a health halo, but a closer look often reveals the presence of sugar alcohols like maltitol or sorbitol. These ingredients, while not technically sugar, still contribute calories and can cause digestive discomfort. This is particularly concerning for those managing weight or blood sugar, who might be unknowingly misled. **The Deception:** Consumers are lulled into a false sense of security, believing they are making a healthy choice when they are not.
- **Misleading Health Claims:** Labels emblazoned with phrases like "boosts immunity" or "improves heart health" often lack scientific backing. These unsubstantiated claims prey on consumers' desires for quick and easy health solutions, swaying them to purchase unhealthy products under the assumption of added benefits they simply don't provide. This undermines informed decision-making and creates a false sense of security regarding dietary choices. **The Deception:** These claims exploit consumers' health anxieties and lack of scientific knowledge, leading them to prioritize vague health promises over actual nutritional value.
- **Confusing Terminology:** Vague terms like "natural" or "whole grain" lack clear definitions, leaving consumers confused about the actual nutritional value of a product. A "natural" candy bar might still be packed with sugar and unhealthy fats, while "whole grain" might not translate to a high-fiber option. Consumers are left with limited information and the inability to make informed choices about the food they put on their plates. **The Deception:** Manufacturers leverage the positive connotations associated with terms like "natural" and "whole grain" without providing transparency about the actual ingredients or nutritional content.
- **Visual Deception:** Packaging plays a significant role in influencing consumer choices. Bright colors, cartoon characters, and health-oriented imagery might be used on products that are high in sugar, sodium, or unhealthy fats. This tactic is particularly concerning when targeting children, who are more susceptible to visual cues and marketing messages. **The Deception:** Manufacturers create a visual illusion of healthfulness, distracting consumers from the actual nutritional content of the product.
- **Portion Distortion:** Serving sizes listed on labels might not reflect how much people typically consume in one sitting. This can lead to underestimating calorie and fat intake, particularly for processed foods that are often designed to be hyper-palatable and encourage overconsumption. **The Deception:** Manufacturers manipulate serving sizes to downplay the true caloric content of a product, leading consumers to believe they are consuming less than they actually are.

How These Misleading Labels Impact Consumer Choices:

The consequences of misleading labels extend far beyond confusion. These tactics have a significant impact on consumer behaviour, creating a ripple effect that can negatively impact health and well-being:

- **Unhealthy Purchases:** Consumers misled by "healthy" claims end up purchasing products high in sugar, sodium, or unhealthy fats. This not only undermines their dietary goals but can also contribute to long-term health problems like obesity, diabetes, and heart disease. **The Impact:** Consumers are essentially tricked into making choices that contradict their health goals, leading to a cycle of unhealthy eating habits.
- **Diet and Weight Management Challenges:** Misleading labels pose a significant challenge for those managing weight or specific health conditions. Confusing labels make it difficult for these individuals to navigate the grocery store effectively and differentiate between healthy options and cleverly marketed, unhealthy products. This can lead to frustration, a sense of helplessness, and ultimately hinder their ability to achieve dietary goals. **The Impact:** For those already struggling with weight management or specific health conditions, misleading labels create an additional barrier to achieving their health goals, potentially leading to feelings of discouragement and decreased motivation.

- **Erosion of Trust:** Repeated exposure to misleading labels can create a sense of scepticism towards all food labels, making it even harder for consumers to identify healthy options. This scepticism can lead to a paralysis of choice and a sense of cynicism towards the food industry as a whole, potentially leading consumers to disengage from healthy eating altogether

VI.C Case studies:

• **Bournvita**

In 2019, a social media firestorm engulfed Bournvita, a beloved malt beverage in India long marketed as a healthy drink for children. Social media influencer "Food harmer" Revant Himatsingka ignited the controversy by highlighting the high sugar content in Bournvita. While the exact amount can vary, some sources claimed it reached a concerning 7.3 grams per serving, translating to roughly 37 grams of sugar per 100 grams of powder. This revelation directly contradicted Bournvita's image and tagline, "Taiyari Jeet Ki" (Preparation for Victory), sparking a national debate about misleading labelling and marketing practices.

Critics argued that while Bournvita's labels likely adhered to technical regulations, the crucial information about sugar content wasn't prominently displayed. The marketing strategy heavily focused on portraying Bournvita as a nutritious beverage essential for children's growth and development, potentially downplaying the significant amount of added sugar. This created a perception of misleading labelling, even if the legalities might have been technically sound.

The situation escalated when Mondelez India, the company behind Bournvita, responded with a legal notice to the influencer. This defensive approach backfired spectacularly, drawing more attention to the controversy and garnering sympathy for the influencer. The National Commission for Protection of Child Rights (NCPCR) in India also took notice, raising concerns about potentially misleading marketing that specifically targeted children.

The Bournvita sugar controversy serves as a cautionary tale for the food and beverage industry. It highlights the critical difference between legal compliance on food labels and consumer perception. Companies need to be acutely aware of the message their marketing conveys, even if the labels meet all technical requirements. Transparency and clear labelling are crucial. Consumers, especially parents choosing products for their children, deserve to make informed decisions based on accurate information about the sugar content and potential health implications. This incident underscores the need for a more balanced approach, where marketing reflects the true nature of the product while empowering consumers with clear, easy-to-understand information.

• **Protein Bars**

Protein bars are a popular grab-and-go option marketed towards health-conscious consumers seeking a convenient source of protein. However, the industry faces scrutiny for potentially misleading labeling practices, particularly regarding sugar content. This case study examines these concerns and explores the impact on consumers.

A key issue lies in the use of sugar alcohols like maltitol, erythritol, or sorbitol. Many protein bars, including Rite Max Protein bars, boast "sugar-free" claims on their packaging. While technically compliant with regulations – sugar alcohols aren't classified as sugar – this can be misleading for consumers. They often associate "sugar-free" with an absence of any sweeteners, potentially overlooking the presence of sugar alcohols.

This creates a situation where consumers seeking sugar-free options for weight management or blood sugar control might be unknowingly consuming sugar alcohols. Sugar alcohols have some benefits – fewer calories and a lower impact on blood sugar compared to regular sugar. However, they still contribute some calories and can cause digestive issues in some individuals. This can be particularly concerning for those relying on the "sugar-free" label for specific dietary needs. The images below show how Ritebite's max protein advertises zero added sugar in front of the pack but has 12.7g maltitol which is a sugar alcohol present.



Fig 1:
Front-of-pack of RiteBar's Max Protein Bar
Claiming Zero Added Sugar

Nutritional Information	
Serving Size 1Bar (67g)	
Calories 258	ZERO Added Sugar
Protein	20.0 g
Total Carbohydrate	31.3 g
Dietary Fiber	5.0 g
Polyol (Maltitol)	12.7 g
Sugar	3.9 g
(from other ingredients)	
Net Carbs	13.6 g
Total Fat	9.8 g
Saturated Fat	4.0 g

Fig 2:
Back-of-pack showing added sugar
alcohols (Polyol)

Source: (FIT SHIT, 2018)

• Kraft's Capri Sun

Kraft's Capri Sun fruit drink pouches have long been a popular choice among children and parents alike, marketed as convenient and "all-natural" beverages. However, the brand faced criticism and controversy over its labeling practices, particularly regarding the portrayal of the product as a healthier option. The packaging prominently features images of fruit and claims of being "all-natural," which may lead consumers to perceive Capri Sun as a wholesome beverage choice. However, some varieties of Capri Sun contain added sugars and artificial flavours, raising questions about the accuracy and transparency of the product's labelling. Critics argue that the branding and marketing tactics employed by Kraft may mislead consumers about the true nutritional content of Capri Sun and its alignment with their expectations for a healthy beverage option.

In response to the criticism, Kraft faced pressure to address concerns about the accuracy of Capri Sun's labelling and marketing practices. Consumer advocacy groups and health experts called for greater transparency in labelling and advertising to ensure that consumers are adequately informed about the nutritional content of the products they purchase. The controversy surrounding Capri Sun underscores broader issues within the food industry regarding the accuracy and clarity of labelling practices, particularly for products targeted at children and families. As consumers become increasingly conscious of their dietary choices and seek healthier options, there is a growing demand for greater transparency and accountability from food manufacturers to accurately represent the nutritional content of their products.

• Result

This textual analysis shows how consumers are easily misled and taken advantage of through different misleading tactics by various known brands while making their daily food choices. Case studies on Bournvita, Protein bars and Capri sun provide us with real life examples of such misleading and false labelling done by reputed brands to persuade consumers into buying their products. The potential consequences of misleading labeling are significant. Misinformed choices can lead to unintended sugar intake, while companies risk damaging their reputation and losing consumer trust if labeling practices are not transparent. Consumers by reading labels and understanding the difference between sugar and sugar alcohols, can make informed choices based on their dietary needs and counter these misleading tactics employed by many FMCG companies.

VII CONCLUSION AND RESEARCH LIMITATIONS

• CONCLUSION

There is a noticeable shift towards a healthy lifestyle among consumers of food items as they start becoming more aware of the items they are consuming and paying more attention to labels and switch to healthier snacks. This awareness, even

though a good sign can prove to be less fruitful to consumers if the brands keep using the misleading labeling tactics as mentioned in the paper to fool customers into buying their product.

This calls for necessary government intervention by implementing stricter regulations on industries and fostering greater transparency in food labelling. This could involve stricter definitions for terms like "healthy" and "natural," along with mandated disclosure of sugar alcohols and added sugars. Additionally, promoting consumer education initiatives can empower individuals to make informed choices. Consumers themselves can become more aware of these deceptive tactics and develop a critical approach to reading food labels. By understanding the information presented and not relying solely on heuristics or marketing claims, they can navigate the grocery store with a sharper eye and make healthier dietary choices.

• **Limitations/Further Scope of Study**

This study's findings may be limited due to the small sample size of the survey conducted leading to skewed results. Skewed results can also be found due to selection bias as the survey was mainly circulated to college students belonging to the age group of 18-24 or family members and relatives belonging to middle to higher income families and hence leading to biased results as these category of people might possess greater awareness of nutritional information as compared to other usual consumers due to factors like educational attainment or socioeconomic status.

Hence further study could involve taking a larger sample size to conduct the survey incorporating people from a broader range of age groups, income levels, educational backgrounds, and geographic locations within India to gain reliable and less skewed data for analysis. This approach would provide a more accurate representation of the Indian population's awareness and susceptibility to misleading food labels. Additionally, exploring alternative data collection methods beyond surveys, such as in-depth interviews or focus groups, could offer richer insights into consumer decision-making processes.

ACKNOWLEDGMENTS

I would like to express my sincere gratitude to Mrs. Parinaaz Mehta, my research guide, for her constant support, valuable guidance, and constructive feedback throughout this project. I am also thankful to the Sarla Anil Modi School of Economics, NMIMS University, for providing the resources and academic environment necessary for conducting this research. I deeply appreciate the time and input of all the survey participants, whose responses were crucial to the study. Lastly, I extend my heartfelt thanks to my family and friends for their unwavering encouragement, patience, and motivation during this research.

REFERENCES

1. Avendus Capital. (2022, March 3). India set to become a USD 30 billion Market Opportunity for Health Food by 2026.
2. Bantilan, C. (2023, March 20). Is Coke Zero Bad for You, Retrieved from Healthline
3. Bector, A. (2023, May 5). The Future of the Indian Food Industry Trends and Opportunities for Growth. Retrieved from Financial Express
4. Bera, O., Singh, R., & Bhattacharya, S. (2023). Food literacy & food labeling laws- a legal analysis of India's food policy . J Family Med Prim Care.
5. Bhawan, V. R. (2023). Report on Assessing Effectiveness of Front-of-Pack Nutrition Labels (FOPNL) for Pre-Packaged Processed Foods in India: A Study on Formats, Acceptability and Potential Use. Tarnaka, Hyderabad: ICMR-National Institution of Nutrition.
6. Census. (2011). Pune District - Maharashtra - Population Census 2011. Retrieved from <https://www.census2011.co.in/census/district/359-pune.html>
7. Chintapalli, S. (2022, November 8). Is It True That Coke Zero Has No Sugar.
8. C., Lazaridis, P., & Nayga Jr, R. M. (2006). Consumers' use of nutritional labels: a review of research studies and issues. Academy of marketing science review 2006 (1), 17-20.

9. Fagherazzi, G., Vilier, A., Sases Sartorelli, D., Lajous, M., Balkau, B., & Clavel-Chapelon, F. (2013). Consumption of artificially and sugar sweetened beverages and incident type 2 diabetes in Etude Epidemiologique aupres des femmes de la Mutuelle Generale de l'Education Nationale-European Prospective Investigation into Cancer and Nutrition cohort. *Am J Clin Nutr*, 517-523. 19
10. Fernan, C. (2016). Effects of Front-of-Package Marketing and Corrective Labels on Consumer Perceptions of the Healthfulness of Nutritional Bars. FIT SHIT. (2018, December 14). Retrieved from fitshit.in: <https://fitshit.in/the-best-worstprotein-bars-in-india/> Fowler, S., Williams, K.,
11. Resendez, R., Hunt, K., Hazuda, H., & Stern, M. (2008). Fueling the obesity epidemic ? Artificially sweetened beverages use and long term weight gain. *Obesity* (Silver Spring)
12. Grunert, K. G., & Wills, J. M. (2007). A review of European research on consumer response to nutrition information on food labels. *Journal of public health*, 385-399.
13. Gupta, K., & Dharni, K. (2016). Use and influence of nutrition labelling: an emerging market experience. *Nutrition & Food Science- Volume 46*, 441-456.
14. Hall, M. G., Lazard, A. J., Higgins, I. C., Blitstein, J. L., Duffy, E. W., Greenthal, E., . . . Smith Taillie, L. (2022). Nutrition-related claims lead parents to choose less healthy drinks for young children: a randomized trial in a virtual convenience store. *The American Journal of Clinical Nutrition*, 115(4), 1144-1154.
15. Huang, L., & Lu, J. (2016). The Impact of package Color and the Nutrition Content Labels on the Perception of Food Healthiness and Purchase Intention. *Journal of Food Products Marketing*, 191-218.
16. Jones, A., Dunford, E., Crossley, R., Raj, T. S., Rayner, M., & Neal, B. (2017). An evaluation of the healthiness of the Indian packaged food and beverage supply. *Nutrients* , no, 1103.
17. Kumar, N., & Kapoor, S. (2017). Do labels influence purchase decisions of food products ? Study of young consumers of an emerging market . *British Food Journal Volume - 119*, 218-229.
18. Limbu, Y., McKinley, C., Gsutam, R., Ahirwar, A., Dubey, P., & Jayachandran, C. (2019). Nutritional knowledge, attitude, and use of food labels among Indian adults with multiple chronic conditions - A moderated mediation model. *British Food Journal Volume 121*, 1480-1494.
19. Minhas, A. (2023, July 6). India Packaged Food Market Value . Retrieved from Statista:
20. Morisset, M., & Kumar, P. (2011). Trends and Pattern of Consumption of Value-Added Foods in India. Delhi: Indian Statistical Institute, Delhi Centre.
21. Mottaleb, K., & Mishra, A. (2022). Income, urbanisation and consumption of processed food: Implication for nutrition and health policies for India . *Journal of International Department* , 688-715.
22. Pandey, R., & Kritika. (2022). Consumer Awareness of Nutritional Labelled Foods. *International Journal of Emerging Technologies and Innovative Research*, Volume 9, Issue 12, 405-413.
23. Pradhan, M., Taylor, F., Agrawal, S., Prabhakaran, D., & Ebrahim, S. (2013). FOOD ACQUISITION AND INTRA-HOUSEHOLD CONSUMPTION PATTERNS: A STUDY OF LOW AND MIDDLE INCOME URBAN HOUSEHOLDS IN DELHI, INDIA.
24. Schrobback, P., Zhang, A., Loechel, B., Ricketts, K., & Ingham, A. (2023). Food Credence Attributes: A conceptual Framework of Supply Chain Stakeholders, Their Motives, and Mechanisms to Address Information Asymmetry. *Foods: 10th Anniversary*, .
25. Shamal, S., & Mohan, B. (2017). Consumer behaviour in fortified food choice decisions in India. *Nutrition & Food Science - Volume 47*, 229-239.
26. Singh, S. K., Taillie, L. S., Gupta, A., Bercholz, M., Popkin, B., & Nandita, M. (2022). Front-of-package labels on unhealthy packaged foods in India: Evidence from a randomized field experiment. *Nutrients* 14, 3128, 1-2.
27. Socoliuc, M., Grosu, V., Ciobotariu, M., Brinzaru, S., & Cosmulese, C. (2022). Is Information Asymmetry a Disruptive Factor in Food Consumer Behavior During the Covid 19 Pandemic?
28. Soni, P., & Kaur, K. (2023). Examining claims on food packages in India: Are they inadequate and deceptive? *Measurement: Food- Volume 11*. 21

29. Spiteri Cornish, L., & Moraes, C. (2015). The impact of consumer confusion on nutrition literacy and subsequent dietary behavior. *Psychology & Marketing*, 32(5), 558-574.
30. Tarabella, A., & Burchi, B. (2016). The Evolution of Nutrition Information. *Aware Food Choices: Bridging the Gap Between Consumer Knowledge About Nutritional Requirements and Nutritional Information*, 79-91.
31. Verma, M., Aggarwal, R., Nath, B., & Kakkar, R. (2023). Exploring the influence of food labels and advertisement on eating habits of children : a cross-sectional study from Punjab, India. *BMC Public Health*.
32. Wansink, B. (2003). How do front and back package labels influence beliefs about health claims? *Journal of Consumer Affairs* 37.2, 305-316.
33. *Added sugars*. (2021, November 2). [www.heart.org. https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/sugar/added-sugars](https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/sugar/added-sugars).
34. *Cache://(www.eatrightpro.org/about-us/for-media/press-releases/Academy-statement-on-aspartame - Google search*. (n.d.). (<https://www.eatrightpro.org/about-us/for-media/press-releases/academy-statement-on-aspartame>
35. *Cache://(www.forbes.com/2009/09/23/food-labels-healthy-lifestyle-health-smart-choices-nutrition_slide.html) - Google search*. (2009, September 23). (https://www.forbes.com/2009/09/23/food-labels-healthy-lifestyle-health-smart-choices-nutrition_slide.html)
36. *Capri sun*. (2021, December 11). Truth in Advertising. <https://truthinadvertising.org/class-action/capri-sun/>.
37. *Child rights body directs Bournvita to remove 'misleading' labels over its sugar content*. (2023, April 27). India Today. <https://www.indiatoday.in/india/story/child-rights-body-directs-bournvita-remove-misleading-labels-sugar-content-2365120-2023-04-27>(n.d.). Product Reviews and Ratings - Consumer Reports. <https://www.consumerreports.org/health/food/>
38. *What's in your food? Bournvita row rekindles front-of-package labelling discourse*. (2023, May 1). <https://www.downtoearth.org.in/news/food/what-s-in-your-food-bournvita-row-rekindles-front-of-package-labelling-discourse-89050>
39. Whelan, C. (n.d.). *Sugar alcohol and diabetes: A good sugar substitute in moderation*. Healthline. <https://www.healthline.com/health/diabetes/sugar-alcohol-and-diabetes>