International Journal of Humanities Social Science and Management (IJHSSM)
Volume 4, Issue 2, Mar.-Apr., 2024, pp: 328-333 www.ijhssm.org

A Study of Consumer Perceptions of the Front-of-Pack Nutritional Labelling

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Date of Submission: 03-03-2024 Date of Acceptance: 13-03-2024

Abstract
The purpose of the present study is to investigate consumer perceptions of front-of-pack nutritional labels. Using data collected from 70 shoppers of food items, the results reveal that the majority of respondents sometimes check the nutritional labels. Despite awareness about nutritional labelling, respondents were found to have no interest in reading nutritional labels. The study employed factor analysis for identifying the perceptions of consumers towards nutritional labelling. The study identified five factors based on importance: Preference for Branded Products, Enforcement, Willingness to read labels, dietary purpose, and trust. The findings have significant implications for food companies.

Key Words: Front-of-pack, Nutritional Labelling, Branded Products, Enforcement.

I. Introduction

In recent years, addressing nutrition and diet-related health concerns has received increased attention both from governments and food industries across the globe (Ikonen et al. 2020). A 2022 report by World Obesity Federation's World Obesity Atlas 2022 has highlighted that out of one billion people across the globe - one in five women and one in seven men - will be obese by the year 2030. To help consumers to better manage health-related problems such as obesity, blood pressure, diabetes and heart attacks, policymakers and food companies have introduced the concept of nutrition labelling.

Nutrition labelling can be defined as "a description intended to inform the consumer of the nutritional properties of a food" (de Koe 1997). Nutritional labels help consumers to make healthy food choices because they help consumers track the nutrients present in food items such as calories, trans fats, sugar, fibre, protein, sodium and carbohydrates etc. (Azman and Sahak 2003).vThe nutritional information available on the front of food packages enables the consumers to make better food choices keeping in mind the nutritional claims mentioned on the package.

In India, the Food Safety and Standards Authority of India (FSSAI) regulates food labelling norms. FSSAI has issued the Food Safety and Standards (Labelling and Display) Regulations, 2020 making labelling requirements on food items mandatory. According to these guidelines, food manufacturers must include the following information on the front of the package: the product name, ingredients list, nutritional data, a statement about whether the product is vegetarian or not, a statement about food additives, a statement about the manufacturer's address, name, and FSSAI logo and license.

Despite the guidelines, Indian consumers do not read nutritional labels while buying food items. So, the present study is being conducted, to know the knowledge and perceptions of consumers towards nutritional labels. The article is structured as follows. The first part provides a review of the literature followed by the research methodology and results of the study. The last part details the discussion and implications of the study.

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II. Review of Literature

The following section provides a brief overview of studies carried out in the area of nutritional labelling.

Prathiraja and Ariyawardana (2003)investigated the which influence consumers' willingness to pay for nutritional labels. The findings revealed that gender, education, and special dietary status have significant influence on willingness to pay for nutritional labels.**Goodwin et al. (2006)** studied the opinion of customers towards current labels used by food companies. The results pointed out females engaged more in reading nutritional labels as compared to men. The findings also stressed that personal selection had a stronger impact on food choice than information on nutritional labels. **Kim and Kim (2009)** investigated the perceptions of Korean consumers towards front-of-package nutrition labels. The results revealed female participants and young age groups were found to have significancein checking nutrition labelling. **Lowe et al. (2013)** studied how technology advancements are useful to consumers in reading nutritional labels. The study found three distinct segments of consumers i.e. 'information hungry innovators','active label readers', and 'onlookers', which were found to be different across demographics, and psychographic characteristics.**Huang et. al (2015)**investigatedChinese consumers understanding, attitude and use of nutrition labels. The authors concluded that Chinese consumers had a moderate understanding and positive attitude towards nutritional labels and engaged in frequent purchases using nutrition labels. **Ketki and Dharni (2015)** explored the gender and education-based differences in the use of nutrition labelling in the Indian context. Females reported higher use of labels in food purchases but were found to choose unhealthy supplements.**Feteira-Santos (2019)** examined the impact of interpretive front-of-package nutrition labelling schemes on consumers' food choices. The results pointed out that front-of-package nutritional labels have a significant impact on consumer's purchase intention in comparison to no labels. Using data from 300 customers in Spain, **Medina-Molina and Perez-Gonzalez (2020)** determined the influence of different types of interpretative labels on the perceived healthiness and purchase intentions of consumers. The authors concluded that different nutrition formats have no moderation impact on the link between perceived healthiness and food purchase intention.

III. Research Methodology

Data for the present study was collected with the help of a self-administered structured questionnaire through the mall-intercept technique. The customers visiting a major retail outlet in Amritsar were approached. Out of 100 questionnaires distributed, the study used 70 questionnaires for further analysis. Incomplete questionnaires were rejected. The study has a response rate of 70 per cent.

The questionnaire was divided into two sections. Section I consisted of questions related to demographics such as age, gender, educational level and general questions regarding nutritional labels. Section II included fourteen statements to measure the perceptions of consumers towards nutritional labelling. All the statements were measured on a 5-point Likert scale ranging from agree to disagree.

IV. Data Analysis and Results

General Characteristics of Respondents

Table 1 provides a brief demographic profile of respondents. Out of 70 respondents, 27.1% are males and 72.9% are females. The result shows that the majority of the respondents 89% were of the group 21-30 years, 7% of the respondents were of the age group 31-40 years, 3% were respondents fromthe age group above 40 years and only 2% of respondents belong to a group of below 20 years.The majority of respondents are private sector employees i.e. 47.1% while the rest fall in the category of government sector employees (35.8%) and the rest were business man (17.1%).Educational level is an important factor which influences the perception of consumers. Out of 70 respondents, 15.7% were graduates, 74.3% were postgraduates and 10% were professionals.

Table 1: Demographic Profile of Respondents

Variable	Frequency	Percentage (%)
Gender		
Male	19	27.1
Female	51	72.9
Age (years)		
Below 20	1	1.4

21-30	62	88.6
31-40	5	7.1
Above 40	2	2.9
Occupation		
Government Sector Employee	25	35.8
Private Sector Employee	33	47.1
Business Man	12	17.1
Education		
Graduate	11	15.7
Post Graduate	52	74.3
Professional	7	10

Checking of Nutritional Labelling

The respondents were asked whether they read nutritional labels while buying food items. As seen in Table 2, Out of 70 respondents, 28.6% of respondents always read nutritional labelling, 60% respondents sometimes read labels, 10% rarely read it and 1.4% respondents never read it.

Table2:Reading Nutritional Labels on Food Items

Reading Nutritional Labels	Number of respondents	Percentage
Always	20	28.6
Sometimes	42	60
Rarely	7	10
Never	1	1.4
Total	70	100

Preference for Nutrients while Reading Nutritional Labels

The respondents were also asked to rank their preference for various nutrient information like calories, sugar, protein, vitamins etc. which they are likely to read in nutritional labelling. Respondents rated them according to their preference for the nutrients which they were likely to read. As seen in Table 3, the highest mean value is for dietary fibre which is 8.1857 and the lowest mean value is for calories from fat i.e.3.8857.

Table 3:Preference for Nutrients while Reading Nutritional Labels

Nutrient Mentioned on Pack	Mean
Total Calories	4.1571
Calories from Fat	3.8857
Cholesterol	5.8286
Sugar	4.8429
Protein	4.7286
Vitamins	5.3000
Calcium	6.4000
Total Fat	5.2429
Carbohydrates	7.9429
Dietary Fibers	8.1857

Perception of Consumers Towards Front-of-Pack Nutritional Labelling

Factor analysis was used to examine the perceptions of consumers regarding nutritional labelling. We used 14 statements to identify the consumer perceptions of the front of pact nutritional labels. Before applying factor analysis, a researcher needs to determine whether the data collected for the study is appropriate for factor analysis or not. The researchers employ the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy as a useful technique to determine appropriateness of data for factor analysis.

Kaiser (1974) has suggested that a KMO value greater than 0.5 is acceptable. As seen in Table 4,

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the KMO value satisfies the acceptance criteria. Thus, the data is fit for factor analysis.Another test used in the study to confirm appropriateness is Bartlett's Test of Sphericity, and its value is significant (see Table 4).

Table: 4 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.509
Bartlett's Test of Sphericity (Approx. Chi-Square)	341.369*
*Significant at 1% level of significance	

The Principal Component Analysis approach was used to apply the Factor Analysis. The 14 statements which affect the consumer preference regarding nutritional labelling were reduced to 5 factors.

Table: 5 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.672	19.083	19.083	2.672	19.083	19.083	2.564	18.312	18.312
2	2.330	16.642	35.725	2.330	16.642	35.725	1.975	14.106	32.418
3	1.973	14.095	49.820	1.973	14.095	49.820	1.794	12.813	45.230
4	1.250	8.928	58.747	1.250	8.928	58.747	1.759	12.561	92
5	1.215	8.682	67.429	1.215	8.682	67.429	1.349	9.638	67.429
6	.919	6.564	73.993						
7	.789	5.633	79.627						
8	.617	4.408	84.034						
9	.552	3.939	87.974						
10	.535	3.824	91.797						
11	.520	3.714	95.512						
12	.314	2.245	97.757						
13	.272	1.941	99.698						
14	.042	.302	100.000						
Extraction Method: Principal Component Analysis. **Rotation Method: Varimax with Kaiser Normalization.**									

As can be seen in Table 5 above, five factors have been extracted and the total variance explained by these factors is 67.429 cumulative. The first factor explains18.312%, the second explain 14.106%, the third explain 12.813%, fourth factor explains 12.561 and the last factor explains 9.638% of the total variance of the data. The five factors extracted with statements are shown in Table 6.

Table: 6 Rotated Component Matrix

Statements	Component				
	1	**2**	**3**	**4**	**5**
Price is more important for me than labelling	.825				
I only see brand names before purchasing new products.	.813				
I do not read nutritional labelling	.751				
I only read the manufacturer name, expiry or packaged date of the food product.	.566				
Nutritional labelling should be enforced under legislation by the government		.978			
Standardized nutritional labelling must apply to all food products.		.964			

I ensure myself about the quality of food.			.811		
I understand the terms used in nutritional labelling.			.645		
The format of nutritional labelling is satisfactory			.577		
I am interested in knowing about nutritional labelling information.			.566		
Taste of the food product is more important for me than nutritional labelling				.740	
I always read nutritional labels before buying any food product.				.671	
I read nutritional labelling for dietary purposes only.				.577	
I trust the information provided about nutritional labelling					.861

FACTOR 1: Preference for Branded Products
The study revealed a significant factor that accounted for 18.312%. This factor includes all statements that show price, brand name, manufacturer name, expiry or packaged date is more important to consumers than nutritional labelling. Consumers do not bother to read nutritional labelling. This factor reveals that nutritional labelling is overlooked by consumers.

FACTOR 2: Enforcement
This factor includes all the statements which show that labelling of food products should be standardized and enforced by the government.

FACTOR3: Willingness to read labels
This factor includes those statements which show that consumer is ensured by the quality and knows and understand the terms and format of labelling.

FACTOR4: Dietary Purposes
These include those statements which show that the consumer reads nutritional labelling for their dietary purposes.

FACTOR5: Trust
This includes those statements which tell that consumer blindly trust the information given on food product packages.

V. Conclusion, Implications and Limitations

Consumers are nowadays conscious about the food items they consume and the nutrients present in them. Nutritional labelling is an innovative solution to keep consumers updated about the nutritional content of food items. The present study was carried out to understand the perceptions of consumers towards nutritional labelling. The study revealed that the majority of respondents did not check front-of-pack nutritional labels. The participants were found to give more preference to the brand while choosing food items. It was also established that respondents are in favour of government regulations on nutritional labels.

The study has important implications for food companies and the government. The nutritional label should be on the front side of the package to enable consumers to compare different food products. Companies should educate consumers about reading nutritional labels. E.g. consumer awareness program 'Jago Grahak Jago' run by the Government of India. Companies should emphasize nutrients in their advertising appeals.

The study suffers from some limitations. First, the sample size is small. Secondly, the sample is restricted to Amritsar city because of limited time and money. So, the results of the study may not be generalized. Future studies may consider the influence of gender, age and educational level on checking of nutritional labels.

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