

Analysis of Food Label Reading Behavior

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Abstract: *This study aim to describe behavior of food label reading, analyze the influence of information exposure, motivation, knowledge of labels and perception of label on food label reading behavior. The research model was developed and tested on 226 respondents who at least 19 years old and has brought five food category (beverages, milk, biscuit, instant food and snack) in the latest six months. Assessment of the research was conducted by SEM and processed by LISREL software. The result indicates that information exposure, motivation and knowledge of labels significantly related with perception and the information exposure, motivation, knowledge of labels and perception significantly related with label reading behavior. Besides, this research also finds out the label attributes that are most often read by respondents. The three main results are the respondents read brand name first, then product name and best before date on the food label.*

Keywords: label, perception, motivation, knowledge, reading label, nutrition information

1. Introduction

Indonesian people does not seem to made the food label reading behavior as a habit. Based on research data [1], only 13.33 percent of respondents in Bogor had adherence to reading food labels while the rest were 86.67 percent of respondents had sufficient compliance to totally disobedient. In research in 2016 [2], 54.7 percent of respondents said that they rarely read nutritional labels on packaging products. The survey results of the 2015 Food and Drug Administration (BPOM) showed that as many as 25.3 percent of consumers read food-labeled compositions when buying, 37.1 percent were frequent, 34.5 percent were rare and 3.1 percent never read the composition [3].

Previous research shows factors that influence label reading behavior, they are internal factors that include individual characteristics (age, sex, education level, pocket money, food expenditure), external factors that include sources of information about labels, lectures related to consumers, college related to label's knowledge, knowledge of nutritional labels and risk of [4], [5]. Other research in London observed label reading behavior in six food categories, namely breakfast cereals, carbonated soft drinks, sweets, ready-to-eat food, salty snacks, and yogurt. The reason behind the selection of these six categories is that the product must be accompanied by nutritional information, either Front of Package (FOP) or Nutritional Value Information (ING) from retailers or producers and the product must be a product that have benefit for health [6].

Information in food label that is most seek by consumers are nutritional information, calorie content and certain composition ingredients. Previous research found that consumers only need expiration date information, but currently as many as six out of ten people are concerned about health, therefore more nutritional information is needed by consumers [7], [8].

Based on the explanation that have been given above, it leads the idea to do research to study the food label reading

behavior and which attribute that most often read by customer. Because from the previous research, mostly showed that the most importance information was only expiry date, even though there are some important informations on the label. From the above explanation, it can be formulated the following questions:

- 1) How to describe food label reading behavior?
- 2) How does the effect of information exposure, motivation and label knowledge on perception of reading label?
- 3) How does the effect of information exposure, motivation and label knowledge on perception of reading label?

2. Literature Review

2.1 Food Label

Food labels are all the information about food in the form of pictures, text, combinations of both, or other forms included in food, put in, pasted on, or are part of food packaging. Every food and beverage that marketed in Indonesia and registered in the Food and Drug Administration (BPOM) must be equipped with a label on the packaging.

Claims are all forms of description which state, suggest or directly stating the specific characteristics of a food relating to the origin, nutrient content, production, processing, composition or other quality factors. Food claims in Indonesia are divided into nutritional claims, health claims and claims other than nutritional claims and health claims. Nutritional claims are all forms of description that state, show or imply that certain nutrients have certain nutritional characteristics including the value of energy and the content of proteins, fats and carbohydrates, as well as vitamins and minerals. Health Claims are all forms of description that state, suggest, or imply that there is a relationship between food or food ingredients and health.

Nutritional value information is required to be labeled only if the product has nutritional claims, such as 'low salt' or 'high of vitamin A' on the label. As many as 87 percent of consumers consider that important nutritional value

information is listed on the label and as many as 68 percent of consumers prefer tables with a form of horizontal stretching because it's easier to read [9].

2.2 Food label behavior

In the food and beverage industry which always competes tightly and is vulnerable to be threatened by new players, marketers or industries need accurate information about consumer behavior towards a food and beverage product. Marketers or industries are obliged to understand consumers, both consumer needs, consumer tastes and how consumers make decisions so that marketers can produce goods and services that are in accordance with the needs of consumers [10].

Consumers know about nutritional value information but they didn't use it properly because consumers don't know how to use nutritional information well. Consumers who intentionally seek and read nutritional information can understand some of the nutritional terms used in the label even though they are a little confused by other terms [11]. As many as 32 percent of the total respondents in a research, read nutritional information on labels when buying new products, 26 percent of respondents read nutritional information regularly and 14 percent did not read food labels at all [12].

The formation of consumer attitude often illustrates the relationship between trust, attitude, and behavior. Those three factor also related with the concept of product attributes [13]. Consumer trust or consumer knowledge concern the belief that a product has various attributes and benefits of these various attributes. Consumer trust in product, attributes, and product benefits illustrated consumer perceptions [14].

2.3 Relationship between information exposure, motivation, label knowledge on the reading label perception

Exposure of information is the information that received by consumers regarding food advertisements that will increase consumer knowledge in understanding any information contained in food labels, which will later form a positive attitude and influence behavior in determining healthy food products [15]. Sources of information about labels are obtained from website, print media (newspapers, magazines and tabloids), electronic media (television and radio), friends and family, also from seminars and lectures. The information obtained can be in the form of advertisements about recommendations for reading labels that are accommodated by BPOM or in the form of brochures.

H1 Information exposure is significantly affect reading label perception.

In the previous studies, respondents who read the food label before buy the product are associated with their motivation to maintain the quality of their diet [16]. Respondents who choose the healthy food in their shopping rituals tend to take part in a healthy diet program by limiting the consumption of fatty and fried foods, increasing consumption of vegetables

and fruit, and choosing white meat rather than red meat. The respondents had a motivational background to be healthier, abstinence from eating because of the illness they suffered, want to have the desired body shape, allergies to certain foods and vegetarians [12].

H2 Motivation significantly affect reading label perception.

Knowledge of reading labels can be in the form of knowledge about nutrition. The previous study suggest a positive relationship between knowledge of nutrients and the use of nutritional tables as a consideration for shopping. Respondents in the study read the table of nutritional value information because they understood the purpose of the information [17].

Knowledge and experience that someone has can influence perceptions [11]. In the research on consumer perceptions in the food label reading program, argues that there is a direct relationship between the level of education and knowledge and the selection of healthy foods. Populations with higher levels of education tend to have a deeper awareness of choosing healthy foods than populations with low level education [18].

H3 Label knowledge significantly affect reading label perception.

2.4 Relationship between information exposure, motivation, label knowledge, and reading label perception on food reading label behavior

Peers have an influence on early adolescents in choosing unhealthy foods. The influence of peers tends to be insignificant towards early adulthood. Although peers tend not to have an effect on adulthood, diet tends to be consistent from adolescence to adulthood, which in other words eating behavior as adults can be influenced by habits during adolescence [19]. Advertising can influence label reading behavior and diet by stimulating visually, promoting the popular taste and variant of a product. Advertising is a promotional tool that is most suitable for young adults [20].

H4 Information exposure is significantly affect reading label behavior.

Motivation is an important factor that supports healthy living behavior, but this applies if individuals already know the importance of health [20], [21]. Diet is a way to maintain the health of an individual by select the food to be consumed. Arrangement of diet by modifying existing diet so that it is in accordance with the ability of someone who lives it tends to involve label reading behavior in choosing what type of food is suitable for diit. Modification of the unit so that it is in accordance with the norms felt by the individual concerned is called the Dietary Modification goals (DMGs). The purpose of this diit can positively influence healthy eating behavior [22], [23]

Religion is also one of the factors that influence label reading behavior, especially in Muslim who require halal food. The

influence of religious motivation on the decision to choose products and brands can provide an indication of individual consumption behavior including label reading behavior. Muslim tend to see the halal logo and the composition of a product to ensure that the food chosen is in accordance with religious law [24].

- H5 Motivation significantly affect reading label perception.

A study proved that there is a significant relationship between the level of education and knowledge of nutritional labels with label reading behaviour [25]. Respondent who had good nutritional knowledge read nutritional value information more often, with respondents as much as 66 percent saying "often" or "always" reading labels. In groups with low nutritional knowledge, the frequency of label reading was low, as 53 percent answering "rarely" and "never" reading labels. While the group with medium nutrition knowledge, shows intermediate behavior, with the frequency of reading labels that are not often also not rare [26].

- H6 Label knowledge significantly affect reading label behavior.

Perception is influenced by two factors, internal factors and external factors. Internal factors are characteristics of respondents such as gender, age, occupation, education and socio-economic status. A person's perception of an item also affects their behavior in reading nutritional labels. The perceptions they have had for certain products will continue to be believed, so they will be more inclined to ignore the latest new information, such as food nutrition labels. The respondents' external factors came from the environment around the respondents which could influence their perceptions such as information sources [27].

- H7 Reading label perception significantly affect reading label behavior.

2.4 Research Framework

The researcher wants to know the relation between information exposure, motivation, label knowledge to reading label perception and the relation between information exposure, motivation, label knowledge, and reading label perception to reading label behavior. Model or conceptual framework in the research can be seen in figure 1.

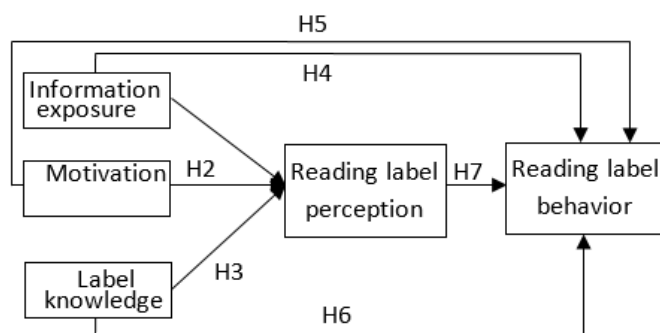


Figure 1: Research framework

3. Research Methodology

This research is a descriptive study with quantitative

approach to analyze information exposure, motivation, label knowledge, label reading perception toward label reading behavior. This research was conducted in January to March 2018.

Data collection is done by self-administered survey. Respondents are asked to fill the questionnaire by themselves via website. Researcher distributed the link of the questionnaire via short message, email and linkedIn. The questionnaire consist of three parts including screening questions, the second part is respondent profile and the third is the variables of this study. The respondent in this study must require two conditions:

- Respondent is at least 19 years old
- Respondents buying five certain food categories in the last six months.

Nonprobability sampling was conducted and total 226 respondents completely answer the questions.

Data analysis was done by descriptive and statistical method. Descriptive analysis in this study aims to provide an overview of economic and demographic characteristic and also respondents' medical history. All respondents' data are grouped and calculated by percentage and presented in table used Microsoft Excel 2013. While the analysis to see information exposure, motivation and label knowledge to perceptions and information exposure, motivation, knowledge and perceptions of label reading behavior used Structural Equation Modeling analysis (SEM) and was processed by LISREL 8.70. SEM model of this study can be seen in figure 2.

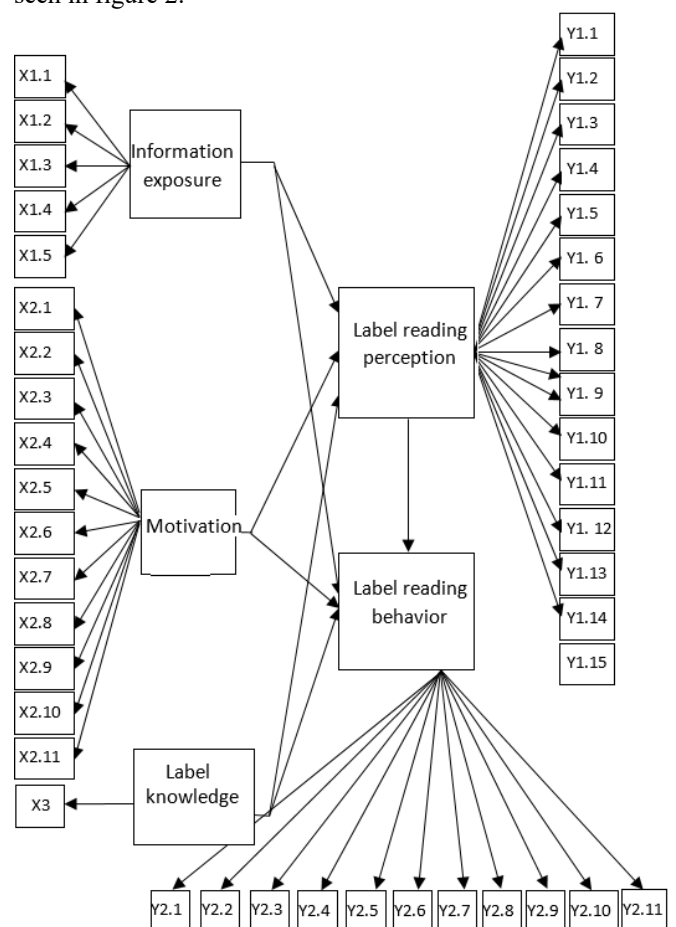


Figure 2: SEM model

4. Result

4.1 Respondents profile

The demographic aspects describe the characteristic of respondents who fill the requirements of research. The aspects of demographic are gender, age, education level, occupation, income per month, expenditure for foods, religion, respondent's medical history and family of respondents' medical history. Respondents' profile in this study can be seen in Table 1.

Table 1: Respondent profile

Respondent profile	n	%
Sex		
Female	156	69.0
Male	70	31.0
Age		
19-28	167	73.9
29-38	40	17.7
39-48	13	5.8
49-57	6	2.7
Level of education		
High school	44	19.5
Vocation	14	6.2
Undergraduate, postgraduate & doctoral	168	74.3
Occupation		
Student	68	30.1
Housewife	16	7.1
Government employees /Police/military	21	9.3
Corporate employee	104	46.0
Entrepreneurship	12	5.3
Labor	2	0.9
Professional	3	1.3
Religion		
Moslem	203	89.8
Nonmoslem	23	10.2
Income (per month)		
<Rp 2.500.000	65	28.8
Rp 2.500.000 – Rp 3.450.000	30	13.3
Rp 3.451.000 – Rp 4.800.000	25	11.1
Rp 4.800.100 – Rp 5.500.000	21	9.3
> Rp 5.500.000	85	37.6
Expenditure of purchase food		
< Rp 25.000	26	11.5
Rp 25.001 – Rp 50.000	68	30.1
Rp 50.001 – Rp 75.000	23	10.2
Rp 75.001 – Rp 100.000	31	13.7
> Rp 100.000	75	33.2
Respondents' medical history		
Ya	7	3.1
Tidak	219	96.9
Respondents family's medical history		
Yes	89	39.4
No	137	60.6

4.2 Descriptive result

Researcher asked respondents which of the label attributes in each food category were the most priority to read. Attributes contained product name (Brand), type of food, expiry date, nutrition information panel, composition, nutritional claim, health claim, producer, volume, BPOM number, customer service info, halal logo, recycle logo and animal welfare

logo.

The results of sorting attributes on the labels that are most priority to read to the least readable ones are as listed in Table 2. The table shows that in almost all types of food, respondents have the same priority. The first read attribute is a product name or brand. The second attribute that is most read is the type of food or the expiry date on the type of drink and the third attribute that is most read first is the expiration date. While the most recently read or often unread attribute is the animal welfare logo. Animal welfare logo or indeed still rarely found in food products in Indonesia. This logo is mostly obtained in developed country because in that country, attention to animals is very high.

Table 2: Sequence of priority of label attributes

Food category	Priority of label attributes	n	%
Beverages	1. Product name (Brand)	129	57.1
	2. Expiry date	74	32.7
	3. Type of product	71	31.4
Milk	1. Product name (Brand)	141	62.4
	2. Type of product	75	33.2
	3. Expiry date	86	38.1
Instant food	1. Product name (Brand)	139	61.5
	2. Expiry date	75	33.2
	3. Type of product	93	41.2
Biscuits	1. Product name (Brand)	140	61.9
	2. Expiry date	75	33.2
	3. Type of product	93	41.2
Snack	1. Product name (Brand)	147	65.0
	2. Expiry date	78	34.5
	3. Type of product	90	39.8

Researcher also found the reason why respondents don't read label before buying packaged food as the result showed in Table 3.

Table 3: Reason not read the label before purchase

No	Reason	n	%
1	Font is too small	71	31.4
2	Information is difficult to understand	56	24.8
3	Uninteresting design	50	22.1
4	Have no time to read (busy)	73	32.3
5	Lazy	9	4.0
6	Purchase the certain product often	4	1.8
7	Trust in producer	6	2.7
8	Unimportant	4	1.8

The most chosen reason is have no time to read the label when buying food (32.3%), followed by the font is too small (31.4%), information is difficult to understand (24.8%), uninterested design (22.1%) and so forth.

4.4 Statistic result

The Measurement model or often called outer model specifies how the latent variable are measured in terms of observed variable. It describes the validities and reliabilities of measurement process. For measuring the model, a ratio of factor loadings to standard error (lambda or loadings) more than 0.5 was classified as reliable. Construct reliability (CR) and Variance Extracted (VE) should be more than 0.7 and 0.5 to have acceptable fit [28]. In Table 4, it can be seen that

from the results of validity and reliability, the model has fulfilled the requirements indicated by the value $VE > 0.5$, which means the model is valid and the value of $CR > 0.7$ means that each latent construct is valid and reliable.

Table 4 : Margin specification

Variable	Indicator	Loading Factor	T-value	VE	CR
Information exposure	X1.1	0.80	7.92	0.62	0.77
	X1.2	0.78	8.82		
Motivation	X2.2	0.79	20.76	0.54	0.85
	X2.3	0.85	18.11		
	X2.5	0.68	17.41		
	X2.6	0.72	21.57		
	X2.11	0.60	17.98		
Label knowledge	X3	1.00	19.58	1.00	1.00
Label reading perception	Y1.1	0.80	21.26	0.51	0.92
	Y1.4	0.72	16.31		
	Y1.6	0.59	14.21		
	Y1.7	0.77	14.71		
	Y1.8	0.84	17.83		
	Y1.9	0.70	16.94		
	Y1.10	0.68	15.75		
	Y1.11	0.71	15.24		
	Y1.12	0.54	11.84		
	Y1.13	0.59	13.11		
Label reading behavior	Y1.14	0.84	15.10	0.52	0.88
	Y1.15	0.71	16.61		
	Y2.1	0.84	23.09		
	Y2.4	0.61	10.22		
	Y2.5	0.70	10.80		
	Y2.7	0.62	9.73		
	Y2.8	0.64	10.21		
	Y2.10	0.87	11.07		
	Y2.11	0.72	10.53		

The result indicate that the model are reliable and valid, it showed from the value of CR were above the threshold, it range from 0.77 to 1.00 and the variance extracted range from 0.51 to 1.00. The loading factor from each construct were significant, it range from 0.54 to 1.00. So can be concluded that the indicators and the construct were acceptable.

The result of standardized loading factor and t-value of the model were showed in Table 5. Result from the structural model exhibit acceptable level of fit with RMSEA = 0.045, GFI = 0.97, AGFI = 0.96, IFI = 0.99, CFI = 0.99, and NFI = 0.96.

The result shows that information exposure doesn't related to label reading perception ($\lambda=0.61$, $t=0.01$), while motivation significantly related to label reading perception ($\lambda=24.02$, $t=0.79$). Label knowledge also significantly related to label reading perception ($\lambda=2.82$, $t=0.10$). Then result also shows that information exposure significantly related to label reading behavior ($\lambda=8.63$, $t=0.25$). Motivation significantly related to reading behavior ($\lambda=3.45$, $t=0.23$), label knowledge also significantly related to reading behavior ($\lambda=3.98$, $t=0.14$), and label reading perception significantly related to label reading behavior ($\lambda=5.78$, $t=0.47$).

Table 5: Result of Hypotheses

No	Path	Path coefficient	t-value	Hypothesis supported
H1	Information exposure (X1) → Label reading perception (Y1)	0.01	0.61	No
H2	Motivation (X2) → Label reading perception (Y1)	0.79	24.02	Yes
H3	Label knowledge (X3) → Label reading perception (Y1)	0.10	2.82	Yes
H4	Information exposure (X1) → Label reading behavior (Y2)	0.25	8.63	Yes
H5	Motivation (X2) → Label reading behavior (Y2)	0.23	3.45	Yes
H6	Label knowledge (X3) → Label reading behavior (Y2)	0.14	3.98	Yes
H7	Label reading perception (Y1) → Label reading behavior (Y2)	0.47	5.78	Yes

4.5 Discussion

This study found strong evidence that there is a relationship between information exposure, motivation, label knowledge, and label reading perception to label reading behavior. Almost all the hypotheses are supported by this study. The first main research objective of this study was to know the describe of reading label behavior. Most of all respondents chose three attributes of the label that most often to read. They are product name (Brand), expiry date, and type of product. The attribute that most rare to read are logos.

The second main research objective of this study was to analysis the relation between information exposure, motivation, and label knowledge to label reading perception. Motivation significantly related to label reading perception (H2), which in line with the findings of previous study [12]. The label knowledge significantly related to label reading perception (H3) and the knowledge which the most known by respondents is the expiry date on the label and the knowledge about nutrition or claim is the lowest. This relation is in line with the literature as explained above [11], [17]. Only information exposure that doesn't related with label reading perception. A previous study said that education about food which comes from parents is likely when the children are still in preschool until junior high school [29].

The third main research objective of this study was to analysis the relation between information exposure, motivation, label knowledge, and label reading perception to label reading behavior. and there is relation between information exposure on label reading behavior (H4) and is in line with the previous study [19]. Family and friends can be influencers on human behavior in choosing something, in this case is choosing food [30]. The influence of friends tend

to choosing unhealthy foods, such as junk food. When you are with friends, then your friends order junk food / fast food, then teens tend to order the junk food / fast food too. While if a friend says to choose healthy food, teens tend not to heed their friends. Unlike the role of parents who tell their children to choose healthy food, children tend to obey their parents'. In each interview, respondents always mentioned that families, especially mothers and grandmothers were the main influences on choosing healthy foods, especially at dinner. Their mothers and grandmothers don't allow dinner with junk food / fast food.

Motivation also has significant relation to label reading behavior (H5) and it's in line with the previous study [23], [25]. The biggest motivation of the respondents in this study is not diet goals but the safety feeling. Label knowledge has significant relation to the label reading behavior (H6), in accordance with the previous study [25], [26]. Label reading perception has significant relation to label reading behavior (H7) as supported by the previous study [27].

5. Conclusion

Motivation significantly related to label reading perception, which evidence by hypothesis H2. The label knowledge significantly related to label reading perception which evidence by hypothesis H3 and the knowledge which the most known by respondents is the expiry date on the label and the knowledge about nutrition or claim is the lowest on the list. Information exposure significantly related to label reading behavior which evidence by hypothesis H4. Motivation also has significant relation to label reading behavior which evidence by hypothesis H5. Label knowledge has significant relation to the label reading behavior which evidence by hypothesis H6 and label reading perception has significant relation to label reading behavior which evidence by hypothesis H7.

This study used online questionnaire which was aimed to reach large respondent in short time and in various type of respondents. This study didn't use in-depth interview so the answer of the respondents can be explored in advance way. Also this study doesn't analysis the purchasing activity after reading the label. Thus, in the future studies, the label reading food behavior can be developed in a better way.

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