EFFECT OF CONSUMER KNOWLEDGE ON USAGE OF NUTRITIONAL LABELS

Mrs. Anam Javeed  
PhD Scholar  
University Utara Malaysia  
anam_javeed@oyagsh.uum.edu.my

Dr. Ismail bin Lebai Othman  
Associate Professor  
University Utara Malaysia  
iothman@uum.edu.my

Dr. Sany Sanuri bin Mohd. Mokhtar  
Associate Professor  
University Utara Malaysia  
sany@uum.edu.my

Dr. Muhammad Yar Khan  
Assistant Professor  
COMSATS Institute of Information Technology  
Pakistan  
muhammadyar@ciitwah.edu.pk

ABSTRACT

The facts given on food packages in the form of nutritional label provides consumer with significant information but not well utilized by the consumers. This article examined that consumers possessing knowledge of nutrition are more likely to use the nutritional labels. Such consumers are in a better position to understand the salient information and make healthy food choices. The reviewed studies revealed that there exists limited understanding regarding the role of consumer knowledge in nutritional label usage and the future investigations should be directed to provide wider understanding in variety of shopping environments. Moreover, researches have an open avenue for investigation of variety of dimensions of consumer knowledge and either increase in knowledge can impact the usage of food label positively. The upcoming researches have an opportunity to investigate the critical dimensions and forms of consumer knowledge which cast an impact on the perceived food quality and to determine whether increased knowledge can stimulate the usage of nutritional information on food packages.

Keywords: Nutrition, Nutritional information, Consumer knowledge, Food label

INTRODUCTION

In the modern day marketing perspective, it has become essential for the marketer to know about the level of consumer knowledge regarding the product (Hansen et al., 2016). Assessment of consumer knowledge is crucial to develop the marketing plan (Kang et al., 2013). The knowledge possessed by the
consumer casts a strong shadow on all the aspects of marketing strategy development (Remley et al., 2015). Mullins et al. (2014) as well as Cravens et al. (2009) emphasized that understanding the mindset of the consumers while developing marketing plans is essential for the marketing policy decision makers to formulate the marketing strategies that are align fully with the target market. Famularo et al. (2010) mentions that product differentiation, branding, labeling, distribution and promotional strategies all require adaptation depending on the amount of knowledge consumers possess. Knowing what consumer knows and perceives about the product is a key to developing successful marketing plans (Vigar et al., 2015). Understanding the knowledge of consumers regarding the food labels is very important for the food manufacturers and marketers (Hansen et al., 2016). As food is basic necessity of every human being, so developing marketing plans based on consumer knowledge is challenging and competitive (Remley et al., 2015).

According to Katarzyna et al. (2010), the nutritional label on the food package acts as a source of information. Anderson et al. (2010) mentioned that the nutritional label comprises of the information regarding the nutritional goodness of the respective food product. Hieke and Taylor (2012) argued that the nutritional labels could be placed on either front of the food package or at the rear of the packaged food product. The food labels have a utility from various points of views (Susannah, 2011). According to the viewpoint of policy makers, nutritional labels serve as a quality assurance tool for promotion of healthy eating habits among consumers. From the standpoint of consumers, the nutritional label reduces the risk perceptions regarding the product and act as a vital promotional cue. From the perspective of retailer, this label is a source of providing necessary information regarding the nutritional goodness of the food. Finally, from the marketers’ angle, the nutritional label is major food packaging cue which results in creating perceptions regarding the quality of the product. Nutritional labels are widely acknowledged to communicate sophisticated product information and are perceived to influence the consumer choice (Susannah, 2011).

As the modern consumer market is experiencing various drifting trends and the modern consumer is not convinced with the regular cues, nutritional label is treated as an innovative food packaging cue (Azila et al.,
2013). Without maintaining nutritional labels it would be difficult for the marketers to maintain the quality perceptions of the consumers. The usage of the nutritional labels on the food packages is subject a strict invigilation as these labels are used to make food choices. The pre-packaged food gets through almost every person now-a-days. Hence the nutritional label is expected by the consumer to indicate the quality of the product (Barzegari et al., 2011).

Based on the studies of (Charness et al., 2001; Jacoby et al., 1974) consumer knowledge casts an impact on the usage of food packaging labels in following ways: Firstly, having previous knowledge enables consumers to focus on the important cues given in the form of information and ignore other marketing stimuli which do not indicate the salient features of nutritional qualities of the food product (Fitzgerald et al., 2008). Secondly, having a knowledge base can help consumers to comprehend the food packaging cues and lastly it could help in the application of the knowledge while making food choices (Spronk et al., 2014). The consumer knowledge is effective in making healthier food choices as well as the consumer knowledge can moderate the relation of nutritional label and dietary behaviors/ food quality perception/ buying behaviour etc. (Satia et al., 2005). There are several strong reviews conducted in past few years regarding nutritional labels and dietary behaviors as well as the regarding the perceptions and attitude in broader view (Bonsmann & Wills, 2012; Campos et al., 2011).

CONCEPTUAL DEVELOPMENT

CONSUMER KNOWLEDGE
Consumer knowledge is defined as the units of facts that the consumer has in his mind regarding the product. Previously the consumer knowledge was considered to be as a uni-dimensional construct and the past studies were not able to able to categorize different dimensions of the knowledge (Alba & Hutchinson, 2000). The two components of the knowledge are familiarity and expertise (Alba & Hutchinson, 2000). On the other hand, Brucks (1985) proposed that consumer knowledge has three main perspectives and those are prior experience, objective knowledge and subjective knowledge. The objective knowledge is the facts that the consumer actually knows however the subjective knowledge is the perceived knowledge (Aertsens et al., 2011). The consumer knowledge is established
through advertising, sales persons, from the experience of the peers as from the product encounter (Perrouty et al., 2006).

While the consumer is in shopping environment he utilizes the prior knowledge possessed to make perceptions about the products and purchase decisions (Pillai et al., 2015). The knowledge of the consumer regarding the nutritional labels on the food packages makes it convenient for the consumer to choose the product among variety of different products (Krishna, 2015). The nutritional knowledge is the information possessed by the consumer nutrition, diet, health, diseases and major sources of dietary recommendations (McKinnon et al., 2014). Many of the previous surveys have clearly established that consumer knowledge plays a significant role in the usage level of nutritional labels. Consumer who is less aware of the nutritional facts would consult and read the label more carefully.

It has been suggested by various researchers that a narrow definition of knowledge is needed (Axelson & Brinberg, 1992; Li et al., 2000, Lähteenmäki, 2013). Whereas it is suggested by Parmenter & Wardle (1999) the broader description of consumer knowledge has more capability to capture aspects of knowledge and its impact on the cognitive processing of food packaging cues. The nutritional label is one of the important components of the food packaging now-a-days which is utilized by the consumer to assess the quality of the product. The food packaging cues are used in the number of situations and their utility is on numerous purchase occasions where the consumer knowledge plays evident role in product evaluation and perception formation (Huang et al., 1996; Moorman, 1996; Alba and Hutchinson, 2000). The knowledge possessed by the consumer is then applied to take decisions about the healthy products (Parmenter & Wardle, 1999). The presence of nutritional labels provides users with lots of health information and also encourages consumers to make healthier food choices (Annunziata et al., 2016).

**NUTRITION LABELS**

In USA, the information to be displayed nutritional fact panel is being regulated by FDA and almost 98% of the food packages have nutritional label and all over Europe roughly 84% of products contain nutritional label (Legault et al., 2004) The basic information present on the nutritional label is serving size, calorie count, daily values, vitamins minerals and energy value.
The survey was conducted in USA where it was reported that almost two third of the respondents used NFP’s while going for the purchase decisions (Ollberding et al., 2010; Mhurchu & Gorton, 2007). The consumer can understand the nutritional information said Graham & Jeffery, (2011) but it has been reported that the precision and accuracy of comprehension of nutritional labels slows down when the task is complex (Grunert & Wills, 2007). The research conducted by Miller (2014) reported that the respondents could identify the nutritional fact panel accurately however they could not calculate the daily intake value and could not understand the numerical calculations.

The nutritional labels are regarded as the major source of information for the consumers to evaluate the product quality (Cheftel, 2005). Darkwa (2014) clearly argues that the nutritional labels play a vital role in consumer decision making for the healthier choices and assist them to compare the nutrients across the various food brands. The product packaging involves the production of food wrappers and containers for the item (Keller, 2001). The packaging along with the function of product protection now—a-days is considered as a major marketing tool (Barreiro et al., 2010). It serves commercial purposes of marketing communication about the usage as well as nutritional information (Smith & Taylor, 2004; Rundh, 2013; Kotler et al., 2009). The nutritional labels have a salient relationship with the level of trust of the consumers (Kroonenberg, 2012). The nutritional information is a major factor considered by consumers to judge quality (Silayoi & Speece, 2004). Walters & Long (2012) argued that consumer knowledge can magnify the chance of product purchase and also upsurges the trustworthiness of the product. Information on the product could help consumers in making their decisions about product choice.

ROLE OF CONSUMER KNOWLEDGE IN NUTRITIONAL LABEL USAGE

In modern world the nutritional labels are considered as an effective way of communicating the information to the consumers. The information on food labels is displayed on the point of purchase of the packaged food (Campos et al, 2011). The consumers when go for the purchase they give particular importance to nutritional fact panel but the information on the labels may not always communicate the intended
message to consumers (Glanz et al., 1998; Drichoutis et al., 2009; Hieke & Taylor, 2012; Wills et al., 2009). The use of prior knowledge has been studied in cognitive literature but the role of consumer knowledge in food label usage is less studied. Based on the cognition procedure, consumers see the food labels, give an attention to it, try to understand and comprehend the food label and store it in the memory.

The long term working memory presented by Ericsson & Kintsch (1995) says that the consumer integrates the new information with existing linkages in the memory. This integration of information results in formation of long term memory networks (Chiesi et al, 1979; Ericsson & Kintsch, 1995). The impact of consumer knowledge on perceptual process has been studied by several researchers (Charnes et al., 2001; Jacoby et al., 1974) and based on these studies the consumer knowledge casts an impact on the usage of nutritional labels in following ways: Firstly, having previous knowledge enables consumers to focus on the important cues given in the form of information and ignore other marketing stimuli which do not indicate the salient features of perceived qualities of the food product. Secondly, having a knowledge base of can help consumers to comprehend the food packaging cues and lastly it could help in the application of the knowledge while making food choices.

Most of the studies have depicted that a strong positive relationship exists between consumer knowledge and the food label usage. A study conducted by Hess et al., (2012) on 1162 Swiss respondents reported that both objective and subjective knowledge have a positive association with food label usage among Swiss consumers. Similarly a research conducted on UK consumers which were 500 college students by Cooke & Papadaki (2014) reported similar positive association between nutritional knowledge and food label usage. The study conducted by (Silayoi & Speece, 2007) has suggested that information possessed by the consumer is a major factor considered by consumers to judge quality. Information on the product could help consumers in making their decisions about product choice. The study conducted by Norazlanshah et al. (2013) and Mannell et al. (2006) reported no relationship exists between consumer knowledge and food label usage.

The study carried out by Misra (2007) reported an indirect relationship between
consumer knowledge and usage of the nutritional label as food packaging cue. The other studies which reported effect of consumer knowledge on food label usage are positive (Groeppel-Klein, 2005; Drichoutis et al., 2008). The type of knowledge assessment also casts an impact on the self-reported frequency of food label usage (Ramanathan & Menon, 2006; Norazmir et al., 2012). In the study being conducted by Petrovici & Ritson (2006) both subjective and objective knowledge types were used and subjective measures were reported to be in positive relationship with the food packaging cue usage not the objective measures.

Most of the researchers which have examined the association of consumer knowledge and food label usage have reported a positive nexus between these two variables (Cordell, 1992; Burton et al., 1999; Hess et al., 2012). The research works revised in this article have consistently reported the strength of the positive relation that consumers are well able to understand the nutritional label usage in European context. From the past researches it can be clearly established that knowledgeable consumers can comprehend the nutritional labels much more effectively in contrast to the consumers with less level of knowledge (Hoyer, 1984; Laran & Janiszewski, 2009; Rook, 1987; Jacobs et al., 2011).

Certain findings suggest that knowledge possessed by the consumer has an evident impact on the product comparisons on the basis of healthfulness (Geyskens et al., 2007; Zaidi and Muhammad, 2012; Miller, 2014). Only one study in all the review process conducted yielded no relationship between consumer knowledge and usage of food labels (Orquin, 2014). Definition of dietary daily intake values was provided by the (Ahmadi et al., 2013). A brief experiment was conducted by Ahmadi et al. (2013) in the following study where respondents were asked to identify the amount of calcium is present in the dairy product reported that founded on the information given on the label, only 2 out of 37 individuals were able to correctly answer the question asked. The basic assessment revealed that most of the respondents were unaware of the previous knowledge about the calcium. As a recent trend for examining food label usage, eye tracking is widely being used now- a- days in researches (Zhang & Seo, 2015). Frequency is defined as how much or how often the individual consults the food label in our framework (Bialkova et al., 2014). By spending more time looking at the label does
not provide any evidence that it is well understood as well (Schaefer, 1997; Miller & Cassady, 2012). This act can yield both types of outcomes where more time could mean confusion in understanding the food label or it can mean that it is well understood and evokes more associations in the mind to take better decision (Miller, 2014; Miller et al., 2015; Nelson et al., 2014).

Miller and Cassey (2012) studied the compensatory and non-compensatory strategies. Compensatory strategies are the ones in which one nutrient can compensate the other nutrient (lower fat content can compensate higher sodium content whereas non-compensatory strategies are the ones used for product comparisons for e.g. amount of sodium content in one product as compared to other product (Jones & Richardson, 2007). The study conducted in Ethiopian market regarding knowledge of nutritional label on packaged dairy products that even though the presence of considerable awareness and knowledge consumers still prefer go for high fat content (Bekele et al., 2016). (Refer Table 1)

DISCUSSION
The consumer knowledge in long term memory supports the label usage, frequency and comprehension. The more the consumers know about the food packaging cues the more is the probability of consulting and understanding of labels. Various studies which are being reread here are focused on the impact of consumer knowledge on nutritional label usage.

The literature has done more in terms of ‘how often’ the label is used as compared to ‘how well’ the label is used in quality perception. It has not been well established in the studies that either the qualitative or quantitative factors are qualified by knowledge more. One study conducted by Jacobs et al. (2011) included reported positive association between consumer knowledge and nutritional label use in his study. The findings of Petrovici et al. (2012) and Fitzgerald et al. (2008) reported the association between only consumer knowledge and food label usage.

Few of the researchers have studied the relation of newly acquired knowledge with nutritional label usage (Sun et al., 2016; Johnson & Kirmani., 2014). The experimental approach has been effective in measuring the food choices of the respondents (Dickson et al., 2011; McKinnon et al., 2014). Studies being conducted by Chuah et al. (2016) and Süutterlin & Siegrist (2016) suggest that despite of the fact that
consumer is having knowledge there could be misleading effects of the information on the buyers. Previous study has shown that better level of knowledge has been more effective in weight loss among obese and low income women (Klohe-Lehman et al., 2006). There are numerous studies which have shown positive nexus between consumer knowledge and healthy dietary intake (Ahmadi et al., 2013; Bonaccio et al., 2013). Motivation to make healthy food choices and healthy dietary intake encourages the consumers for nutritional label usage. On contrary it has been studied that few consumers are not interested in using food labels or in making healthy dietary choices despite of knowledge (Paul et al., 2014; Lin et al., 2004; Petrovici & Ritson, 2006). It is established by the research that motivation and knowledge co-exist and motivation is predicted by knowledge (Miller & Cassady, 2012; Miller et al., 2010).

CONTRIBUTIONS AND IMPLICATIONS
This article makes several practical contributions. It provides a testable linkage between the consumer knowledge and nutritional label usage. Amidst the knowledgeable modern consumers, it is a strong reason for the marketers to take into consideration the factor of consumer knowledge. The consumer knowledge is a significant predictor of the nutritional label usage and ultimately rational food choices. Marketers may want to be persistently updated with the recent trends and attitudes of consumers towards products. In order to assess the recent trends the understanding of consumer knowledge is crucial for the marketers. By understanding the role of consumer knowledge in the usability of nutritional label, the practitioners could better understand and predict the behaviour of consumers. Further, this linkage allows future researchers for empirical investigation in various contexts and shopping environments.

DIRECTION FOR FUTURE RESEARCH
The study presents various horizons for future researchers. The study done by Post et al. (2010) concluded that older consumer use food labels because of higher health risks. In later life, the advantages of food labels and usage of them becomes more frequent and evident (Miller et al., 2011; Miller et al., 2013). There are numerous ways in which knowledge construct needs to be measured
and researcher have shown some agreement that a broader definition is needed to capture the diverse behaviors regarding dietary choices (Ashley et al., 2015). Further investigation is required on dimensions of nutritional knowledge, food label usage and dietary behaviors (Paul & Datta, 2016). There is a need of research declared by cognitive researchers for distinction between declarative and procedural knowledge and impact on food label frequency and usage (Pray, 2016). This distinction of knowledge constructs have been rarely applied to the nutritional knowledge, with an exception of (Dickson et al., 2011). The cognitive literature supports the fact that both factual and procedural knowledge complement each other (Wardle et al., 2000). There is an open avenue for research of causal linkages between consumer knowledge and food label usage in variety of populations (Schmitt & Zarantonello, 2013). More research could be directed towards how the food labels can lead to mal dietary habits and false dietary choices (Sun et al., 2016). As suggested by Ares et al., (2016) well knowledgeable consumers apply the food label information more for their healthy decision making but the area that how the food labels contribute to the well-being is still an open avenue for upcoming researchers. Further studies are needed to be directed towards sustainability of nutritional knowledge among consumers and how to use the information correctly (Varela et al., 2010). More research could be directed towards the use of nutritional label as a marketing cue and its role on perceived product quality (Sun et al., 2016).

CONCLUSION
Based on the findings of this review, it has been established that consumer knowledge provides support to food label usage. Even though, the literature base for ingredient and health claims is limited but the prevailing studies are consistent with the notion that more knowledge supports their usage. Depicting from the literature base, it can clearly be established that storage of knowledge in long term memory of consumer can aid in better decision making. The literature identifies few gaps which clearly can be a pathway for future researchers specifically in older consumers and how to improve the communication through food labels.

REFERENCES
- Barzegari, A., Ebrahim, M., Azizi, M., & Ranjbar, K. (2011). A study of nutrition knowledge, attitudes and food habits of


- Huang, H. K., Wong, A. W., Lou, A. S., Bazzill, T. M., Andriole, K., Zhang, J., ...


for Health and Care Research, VU University).


Rundh, B. (2013). Linking packaging to marketing: how packaging is influencing the marketing strategy. British Food Journal, 115(11), 1547-1563.


### LIST OF TABLES:

Table 1: Recent Arguments of the researchers regarding consumer knowledge and usage of nutritional label

<table>
<thead>
<tr>
<th>Author/s</th>
<th>Argument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perrouty et al. (2006)</td>
<td>• Advertisements and peer reviews play a significant role in the formation of consumer knowledge.</td>
</tr>
<tr>
<td>Aertsens et al. (2011)</td>
<td>• Objective and subjective knowledge both assist in the food label usage.</td>
</tr>
<tr>
<td>Pillai et al. (2015)</td>
<td>• Consumer use the prior knowledge that they possess to make</td>
</tr>
<tr>
<td>McKinnon et al. (2014)</td>
<td>• Consumer utilizes the prior knowledge in order to make favorable food choices.</td>
</tr>
<tr>
<td>Taylor and Hieke (2012)</td>
<td>• Consumer with less level of knowledge pays more attention in referring to the nutritional labels.</td>
</tr>
<tr>
<td>Hess et al. (2012)</td>
<td>• There exists a strong positive relationship between consumer knowledge and nutritional label usage.</td>
</tr>
<tr>
<td>Cooke and Papadaki (2014)</td>
<td>• A strong positive nexus is existent between the consumer knowledge and usage of nutritional labels.</td>
</tr>
<tr>
<td>Norazmir et al. (2012)</td>
<td>• Consumer knowledge impacts the frequency of label usage.</td>
</tr>
<tr>
<td>Miller 2014</td>
<td>• The knowledge possessed by the consumer helps to make product comparisons.</td>
</tr>
<tr>
<td>Zhang &amp; Seo, (2015)</td>
<td>• The consumer knowledge affects the nutritional label usage positively.</td>
</tr>
</tbody>
</table>