Understanding the Impacts of Front-of-pack Labels on Consumer Product Evaluation and Purchase Decisions: A Systematic Review

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Abstract. In this paper, we review studies on the influence of front-of-pack labels (FoPLS) on consumer product evaluation and purchasing decisions across countries and in different formats. We first introduce the definition and five different types of FoPLs and categorize them into reductive, hybrid, and evaluative groups. By conducting a review on the general impacts of labeling on consumer purchasing, we find that multiple aspects of consumers perceptions can be affected by FoPLs. Since several studies revealed that position and format of labeling make a difference in catching consumers' attention, we then review and analyze the existing literature on various categories of FoPLs. The findings on the effectiveness of various presentations of nutritional information have been contradictory and inconsistent. Nutri-score is found to be more effective in enhancing understanding of product healthiness in some studies while multiple traffic light labels are more illuminating in other papers. In general, we conclude that evaluative and hybrid types of labels are more effective and favored by consumers than the reductive type. This paper offers a comprehensive review on existing literature and propose several potential areas for future research in this field. We call for more studies on shape elements of the labeling and moderating impact of product category. This study contributes to literature about health claims and product evaluation and offer guidance for effective nutritious information labeling.

Keywords: front-of-pack labels, health claims, consumer decision making, product evaluation.

1 Introduction

In recent years, owing to long working hours (overtime), short sleeping duration, and other factors, obesity has become a pressing public health concern [1]. Obesity prevalence in US adults was 39.8% in 2015–2016, whereas it was 18.5% in children [2]. According to the results from a seven-year health fitness study [3], the prevalence of obesity among youth was 20%, and overall obesity for the Hong Kong population was 22%. The unbalanced diets have contributed to an increase in cardiovascular disease, leading to growing awareness of healthy food choices.

As a result, there have been a growing number of studies on front-of-pack labels (FoPLs); nevertheless, the results about the effectiveness of different formats of labels are inconsistent. Hence, this proposed research aims to reconcile the discrepancy and take into account potential factors that might affect the effectiveness of various types of FoPLs, such as the

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degree of health consciousness of consumers and product nature (hedonistic vs. utilitarian). While there has been a considerable amount of literature comparing the preference and usefulness of different FoPLs in assisting purchase decisions in Australia [4], Netherlands, and Nepal [5], there is currently a lack of attention from scholars on consumers in many other parts of the world. Therefore, this study is intended to provide a comprehensive analysis of how consumers perceive the healthiness of foods and beverages by viewing different formats of FoPLs. The next step is to review the impacts of various FoPL formats on the consumption intention of healthier options since the ability to identify healthy foods does not necessarily translate into actual action to buy them.

The following research questions are intended to be reviewed in this study: Will the FoPLs affect consumers' attention to nutritious information? After recognizing the healthier options, will the FoPLs affect consumers' intention to buy nutritious foods and beverages? Do the evaluative formats have a more significant impact than reductive information on motivation to choose healthier products? Is the use of Nutri-Score more influential than Multiple Traffic Lights (MTL) and the Health Star Rating (HSR) among consumers when making buying decisions? Are differences in the impact of various formats of FoPLs moderated by product category? Is the effectiveness of the evaluative format more significant on nutritious utilitarian foods and beverages or hedonistic ones?

In addition to theoretical contribution, this study is expected to generate significant practical implications. Currently, there are no mandatory requirements for adopting either a Nutri-Score, Multiple Traffic Lights (MTL), Health Star Rating (HSR) or any other FoPLs, the practical implication of this proposed research is expected to offer guidance on choosing the most appropriate labeling system in many of the developing countries or regions. Additionally, because of globalization and international trading, a large portion of foods and beverages sold in supermarkets are imported from different countries/regions where varying formats of FoPLs are adopted. Consequently, consumers are exposed to diverse types of FoPLs, which can result in misunderstanding and confusion [6]. Therefore, the goal of this study is to recommend the FoPLs that are more effective from the standpoint of public policy in motivating customers to choose healthier options. The standardization of FoPLs format on all foods and beverages sold could strengthen trust in the credibility of evaluation criteria and assist in consumer evaluation of healthiness, consequently making easier purchase decisions. This practical value is crucial given that consumers in fast-paced societies like Hong Kong are generally more impulsive and careless regarding decision-making styles [7]. Hence, the time devoted to shopping might be relatively more limited, putting greater importance on FoPLs in making healthy buying decisions.

2 Definition and Categories of FOPLs

Health claims are different from required nutrition facts by which they typically focus on important nutritional features used to draw in customers instead of offering detailed information about the nutritional content of a product. Many nutrition claims are displayed on the front of the package (FOP) because they serve a marketing purpose. In contrast, the side or back of the package is usually where you may find the mandatory nutrition information. because it is less appealing to customers visually. Therefore, front-of-pack labels (FoPLs), if

they are straightforward to understand and customers are motivated to use them, could assist people in choosing more nutritious foods and beverages. However, health claims would not only motivate healthier purchasing decisions but also lead to heuristic behaviors. Nutrition claims are interpreted by heuristic processing, which necessitates inductive and memory-based evaluations [8]. The halo effect is a term given to this specific heuristic. Therefore, declaring a food item to be fat-free could lead to consumers overestimation of its extent of healthfulness.

There are five commonly used FoPLs consisting of the Multiple Traffic Lights (MTL), Reference Intakes (RIs), Warning symbols, Health Star Rating (HSR) system, and Nutri-Score (Figure 1). In general, different types of FoPLs can be categorized into three groups: evaluative, reductive, and hybrid [9]. The evaluative type of label offers recommendations without nutritional information, whereas the reductive ones present only brief nutritional information with no opinions. The hybrid mode contains both recommendation and factual information. The evaluative type of label is more directive, and the assessment criteria are often set by nutritionists such as the UK Food Standard Agency (FSA). The reductive labels require more cognitive effort than the evaluative ones, which demand more compliance [10].

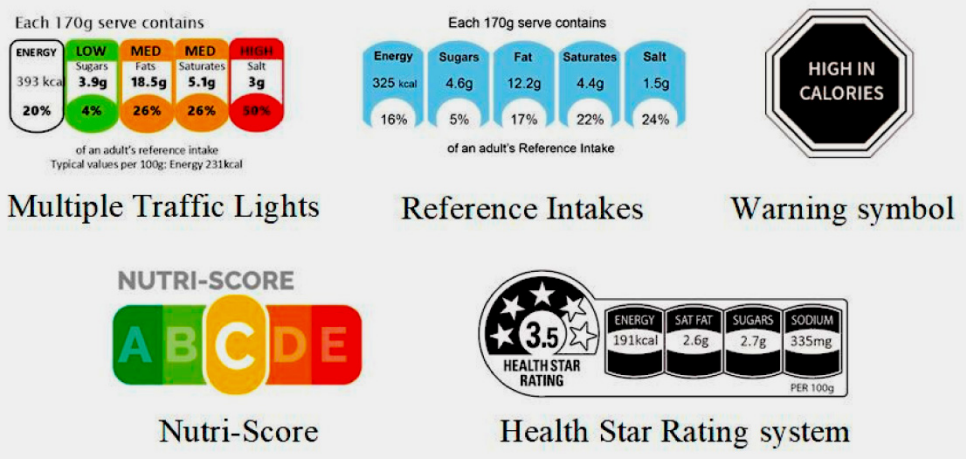

Fig. 1. five types of FoPLs. Hamlin, R. and McNeill, L. (2016).

3 General Impacts of FOPLs on the Consumer Purchasing Process

Health claims have reportedly been demonstrated in a number of earlier research to influence consumer opinions and evaluations of products, including their healthfulness [11], naturalness [12], and quality [13]. The cognitive-affective-conative model is expected to be able to explain the process of consumers viewing FoPLs, followed by building trust, liking, and intention to purchase, ultimately purchasing healthy products. There is an inconsistency between expected and actual liking and between emotional profiles before and after tasting when health claims such as “salt reduced” for cheese are given to buyers [14].

The degree to which a label will catch consumers' perception and awareness is shaped by bottom-up factors, which include the label's format or position on the package [15]. With regard to research by Bialkova and van [16], factors influencing consumer attention to health

labels include label size, color scheme, label familiarity, and placement on the package's front. Consumers are also found to have a preference for shorter claims than longer ones due to a clearer understanding of product attributes and benefits [17]. People's responses to labels are influenced by the type of information offered and the way it in which it is presented (facts vs. assertions).

Graphical health warning labels with instructional textual formats appear to be more effective than those with testimonial narratives [18]. According to one study [19], labels informing consumers that there has been a salt reduction may negatively affect their expectations and even the way the products actually taste. Health claims can also influence consumer preference or liking of a product.

4 Comparison of Different Formats of FOPLs on Consumer Purchasing Decisions

Various formats of health labels are adopted in different countries and/or regions across the globe. Customers are informed with color-coded nutrient content on traffic light labels (also known as hybrid FoPLs) in the UK about the food's medium, low, or high levels of sugar, salt, and fat. The findings from Fenko's team [20] showed that participants focused on the traffic light labels for longer and more frequently than they did on the Choices logos. It took into account the roles played by time constraints during the purchase process and general health interests. In Australasia, an evaluative "star rating" system and a reductive type PDI element make up the "Health Star Rating" (HSR) FoPL (hybrid FoPLs). The consumer samples in one study [9] "convert" the ordinal star rating internally into a binary format and use it as an input to facilitate decision processing in a more straightforward manner. Consumers choose healthier options on average when presented with color-coded FoPLs, according to experimental data from actual purchasing tasks. In another study [21], multiple traffic light labels are most favored by consumers, which differed from previous findings in which Nutri-score is more effective in enhancing understanding of product healthiness. The discrepancy could be caused by the lack of perceived credibility of the Nutri-score system among the sampled consumers, and different formats of labels were tested and compared in various studies.

A number of literature studies the influence of FOPLs with the focus on specific geographic locations, including both developed and developing countries. For instance, Menger-Ogle [5] investigated this influence on purchase intentions of Nepali consumers, although health claims are proved to drive 12% of purchasing priorities measured in Nepal. When presented with a traffic light system, Australian consumers are approximately five times more likely to pick nutritious food than when faced with a monochrome system, and three times more likely than when faced with color-coded options [22]. However, another study focusing on Australia [4] found that there are no significant differences among various formats of labeling on shopper's ability to determine healthier products.

5 Discussion of Future Research Directions

After the comprehensive review of existing papers, a number of potential future research areas have been identified. Though there have been comparisons between evaluative and reductive labels, limited previous studies focus on the shape element of FoPL design. There are studies about the aesthetic aspects of product ratings and their influence on product preference, which can be referred to. People naturally perceive complete images from partial displays because of their inherent need for visual wholeness [23]. When product ratings are less than the nearest integer, it was discovered that the rounding effect accounts for the increased product preference when utilizing a non-rectangular rating style [24]. Conversely, the non-rectangular rating system results in a decrease in customer preference for products rated higher than the closest integer. In health star ratings, the scale ranges from ½ a star to 5 stars, with ½ a star as the difference between two consecutive ratings. In other words, there are no 4.2 stars (higher than the nearest integer) or 3.8 stars (lower than the closest integer). However, the comparison between star versus bar ratings could still be made to examine the differences in consumer perception of product healthfulness caused by the visual round effect.

The influence on perceptions and evaluations depends on the product categories [17]. Based on the results of a controlled cafeteria study, nutritional information labels may enhance the perceived tastes of less nutritious hedonistic foods (like desserts and snacks), whereas they do not alter the flavor of nutritious utilitarian foods (like yogurt). The majority of participants in the experiment conducted by Talati's team [25] reported being motivated to make decisions regarding foods taken as part of routine daily meals using the evaluative FoPLs (especially the HSR) but not for hedonistic items such as desserts. Numeric calorie labels are more about to impact consumers who have relatively lower level of health consciousness [26]. Nutrition labels may influence consumers' decisions to buy healthier foods due to the significant positive relationship between labeling and the healthfulness of selected items. Therefore, more further research could concentrate on examining whether the discrepancy in the impact of various formats of FoPLs are moderated by product category in which the superiority of effectiveness of evaluative format is more salient on nutritious utilitarian foods and beverages than on hedonistic ones. Additionally, the potential moderating impact of consumers' level of health consciousness on the differences in the effects of various formats of FoPLs is another area worth discovering.

6 Conclusion

In conclusion, there has been inconsistency among studies about the impacts of various formats of FOPLs on consumer evaluation of product healthfulness and subsequent purchasing decisions. It has generally been found that the evaluative formats have a more significant impact than reductive labels in terms of the ability to indicate the product healthiness. This paper reviewed existing studies on the general impacts of FOPLs on consumer evaluation of products and purchasing decisions and compared the influence of different types of labeling. Future research could explore the shape elements of the labeling, which means whether rectangular and non-rectangular ratings make a difference in consumer perception of product healthfulness. Additionally, potential moderating impact of product category also worth

further investigation to verify if the superiority of effectiveness of evaluative type of FOPLs is more significant on. Nutritious utilitarian foods than on hedonistic ones.

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