COLOR AND SYMBOL IN PACKAGING DESIGN REPRESENTING FLAVOR IN ORDER TO SUPPORT THE LOW VISION PEOPLE IN CHOOSING THE DRINK: CASE STUDY IN GREEN TEA DRINK

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Abstract - Equality in society is considered to be the most talked about today. Whether, ordinary people or people with disabilities all need the equality of daily living. Some of the products sold in the market do not help in making a purchase and make a purchase decision for the visually impaired people or low vision person, who still has a need to select product on their needs. This paper presents the colors and symbols in packaging design to help the low vision person to buy drinks, for example, green tea drinks using the tools divided into three types for testing is 1. Use color 2. Use color with black symbol 3. Use color and color symbol. The results of the experiments the color is more effective to represent the flavor and support decision to buy more than black symbol and color symbol. The benefit of this research can be further developed in the design to support the needs of the low vision person.

Index Terms - Low vision person, Color, Symbol, Design communication, packaging design

I. INTRODUCTION

In the present living society, there is a co-living between regular people and disabled people thus most of the people understand and know of disabler. However some people might not realize the definition and the characteristic of these people. Disabler means a person with physical, intellectual or mental abnormality or lack thereof; in which the ministry of public health has categorized people with the eyesight impairment into indigenous 2 groups, which are people with total blindness and people with low vision eyesight. The distinguishing indicating factors are by the ability of the person in seeing; blind disabler is the person who could not see the picture, detect the light or receive the vision which has less than 6/60 or 20/200 resolution. The low vision people; the World Health Organization give the definition as a person who is better with using regular eye glasses and see the vision with less than 6/18 or 20/70 resolution which means the seeing range of the blur eyesight people are only at 20 feet compare with normal people with 70 feet eye range, until he cannot see the light anymore. In addition they are people who have the field of vision narrower than 30 degree. The quality of the low sight vision reception can be separate in 4 kinds.

1. The vision is blur or distorted in the center, a person with this blur sight is having problem with reading
2. Regular blurry vision
3. Narrow field of vision, the seeing of these indistinct eyesight people see is like seeing through a tunnel in which causing difficulty in walking, may tumbling over easily. If the eyesight is narrower than 10 degree when reading a book at the range of 2 inches from the eye, a field of vision is at 9 mm wide, equivalent approximately to only 4 letters. This make the person with this blurriness has slow reading speed and if spending a long time reading might cause heavy eye soreness.
4. Field of vision impair in half, the vision is blurry only on one side which means they can see clearly on the other side only. In this case if it is blurring on the right hand side, reading becomes a struggle because they cannot see the next letter.



Fig. 1 The quality of the low sight vision reception

From fig 1, showing all 4 perspectives low vision disabler perception, you can see that low vision disabler is still containing the ability to see similarly as normal people but only in low level which is the limitation in seeing [1].

Regarding the equality in human rights; no matter what type of disabler, equal right to live daily life in the society is still needed including other prospects of facility entitled of disabler who living together with other regular people in order to encourage the equal right in the community.

Today, the variety of ready to drink beverages is very vast especially green tea drinks in the market which, are numerous. Ready to drink green tea is taking a huge market shares and with constant increasing of producing growth rate because it is the product that is

easy to be selected and find in the typical convenient store. Various varieties of green tea flavors in the market allow the customer to have more purchasing choices. Most of the factors that impact the drinking purchasing choice consists of the written content indicate the taste, the drinking brand and the color on the packaging. The packaging influences the representation and exemplifies the beverage taste containing inside, especially the shape, the graphic and the color which deliver the meaning and the experience the taste of the product to customers including adding the attractiveness to the shelf. However, for low vision disabler who has limited sight, making the packaging in the market hard to transfer the taste of green tea drink in supporting the purchasing selection especially the letter indicating the content. From fig 2, showing of the arrangement green tea drink on the product shelf which is hard for indistinct sight people to select.



Fig. 2 Green tea drinks on the product shelf

This research utilized the concept of HAAT Model by Cook and Hussey (2008) that is consistedof4 factors such as human, activity, assistive technology and context. In this research; on the human factor studied the low vision person; activity factor studied the green tea purchasing choice; assistive technology studied the color and symbol supporting in communicating with the low vision people about the taste on the green tea drink and context factor studied about the color pattern and the symbol on the green tea drink packaging presented in fig 3 [2].

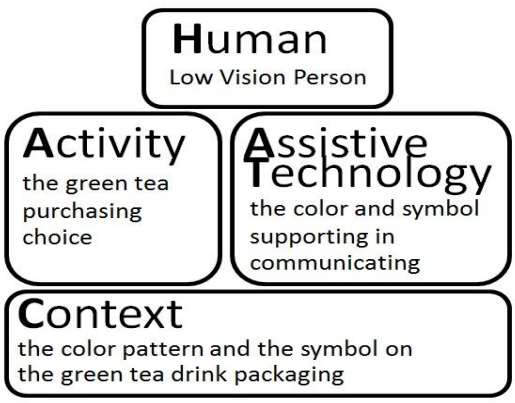


Fig. 3 The concept of HAAT Model in this research

The Gathering of the preliminary data by observing and interviewing the low vision person to find out their opinion regarding the purchasing selection particularly on the topic of choosing green tea drink on the store's product shelf or convenient store, the process of green tea drink purchasing selection of the low vision person is explained in 2 periods;

1) The period before the selection, in this stage the low vision person will absorb the whole picture of the product in front of them then after that approaching nearer to the shelf.

2) the buying and between the selection is when the low vision person pick up the green tea drink bottle and look at the letter or the message representing the content of the green tea drink flavor.

Some low vision person may use supporting item in order to seek the information such as magnifying glasses after finished looking at the flavor profile then they will purchase according to the mentioned data [3]. From earlier, the problem detected is the communication of content of the green tea drink using letter messages, colors or symbols which are hard to decide on by the low vision person including the time consumption in selecting. This research was the study in regarding to the color and symbol using in communicating the flavor of the green tea drink for low vision person in order to increase the possibility and fulfill the equality in choosing the product by overcoming the limitation in the perceiving clear color and of simplified symbol matching the potential of the low vision person replacing the letter representing the flavor content on the product packaging.

II. OBJECTIVES

This research's objective is to study about color and symbol in packaging design which represent the flavor to support the low vision person in selecting of the purchasing beverage with more effective methods by using the group of green tea drinks as the example.

III. PROCEDURE OF THE RESEARCH AND METHODOLOGY

This research is the quality research that began with gathering data from research papers related to the behavior of product purchasing selection and in depth interview with sample group of 8 people who are low vision person and willing to buy the product by themselves from Low Vision Association Thailand.

The process of gathering data in this research is as follows; 1) collecting paper data from related research about the low vision person including the characteristic of the color and symbol using to communicate the meaning 2) collecting the daily life purchasing behavior of the low vision person, The steps of selection covering from observing and the ability of eyesight in selecting. The researcher

collecting the data by interviewing using unconstructed interview shows in fig 4.



Fig. 4 Interview and collecting data with low vision person

3) On collecting of the utilizing of the color and symbol representing the flavor of the green tea drink, the tool in the research is created from bringing the data of related research paper, observation of purchasing behavior and the low vision person's interviews together and the tool is categorized into 3 types demonstrated [4] [5] [6] [7] in fig 5 which are;

1. The piece of paper which is 6 centimeters wide and 12 centimeters long in 3 colors which are dark green light green and yellow, these colors represent 3 flavor of green tea the researcher had selected; they are natural green tea flavor, no sugar green tea and green tea with lime. In order to gather data about the tasting perception of the different flavor of green tea through different shade of color.
2. Piece of color paper with black symbol with 3 centimeters wide and 3 centimeters long in which the symbol is the symbol that indicated the 3 flavors of the green tea, the researcher selected as in paragraph 1 to gather data about the perception of the green tea flavor through color and black symbol.
3. Piece of paper identical to paragraph 1 with color symbol 3 centimeters wide and 3 centimeters long to gather the data about the perception of the green tea flavor through color and colored symbol.



Fig. 5 The tool for collecting data

Bringing the 3 tools to adhere to the bottle and used for collecting of data with low vision person in which the experiment is to let the sample group chose the green tea drink from the bottles attached with the 3 pieces of color paper prepared by the researcher while using time measure measuring the time used in selecting. 4) Bringing the information from the experiment regarding the green tea flavor perception to compare in addition with interviewing of the sample group in order to analyze the color and symbol in communicating the flavor of the green tea drink.

The analysis of this research is separated into 2 stages divided by the behavior stage of product selecting by the sample group demonstrated

Period 1: Analyze the sample group's behavior before the green tea drink selection by timing how much time used to look and then perceive the flavor of the green tea drink.

Period 2: Analyze the sample group's behavior during the green tea drink selection by timing how much time the sample group used in perceiving the flavor of the green tea drink and deciding to buy the product.

Then bring the data during both periods to compare and analyze with the regular time of green tea drink selecting behavior time.

IV. RESULTS OF RESEARCH

From the gathering of data, the result can be categorized into 3 groups according to the type of the tool; from table 1 which tests the sample group with bottles that attached with color paper correlating with green tea's flavor, The time result of the period before the all 8 people from sample group select the beverage is at the average of 2.20 minutes, between looking at the product and then staring nearly at the product and then deciding on buying the product of which make the accumulated average time during the purchasing selection 0.

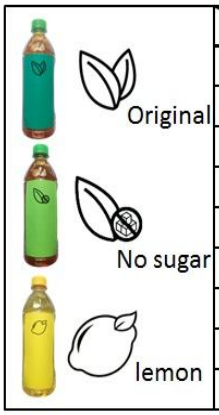
Table.1 Result of group 1

		Before	During
	n \ time	min.	min.
Original	n1	2.09	-
	n2	2.50	-
	n3	3.08	-
No sugar	n4	2.50	-
	n5	2	-
	n6	2.43	-
lemon	n7	1.50	-
	n8	1.50	-
	$\bar{X}$	2.20	-

Table 2 show the result when using color and black symbol in which time result before the selection of

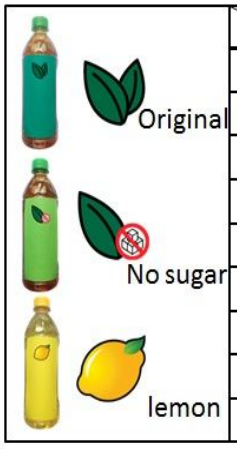
the drink by the 8 people in the sample group is at the total average time of 2.49 minutes, between looking at the product and then staring nearly at the product and then deciding on buying the product of which make the accumulated average time during the purchasing selection 3.58 minutes. It is a time spent staring closely to find out whether it is the right flavor they want to choose.

Table.2 Result of group 2

	n \ time	Before min.	During min.
 Original	n1	2.38	4
	n2	3	4.21
	n3	3.41	4.50
No sugar	n4	3	4.12
	n5	2.30	3.50
	n6	3.02	3.52
lemon	n7	2.13	3.13
	n8	2.24	3.26
	$\bar{X}$	2.49	3.58

In Table 3, it is the table representing the result of experiment using color and color symbol in which time result before the selection of the drink by the 8 people in the sample group is at the total average time of 3.01 minutes, between looking at the product and then staring nearly at the product and then deciding on buying the product of which make the accumulated average time during the purchasing selection 4.21 minutes. It is a time spent staring closely to find out whether it is the right flavor they want to choose.

Table.3 Result of group 3

	n \ time	Before min.	During min.
 Original	n1	2.40	4.30
	n2	3.12	4.42
	n3	3.38	5.04
No sugar	n4	3	4.50
	n5	2.50	4
	n6	3.13	4.02
lemon	n7	2.45	3.52
	n8	2.50	3.48
	$\bar{X}$	3.01	4.21

From the result of all the 3 types of information collected, compare with the data and detail of the period before purchasing and during the purchasing as in fig 6 and fig 7.

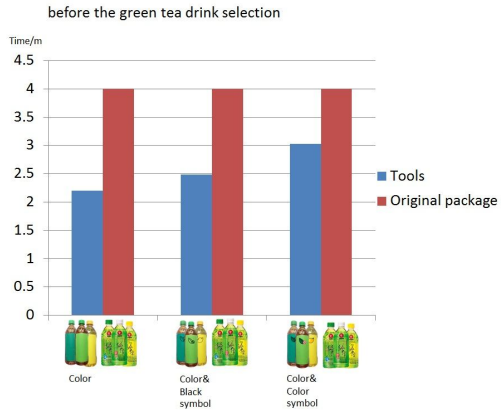


Fig. 6 The comparison before the green tea drink selection

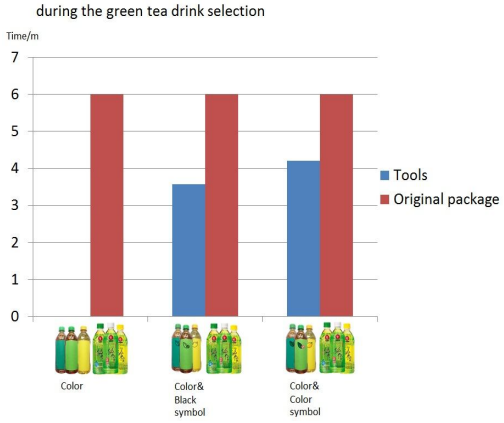


Fig. 7 The comparison during the green tea drink selection

The comparison showing that the differences of the time the sample group took in perceiving the flavor the packaging intends to indicate, we can see that only with color can make the focus group who is a low vision person understand and be able to choose the flavor of the drink and took much less time when choosing to buy; normally it took nearly 10 minutes for the process but it reduced to only 2.20 minutes. Regarding the color and the black and color symbol, despite the fact that the sample group might took less time which is 6.07 minutes and 7.22 minutes accordingly, however, it took much more time to perceived and choose the beverage compare to when using only the color to convey the message.

V. RESULT DISCUSSION

By observing and interviewing the sample group after such experiment concerning the feeling and the opinion of the color and the symbol that used in the test, the sample group stated that merely the color is enough to make it understandable about the flavor because it is easy for the ability in their vision, especially emphasizing on the type of color that is in high contrast such as colors on white background or light tone color on black or dark color; just dark green is enough to indicate original green tea drink flavor without any lettering or picture to explain. Regarding the use of color and the symbol together, black and

color symbol created more difficulty in perceiving the flavor similar to looking at the normal packaging even though there is no letter presenting, the sample group still have to look closely and interpreting the meaning of the particular symbol.

CONCLUSION

In this research, the researcher discovered interesting topics which can be concluded as follows; the research's result about color and symbol on the packaging representing the flavor supporting the low vision person in order to choose the green tea drink, when comparing the time period, founded that the color alone can help the low vision person to perceive the flavor of the green tea and facilitate them in selecting better and reducing the time used in deciding which the green tea drinks to be purchased. On the contrary, for the color on the symbol both in color and in black, the symbol on the paper is not a better way to indicate the flavor and the duration for perceiving of flavor is a long time even though the symbol is simple in the eye of normal eyesight people therefore having the symbol on the color paper both in color and black are not improving method to perceive the flavor of the drink. Moreover it is interrupting the sight and the decision to purchase of the low vision person.

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