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A STUDY ON THE CHARACTERISTICS OF PRODUCT COLOR ON THE INTERNET – WITH AN EMPHASIS ON THE INTERACTION BETWEEN THE EXPRESSION OF PRODUCT COLOR INFORMATION AND COLOR PERCEPTION

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1. Introduction

1.1 Background and necessities

Even though the internet became a major communication media and has reached out more and more human activities, some researches have indicated that the internet contents providers were more concentrated in digitisation of the existing data adjusting the previous media frame, in prior to finding out the characteristics of the internet as different media context[Samsung Digital Systems 1999]. Particularly in communicating quantitative subjects such as color information during commerce activities, it happens frequently to mistransmit or to misunderstand the original information because of the different environmental background.

Therefore, in order to realise better understanding color communication on the internet, it is important to research on the relationship between expression of color information and perception of that based on this media context.

1.2 Goal

The purpose of this paper is to analyse the existing ways of expressing product color information in internet commerce websites and to interpret the relationship between the expressions and user perception through empirical research, regarding the internet as a new media platform transferring color information of exisitng products.

2. Product color information on the websites

2.1 Expression of color information

According to the references, there are several ways in expressing color information using semantic systems in terms of: lingual color terms, visual parameters, scientific measurements. Although English basic color terms are generally accepted to understand by majority of internet users, each translates into special perception stemming from its own cultural and historical background. An experiment by a group of Japanese who have lived in the United States showed that the how differently they perceive 'midori', a Japanese word for green from 'gurin', a generated word from 'green' by frequent use of English, even if 'midori' is considered as Japanese translations for the English word, green[Figure 1]. Although such discussions will matter in sharing common information with global internet users, it is probably one of the efficient way to managing color information together with other database.

2.2 Product color information on electronic product catalogues(EPCs)

As the electronic product catalogues(EPCs) which started as digitised form of product brochure became a direct communication channel to internet users, the contents providers are much more concerned about effective EPCs for efficient database management and systematic information display, even if it is still required to find a compromised solution between rich information and fast data loading [Suk 2000]. Accordingly product color information is ordered as expressed in a different way depending on the information structure of EPCs. A case below, for example, is presenting one image of jacket in blue and other 7 color variations by color palettes with subtitle of color naming underneath. Consumers are supposed to imagine jackets in other color out of these color chips and to choose the naming of the color from a select box[Figure 2].

Figure 1. Comparison: color ranges for "midori(?)" and "gurin(green)" [Hardin 1997]
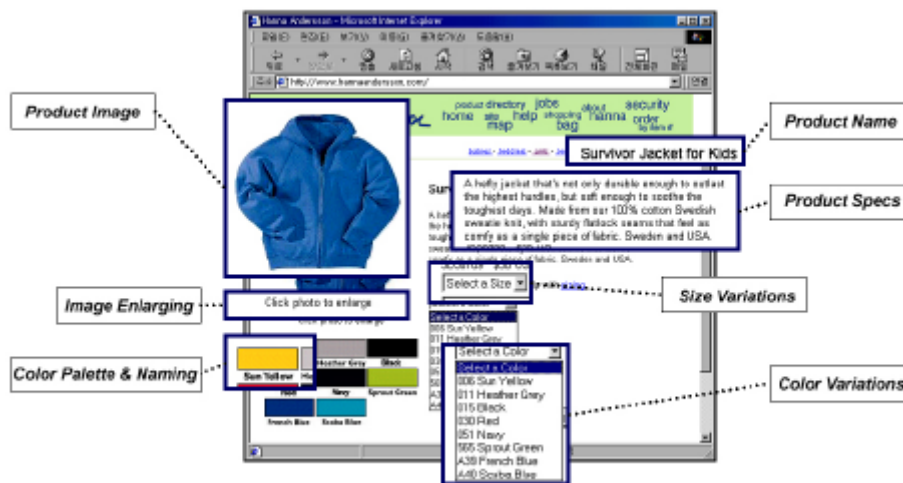

Figure 2. Example: information structure of an EPCs

Assuming that there be communication problems in perceiving 3 dimensional product color through such patterned information, it was conveyed to analyse information structure for product color on EPCs.

2.3 Pattern analysis of product color information on the EPCs

In sampling websites, in order to have a certain level of equivalent quality among the pool, the Internet Guide from Britannica.com was taken as a reference list. Moreover, automobiles, home appliances and apparel were taken as product categories which were mostly in common ones under shopping category from the portal websites, such as yahoo, lycos, alta vista and infoseek, and which have also variations by different color.

As following table 1 presents, overall 70 internet commerce websites from 13 automobiles, 20 home appliances and 37 apparel were analysed and resulted into a couple of patterns. Firstly color naming is major method to communicate product color information, even if each product type has different

tendency to express: *using basic color naming in case of home appliances, or creating new ones combining another nouns or adjectives in that of automobiles, for examples, 'hibiscus red(Audi)', 'milano red(Honda)', 'oriental red(Hyundai)', 'red flame metalic(Toyota)', 'laser red clearcoat metalic(Ford)', etc.*

This case explains that creating color names is another marketing tool, endowing product with new identity. Secondly different ways of expressing color information is apparently shown by product types, which possibly explains product color information is treated dependently of the characteristics of product type itself, contents providers or consumer behaviours in purchasing process.

Table 1. The pattern of product color information on the EPCs

Visual Information of Product — ⊖: Automobiles, ▭: Home appliances, 👕 Apparel

1   none
2   a sample image only
3-a   a sample image and color palette for variations
3-b   a sample image and color palette with texture for variations
4   images for each color variation
5   animations for each color variation
6   video clips for each color variation

Product Color Naming	1			2			3-a			3-b			4			5			6		
	⊖	▭	👕	⊖	▭	👕	⊖	▭	👕	⊖	▭	👕	⊖	▭	👕	⊖	▭	👕	⊖	▭	👕
None	16%			16%										60%	3%						
Offered for product selection				16%	25%	51%						6%		15%				3%			
Offered for Image Description									3%			22%	54%		8%						

Such results, however, are also closely related with understanding web publishing as a digitisation process of the existing data, expecting internet consumers to be able to accept limited information and as figure 3 and figure 4 illustrate frequently enough following cases are the reasons for miscommunication.

Figure 3. Case: 'red' microwave ovens

Figure 4. Case: 'breton red' suit

It is, hence, predicted that there would be new factors to be considered in using internet as communication media for perceiving product colour information and to be discovered through an empirical study grounded on the internet environment.

3. Empirical study- relationship between expression and perception of product color information

3.1 Empirical study plan

The survey resources and database were selected based on the analysis result from chapter 2, and color palettes were composed of 216 web safety color or combination of them. The survey was structured with HTML and CGI in Korean and in English [Figure 5], consisting of following four parts:

    Part I: to fill everyday use color naming by each product type
    Part II: to answer color palette matching color naming from the given product type

Part III: to answer color palette and experience with the product form the given photo
Part IV: to fill his/her demographic data including experience of internet use

3.2 Data analysis

210 survey participants 56% from Korea, 35% from United States and 9% from Germany submitted responses through the websites. Color palettes were later deployed on the color space defined by ISCC-NBS and regression analysis was operated by SPSS. Some single particularities were extracted part by part and also interrelated phenomena are discussed in the conclusion.

Figure 5. Internet Survey

3.2.1 Relationship between product types and color perception

Table 2 shows a deployment of color palettes for 'blue' arranged on the ISCC-NBS color space, which means that among the suggested 8 color palettes from 'pale light greyish' to 'deep' blue spaces, 210 participants selected one as an appropriate blue of for the question. The darkness of each color space represents the relative density of answers.

Table 2. Color perception for 'blue' by different product types

Therefore majority of internet consumers are perceiving 'deep' blue from the color naming 'blue' in automobile or apparel categories. On the other hand, it is not clearly recognised to find out how to perceive 'blue' in case of home appliances. This results are depended of the kind of color as well as that of product types. Even if the degree of data divergence varies, such tendencies are examined in blue, red, green and grey, and the color of home appliances are more differently perceived by internet consumers when it is expressed in color naming [Table 3].

Table 3. Relationship of data divergence between color namings and product types

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Moreover, among the responses more than 50% of participants show a strong tendency in perceiving color through the given color namings in the survey- *blue, red, green, grey, silver(⊖,▢ only), beige, orange(▢only), khaki(👕 only), light blue(👕 only) –* which appears differently by product categories. This group of participants, for example, selected 'vivid' red for automobiles, 'deep' red for home appliances and 'vivid' red in apparel accordingly.
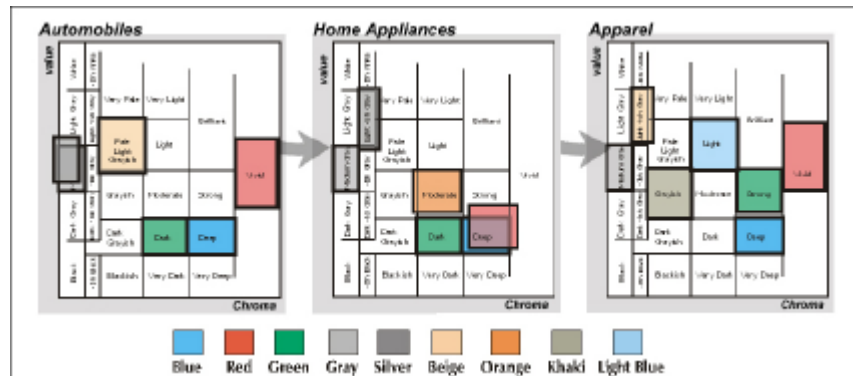

Figure 6. Tendency from 125 participants

In such a way, more factors are discovered according to demographic data including lingual background since all colour naming during the survey were in English, written in alphabet, in order to avoid influences by different nuance from translation.

In addition to this, the number of non responders who refused to select any of the given palettes were significantly high in home appliances and this goes with diverged tendency from table 3 [Table 4].

Table 4. The rate of non responders
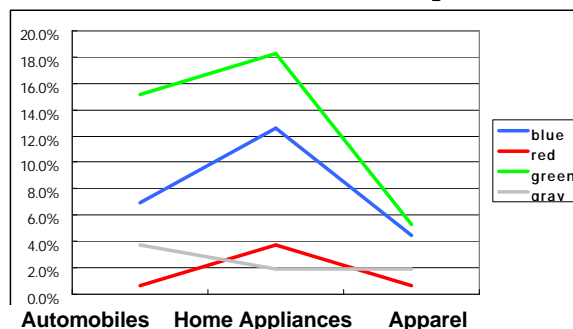
4. Conclusion

As it was presumed from the empirical study plan, internet users resulted non-relationship with marketing patterns from contents provider and rather have another tendencies in perceiving color from color naming according to product type as well as his/her own cultural background. Several features discovered follow:

- by product type
    - color naming for home appliances is relatively limited and within basic color naming system by contents provider as well as internet consumers
    - each type of product affects tendency between color naming and color perception
    - reflective material is recognised as darker tone
- by color type
    - color name 'green' and 'blue' has diversified perception throughout the product types as well as demographic background in comparison with the case of 'red', which shows consistent responses from all the participants
    - internet consumers perceive bluish products as darker and reddish ones as more vivid than the given photos.
- by demographic data

- American and European participants than Koreans, and females than males showed more diversified and sophisticated vocabulary of color naming
- previous experience of the product through digital media is different from that in real
- the more experienced with internet the more reliable in internet shopping, requiring more detail information.
- color perception is independent of age, educational background and internet experience of the participants

Table 5. Co-Relation Model
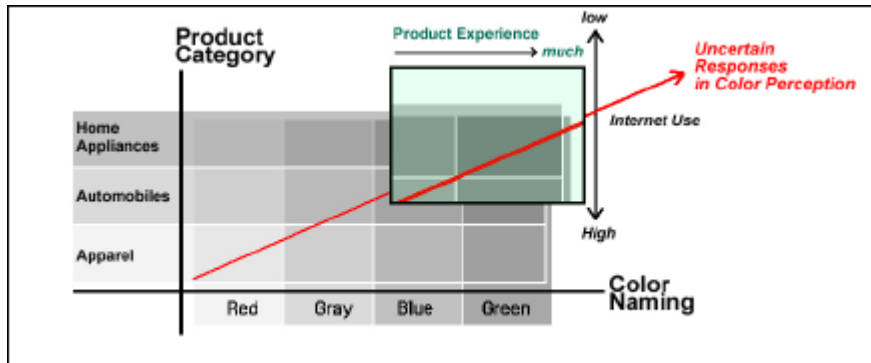
It is also suggested to explain the co-relation model among 4 factors such as product type, color naming, internet use and previous product experience, based on which internet contents providers are expected to set up more detailed guidelines[Table 5].

Lastly, the more real life driven interface in the cyber space is introduced sooner or later by rapidly developing technology, the more in-depth research under the new media environment will be carried out. In such cases research should include realisation process based on experience and knowledge in a larger context of understanding of human behaviour.

Acknowledgement

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