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# ATTRACTIVE FACTORS OF ENVIRONMENT-FRIENDLY DAILY NECESSITIES

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## ABSTRACT

Going green is increasingly important to the market. The present research indicates that functional and emotional factors can achieve the best-perceived effects when choosing an environment-friendly product. Therefore, this study aims to gather these attractive factors from high-involvement groups by using Miyoku engineering. First, we capture the factors through the Evaluation Grid Method and use Quantification Theory Type I for quantitative analysis. Then, generalize four feelings about environment-friendly products, namely "Assured," "Responsible," "Safe," and "Comfortable." We also define a linear dimension with short-, normal-, and far-sight for locating attractive factors and feelings. The result shows that high-involvement groups are more concerned about the long-term impacts of "Responsible" feelings, while low-involvement groups focus more on the obvious benefits of "Responsible" and "Safe" feelings. Moreover, the emphasis on natural ingredients is necessary for achieving "Assured" and "Comfortable" feelings for both the high- and low-involvement groups.

**Keywords:** *Environment-Friendly Product, Attractive Factors, Evaluation Grid Method, Quantification Theory Type I, Miyoku Engineering*

## 1 INTRODUCTION

The "Going Green" business is gaining importance with the increase in the environmental knowledge of the consumers (Phuah, Ow, Sandhu, & Kassim, 2018). Consumers believe that active green consumption can induce enterprises to make their production and sales more environmentally friendly. Therefore, the development of environment-friendly products is

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increasing in the industry (Abele, Anderl, & Birkhofer, 2005). Many companies become more “green” to attract and keep consumers, especially in manufacturing and marketing (Vandermerwe & Oliff, 1990). Currently, more and more environment-friendly products are produced without chemical substances (Song, Meysam, & Shaheen, 2016), that can be recycled and will not cause pollution or natural resource depletion (Shamdasani, Chon-Lin, & Richmond, 1993).

In addition to the “green” changes in products, the purchase intention of consumers will also be affected by multiple factors. Among these, emotions play an important role in predicting human behavior. It can indirectly affect the strength or evaluation of our beliefs, thereby influencing our intention and behavior (Ajzen, 2011). Negative emotions may be a barrier to human environmental action, whereas positive emotions may increase environmental performance (Carrus, Passafaro, & Bonnes, 2008). To realize the goal of green marketing, we need to know the emotion type that influences green actions (Kao & Du, 2020), because the rational benefits of green consumption are insufficient for the consumers to adopt green purchasing behavior (Koenig-Lewis, Palmer, Dermody, & Urbye, 2014). For an environment-friendly product, functional and emotional factors are considered complementary, because combining functional strategies with emotional benefits can achieve the highest perceptual effects (Hartmann, Apaolaza Ibáñez, & Forcada Sainz, 2005).

Therefore, this study aims to explore the positive emotional factors of environment-friendly products through interviews of high-involvement groups. These attractive factors will be captured by Miryoku Engineering, as well as using the Evaluation Grid Method to build the connection between functional and emotional factors. The results can help manufacturers develop new products or systems that can enhance green purchasing.

## 2 RESEARCH FRAMEWORK

The research framework is shown in Figure 1. In this study, we will use Miryoku engineering as the main research approach to help the development of attractive products or services. There have several qualitative and quantitative methods under Miryoku engineering. In this study, we will use the Evaluation Grid Method (EGM) to reveal the connection between functional and emotional factors, and use the Quantification Theory Type I to analyze the data.

In the first part, this study searched for the environment-friendly products approved by the Green Mark on Taiwan’s Green-Living Information Platform. In Taiwan, the Green Mark was launched in 1992 to encourage manufacturers to produce fewer damaged products, and consumers may be able to select recyclable, resource-saving, low-polluting products. The Green Mark products were distinguished into several categories, including cleaning products, home appliances, office supplies, monitors, and furniture. Due to the variety of environment-friendly products in the market, this study was only limited to environment-friendly cleaning products, including dishwashing detergent, hand soap, and toilet cleaner. We selected 30 products by focus group and made them into 30 sample cards. These cards were printed with a color image,

product name, and simple product descriptions without any price information to eliminate the price factor.

The second part of this study captured the attractive factors through in-depth interviews with nine consumers who had purchased at least six of the products in the samples. The most critical five samples were chosen for the comparison ranking. In this stage, EGM was used to record the information provided by the participants. EGM was introduced by the Japanese scholars Junichiro Sanui and Masao Inui (Sanui, 1986), who modified the repertory grid technique from George Kelly (Kelly, 1955). The participants were asked to evaluate the samples based on “strengths and weaknesses” and “likes and dislikes.” During the interview, the researcher focused on the questions which progressed from “what specific conditions” to satisfy “what kinds of attractive features” to achieve “what kinds of feelings.” This laddering framework revealed functional and emotional factors to be integrated into a systemic correlation.

In the third part, this study transformed the EGM results into a Quantification Theory Type I questionnaire. In this phase, we investigated the high- and low-involvement groups for potential differences, the high-involvement groups were defined that having bought at least four of the products in the samples. Then, the most important attractive factors were generalized toward every abstract feeling in two groups. According to the Quantification Theory Type I, we can notice the real factors that consumers care about.

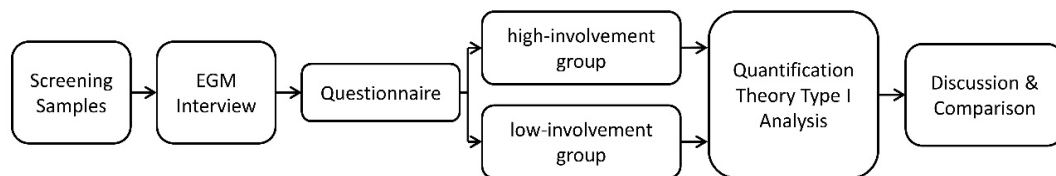


Figure 1. Research framework

### 3 RESULTS OF THE EGM INTERVIEWS

Based on the results of the in-depth interviews with the nine consumers, nine personal EGM charts were created. The abstract feelings, original evaluations, and concrete conditions had been laddered sequentially from left to right, using solid lines to indicate the relationship among different factors. Each path showed one concept; for instance, “more natural ingredients (concrete conditions)” can be “less irritating to skin (original evaluation)” to achieve the “assured (abstract)” feeling. After the integration of the nine EGM charts, the most mentioned abstract feelings were determined, which included Assured, Responsible, Safe, and Comfortable.

#### 3.1 Assured—EGM Charts

Figure 2 shows the structure of attractive factors toward the “Assured” feeling. The features to create the “Assured” feeling were as follows:

1. Fewer chemicals added: Avoid using a fluorescent agent and bleaching agent, and add more natural ingredients to replace chemical ingredients, which can make the product smell better, cause less harm to the skin, and easy to wash out.
2. No corrosive chemicals added: The absence of strong acids and alkalis in cleaning liquids provides these products with a “Non-toxic” image and leads to the “Assured” feeling.

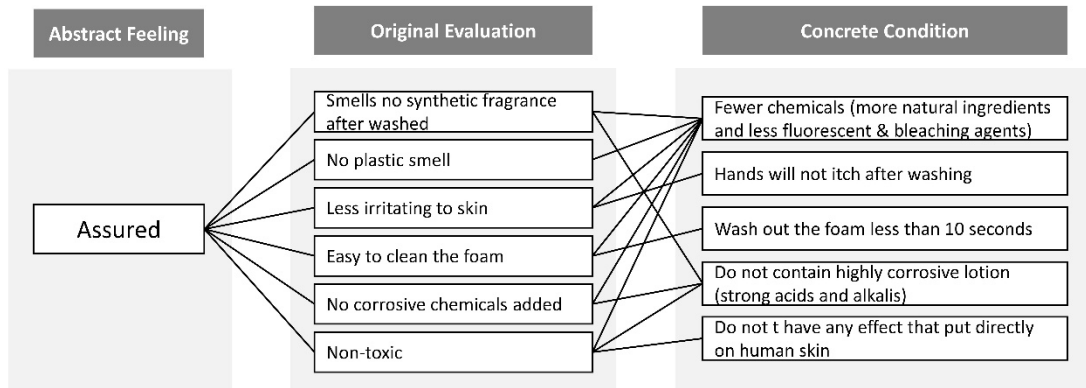


Figure 2. “Assured” EGM chart

### 3.2 Responsible—EGM Charts

Figure 3 shows the structure of attractive factors toward the “Responsible” feeling. The features to create the “Responsible” feeling were as follows:

1. Fewer chemicals added: Use more natural ingredients to replace chemical ingredients, which can reduce harmful gas production, and avoid polluting the water resource.
2. No corrosive chemicals added: The absence of strong acids in cleaning liquids will help not to kill the beneficial bacteria in the septic tank when washing the toilet.
3. Replace plastic packaging: Replace the plastic packaging with biodegradable materials or use recycled pulp on the packaging to reduce deforestation. A simple packaging design will also prevent lasting garbage and avoid the generation of plastic particles.

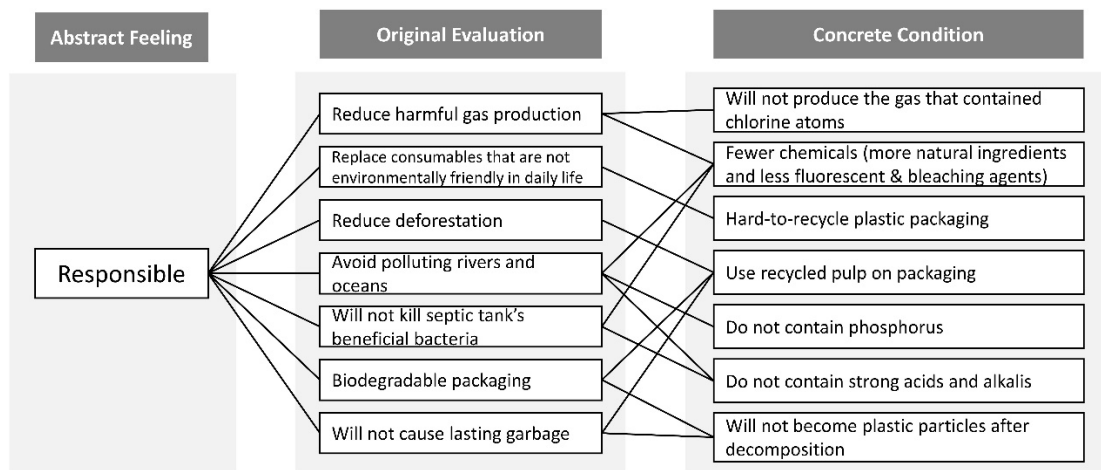


Figure 3. "Responsible" EGM chart

### 3.3 Safe—EGM Charts

Figure 4 shows the attractive factors' structure toward the "Safe" feeling. The features to create the "Safe" feeling were to use more natural ingredients and fewer chemicals to create a non-toxic product, and the cleaning product should be harmless when touching the user's skin.

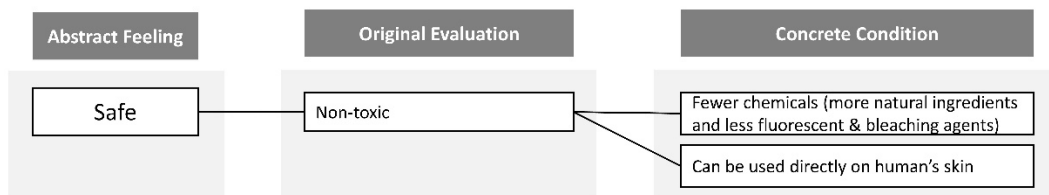


Figure 4. "Safe" EGM chart

### 3.4 Comfortable—EGM Charts

Figure 5 shows the structure of attractive factors toward the "Comfortable" feeling. The feature to achieve the "Comfortable" feeling was to create "good smelling." We can add some natural ingredients such as tree bark to provide a good-smelling experience for the users.

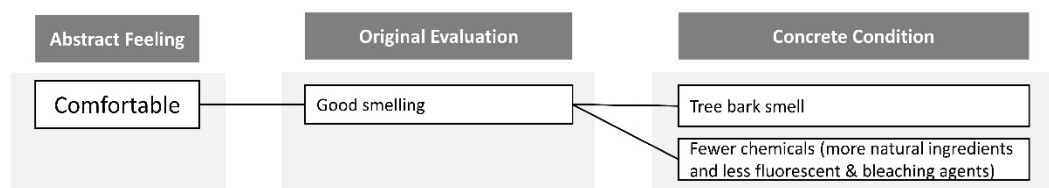


Figure 5. "Comfortable" EGM chart

## 4 RESULTS OF THE QUANTIFICATION THEORY TYPE I

In this phase, we transformed the EGM results into a questionnaire. The abstract of the original evaluation was transformed into the external reference, the abstract feeling became the title, the original evaluation became the item, and the concrete condition became the category. This study received 32 questionnaire responses from high-involvement groups and 117 questionnaire responses from low-involvement groups. The results of the Quantification

Theory Type I are presented in Table 1. We chose the highest coefficient of partial correlation in every feeling, and the data indicated the weight value of different feelings. The title “R” represented the multiple correlation coefficients, and “R<sup>2</sup>” represented the coefficient of determination.

**Table 1.** Abstract of the result of Quantification Theory Type I

Abstract feeling	Original evaluation (Item)	Concrete condition (Category)	Category score	Coefficient of partial correlation	R	R <sup>2</sup>
Assured (High involvement)	Smells no synthetic fragrance after washed	Do not contain highly corrosive lotion (strong acids and alkalis)	0.10	0.46	0.57**	0.33
Assured (Low involvement)	Smells no synthetic fragrance after washed	Do not contain highly corrosive lotion (strong acids and alkalis)	0.18	0.37	0.45**	0.20
Responsible (High involvement)	Will not kill septic tank's beneficial bacteria	Do not contain strong acids and alkalis	0.47	0.53	0.60**	0.36
Responsible (Low involvement)	Replace consumables that are not environmentally friendly in daily life	Hard-to-recycle plastic packaging	0.08	0.22	0.24*	0.06
Safe (High involvement)	Non-toxic	Fewer chemicals (More natural ingredients & less fluorescent agent & bleaching agent)	0.20	0.21	0.21*	0.05
Safe (Low involvement)	Non-toxic	Can be used directly on human's skin	0.43	0.31	0.31*	0.10
Comfortable (High involvement)	Good smelling	Fewer chemicals (more natural ingredients and less fluorescent & bleaching agents)	0.47	0.13	0.68**	0.46
Comfortable (Low involvement)	Good smelling	Fewer chemicals (more natural ingredients and less fluorescent & bleaching agents)	0.29	0.33	0.38*	0.15

Note. \*. correlated, \*\*. strongly correlated, \*\*\*. very strongly correlated

Both high-involvement and low-involvement groups in the “Assured” feeling believed that “smells no synthetic fragrance after washed” was the most important factor to create the “Assured” feeling. Then, the results of the “Responsible” feeling showed that high-involvement groups were more concerned about the further process after the product had been used; for

instance, they considered whether the cleaning liquid killed the beneficial bacteria in the septic tank or not. In contrast, low-involvement groups focused more on the use of plastic packaging in daily life. For the “Safe” feeling, High-involvement groups were more concerned about the ingredient issue, while low-involvement groups were more concerned about using the product directly on the skin. Finally, both the high- and low-involvement groups in the “Comfortable” feeling considered that weaker chemical smells led to a better user experience.

## 5 DISCUSSION

First, the factors presented in the two main feelings, “Assured” and “Responsible,” are very different. The original evaluations in the “Assured” EGM chart are mainly focused on the cleaning process, experts presented more on user experience using their five senses and the phenomenon caused by the product. However, the original evaluations in the “Responsible” EGM chart focus more on the packaging, with more concern for the packaging material and whether it causes lasting waste or not.

According to the results of the Quantification Theory Type I analysis, we define the attractive factors into three aspects, short-sight, normal-sight, and far-sight factors. These three aspects are in the same linear dimension as Figure 6. The short-sight factors considered the short-term benefits; for instance, the packaging materials or whether the cleaning products will harm our skin or not. These factors can create “Responsible” and “Safe” feelings to attract low-involvement groups. The normal-sight is a transition zone between the short and the far one. In this study, we define the ingredients of environment-friendly products as the main factor in normal-sight. The harmless and natural ingredients are the necessary conditions to create all feelings. In addition, the “Assured” and “Comfortable” feelings are only located in this zone, while the high-involvement group in the “Safe” feeling is also constructed by the same factors. The last one is the far-sight, where factors are broader and with long-term benefits, such as the environmental impact, or the process and conditions after the product has been used. In addition, only “Responsible” feeling in the high-involvement group spans this interval. In conclusion, “Responsible” and “Assured” feelings are more difficult to create, and we may notice the different preferences of different groups.

Finally, we can provide several paths to design an environment-friendly product by referring to the result of the EGM. For example, if we want to create a responsible and assured hand soap, we can use biodegradable packaging and emphasize the natural ingredients through advertising. If the target is the high-involvement group, we may highlight the importance of the status of environmental protection on the packaging or advertisement. This study mainly focuses on environment-friendly cleaning products; however, this method can also be applied to other environment-friendly daily necessities to capture different attractive factors.

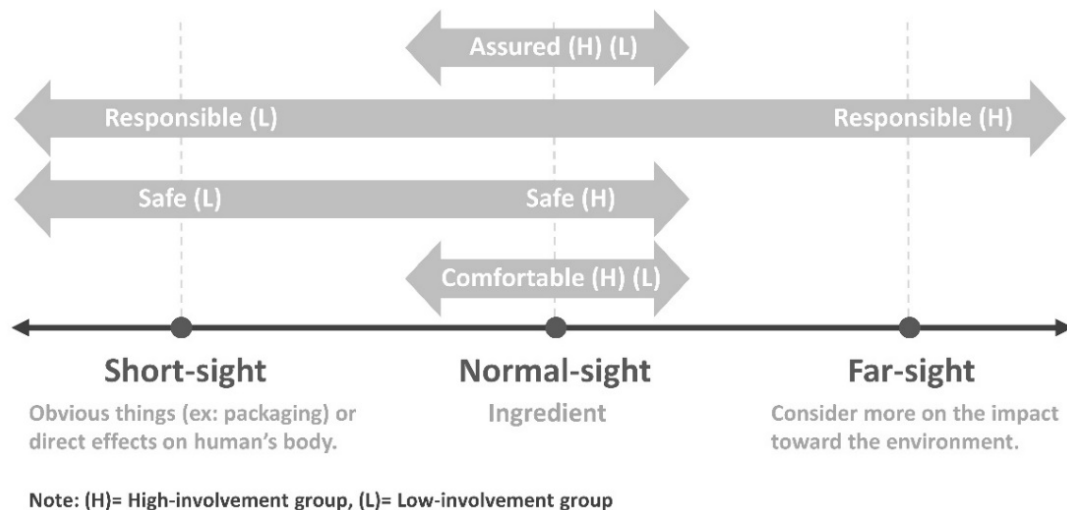


Figure 6. Dimension of environment-friendly products' attractive factors

## 6 CONCLUSION

This study generalizes the attractive factors and four feelings regarding environment-friendly products through in-depth interviews. These feelings are “Assured,” “Responsible,” “Safe,” and “Comfortable.” According to the results of the quantitative analysis, we define a linear dimension of attractive factors, that include short-sight, normal-sight, and far-sight. The “Assured” and “Comfortable” feelings are focused on ingredient factors for the high-involvement and low-involvement groups in the normal-sight. The “Responsible” feeling has the largest span, from the short-sight to the far-sight, and the “Safe” feeling has a middle span, between the short-sight and normal-sight. High-involvement groups in the far-sight are more concern with the impact on the environment after the use of the considered products. In contrast, low-involvement groups focus more on short-term benefits and the effects. In this study, we propose a frame to simultaneously reveal the functional and emotional factors. These attractive factors can be applied in the marketing and design strategies for developing environment-friendly daily necessities.

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