A Pilot Study of Exploring the Relationship Between Dechnology Product and Product Personality

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Abstract. Cultural creative products emphasize personalization to meet the needs of consumers who hope to be unique and different. The purpose of this study is to explore whether if there is a correlation between consumers' dominant or recessive personality traits and their selection of or preference for products. This study is divided into three stages, the first stage finds the relationship between personality traits and the five aspects of product personalization through literature review; the second stage is an experiment that recruits 105 college juniors in day school and night school, and asks them to complete a PDP personality test to learn the personality traits of these college consumers; the third stage provides a manual containing 41 designed Dechnology products and asks the subjects to intuitively choose products based on their own preference. The subjects are not under any pressure and do not need to evaluate the products' design, functions or aesthetics. After data collection is completed, subjects' personality traits are categorized and the product voting results are analyzed. Finally, this study concludes that there is a significant correlation between consumers' personality traits and their preference for Dechnology products. After compiling statistics on similar and different selections made by subjects with each personality trait, this study found that products selected by subjects with different personality traits also have multiple personalities. This study also found that consumers with different personality traits showed different preferences when selecting products, and analysis of products' design and functions showed that product personality was consistent with consumers' personality trait. Results of this study can serve as reference for product planners, designers and marketing personnel.

Keywords: PDP · Dechnology · Personality traits · Product personality

1 Introduction

The cultural creative industry has become a major trend of this century, and large numbers of cultural creative products have appeared in the market. However, among the vast number of creative products, what designs are accepted by consumers? Or, what preferences do target consumers have? Designers and distributors are all searching for the answer to these questions. Hence, "consumer" purchase behavior discussed under

marketing strategy has become a popular research topic. Robert Lauterborn (1990) proposed the 4C theory in contrast with the 4P of traditional marketing, emphasizing the importance of customer. Even so, "Product" in the 4P theory is still related to "Customer" in the 4C theory. Take automobile brands for example, M-Benz represents "luxury" and "comfort"; BMW represents "speed"; Audi represents "technology." All of these automobiles are represented by a "product personality," and the customers that purchase them are also different, but most are related to their dominant or recessive personality traits.

McCrae and Costa (1987) proposed the "five personality traits" to explain the values and preferences of different personality traits. Human resource departments of many enterprises adopt the PDP (Professional Dynamitic Program) personality test to examine the behavioral style of employees. PDP stands for Professional Dynamitic Program, which divides personalities into dominant (tiger), expressive (peacock), patient (koala), precise (owl), and hybrid (chameleon). People with different traits have different personalities, and the test reveals that personality.

Cultural creative products have been emphasizing personalization to meet the needs of consumers who hope to be unique and different. Product personalization is when consumers project their personality traits, both positive and negative, onto products (Sirgy 1982).

PDP personality test has been widely applied in enterprises, governments and private organizations, but it has not been applied in research on creative design. By revealing the personality traits of consumers, we can learn if consumers with different personality traits will have different preferences for product design, which will allow us to find product attributes that are viewed as the product's personality. This will enable us to further analyze if consumers' personality traits are correlated with the personality of products they buy.

2 Literature Review

Consumers' personality and behavioral pattern is referred to as their "personality traits," "personality" refers to a combination of individual characteristics that determine how a person interacts with the surrounding environment, while "trait" refers to a continuous aspect that is used to explain the "consistency" of a person's behavior under different situations (Gatewood and Field 1998). Therefore, "personality trait" is the most stable and important composition of a person's life (Costa and McCrae 1992).

At present, most Taiwanese enterprises adopt the PDP personality test to understand personality traits of their employees or potential future employees. It is a tool that reveals a person's "basic behavior," "reaction to their environment," and "predictable behavioral pattern" (www.pdp.com.tw/index.php). Allport (1937) defined personality trait as follows: "Personality is the dynamic organization within the individual of those psychophysical systems that determine his characteristics behavior and thought." The personality test provided by the PDP divides personality traits into dominance (tiger), extroversion (peacock), conformity (koala), patience (owl), and integration (chameleon) (Table 1).

Table 1. Strengths and weaknesses of personality traits organized by this study

Personality trait	Strength	Weakness	Suitable occupation
Dominance (Tiger)	1. Strong leadership	1. Inconsiderate	Supervisor, general
	2. Adventurous	2. Impatient	
	3. Decisive	3. Does not know how to please others	
	4. Fearless	4. Arrogant	
Extroversion (Peacock)	1. Optimistic, likes attention	1. Unrealistic	Public relations, sales representative
	2. Creative	2. Impulsive	
	3. Energetic	3. Poor concentration	
Conformity (Koala)	1. Listener	1. Too cautious	Administration, customer services
	2. Emotionally stable	2. Does not like change	
	3. Tolerant	3. Indecisive	
Patience (Owl)	1. Careful consideration	1. Picky	Accountant, engineer
	2. Organized	2. Complicates issues	
	3. Logical		
Integration (Chameleon)	1. Adaptive	1. Changeable	Personal assistant
	2. Strong integration ability	2. Unpredictable	

Many studies on the perception of product design have explained that products have personalities, and that there are two advantages to this. The first is that it helps consumers understand products (Mugge et al. 2009); the second is that it attracts consumers because consumers will purchase products that fit their image (Govers and Mugge 2004; Govers and Schoormans 2005). These theories establish the connection between consumers and product personality. Yang and Yu (2008) explored the personalities of Alessi products, and found that consumers did indeed associate with product personality. Aaker (1997) proposed five aspects of developing brand personality, namely sincerity, excitement, competence, sophistication and ruggedness. These five aspects correspond to the five personality traits proposed by the PDP, and their relationship is shown in Table 2:

Table 2. Personality trait corresponding to product personality

PDP personality	PDP personality trait	Product/brand characteristic	Product/brand
Koala (Conformity)	1. Stable	1. Down-to-earth	Sincerity
	2. Patient	2. Honest	
	3. Listener	3. Wholesome	
		4. Cheerful	
Peacock (Extroversion)	1. Likes attention	1. Spirited	Excitement
	2. Creative	2. Spirited	
	3. Charismatic	3. Imaginative	
	4. Interactive	4. Up-to-date	
Owl (Patience)	1. Calculating	1. Reliable	Competence
	2. Thoughtful	2. Intelligent	
	3. Logical	3. Successful	
Chameleon (Integration)	1. Adaptive	1. Upper	Sophistication
	2. Integration	2. Charming	
		3. Patience	
Tiger (Dominance)	1. Practical ability	1. Outdoorsy	Ruggedness
	2. Decisive	2. Tough	
	3. Dominant	3. Masculine	

Consumers are inclined to purchase products that fit their personality and image. Even though consumers sometimes like the design of products, they still will not purchase the product because they symbolic meaning of the product does not fit them (Creusen and Schoormans 2005). When evaluating the aesthetic value of Dechnology products, Lewalski (1988) believed that aesthetic value is divided into three levels X, Y and Z; the lowest level X represents the aesthetic design of the product's exterior; the middle level Y represents the customer's understanding of the product function; the upper level Z represents the feeling that the product gives customers, which is the product's personality. The emotional intensity that these three levels give consumers becomes stronger from X to Z (Chou 2001). Lin and Kreifeldt (2014) also proposed the three levels of a design concept model, including "appearance perception", "semantic perception" and "intrinsic perception," once again supporting the perceptive relationship between consumers and products. The relationship is shown in Table 3.

Table 3. Different levels of consumer perception of products

Lewalski (1988)	X level	Y level	Z level
	Exterior	Function	Feeling
Lin and Kreifeldt (2014)	Appearance perception	Semantic perception	Intrinsic experience

3   Methodologies

Consumers will project their personality traits onto products and personalize products (Sirgy 1982). This means that consumers create product personality, e.g. M-Benz represents "luxury," "comfort" and "dignity." Hence, the dominant or recessive personality of consumers, to a certain extent, is related to this product. Jordan (1997) proposed product personality assignment. He asked subjects to evaluate the personality of products and their preferences, and asked them to define their own personality, using this process to verify if consumers will prefer products with similar personalities as themselves. This study conducts a questionnaire survey to explore if there is a connection between consumers' personality traits and product personality. The research methodology is explained below:

This study on the correlation between personality traits and product personality is divided into three stages: Stage one as described above includes literature review and theoretical foundation. Stage two involves sample selection, personality test, and product preference questionnaire, in which 41 products of the "Dechnology 2014 New Collection" were used as the sample. Before testing subjects' preference for products, subjects first took a PDP personality test to learn their personality traits, after which the product preference questionnaire survey was conducted. Stage three categorizes the personality traits of subjects, compares results of the product preference questionnaire survey, analyzes research results, and then arrives at the conclusion and recommendations. The research framework is shown in Fig. 1.

This study uses the 41 products of the 2014 Dechnology to Humart as the product sample. Dechnology stands for "Design" and "Technology." The Department of Industrial Technology, Ministry of Economic Affairs launched the Dechnology Value-added Project in 2009, and brought together many departments to incorporate technology into the product design cycle and create applications based on "Dechnology." The project output 250 innovative products each year, and the 41 products in the sample were selected from the Dechnology 2014 New Collection (www.dechnology.com.tw).

The questionnaire survey was design based on theories of personality traits and product personality described in the literature review, and consists of two stages, the first stage is a PDP personality test, all subjects are taking the test the first time, in which questions are divided into A and B parts, each part has 10 items with a total of 20 items. The second stage provides each subject with a manual of the 41 products in the Dechnology 2014 New Collection to Humart, the manual contains the product number, name, image, and description, and each subject selects 10 products based on personal preference. Procedures of the two parts are further described below:

Stage One: Parts A and B of the PDP Personality Test. This test includes 20 items of the PDP personality test, subjects are not under any pressure when answering the questions, and their scores for parts A and B are added together. Analysis results of their personality traits are displayed in a quadrant diagram, A represents the decisive of individual behavior and B represents the reaction of individual behavior, an intersection is found to determine their personality trait.
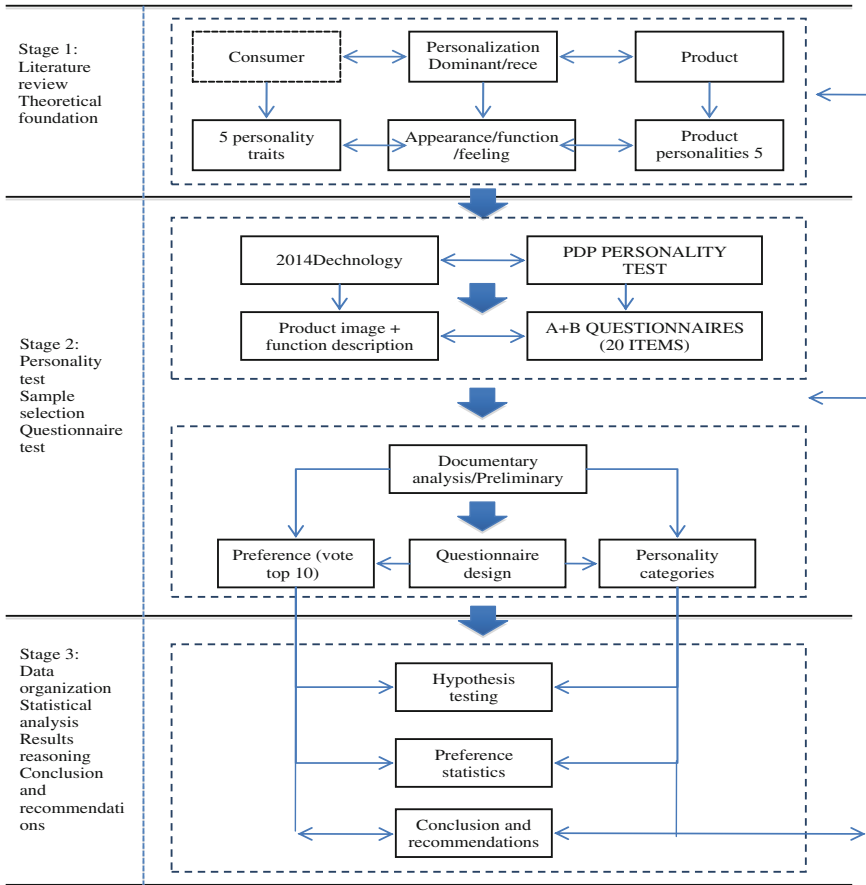
Fig. 1. Research framework

Stage Two: Selection of 41 Products in the 2014 Dechnology New Collection. This test provides a manual containing 41 products in the Dechnology 2014 New Collection to Humart to subjects. Subjects are under no pressure when intuitively selecting 10 products that they prefer by circling the number of the product on the questionnaire.

Subjects of this study are mainly juniors in college, including day school and night school. A total of 105 students between the ages of 19 ∼ 21 took part in this study. The students were mainly from the department of business administration and the department of marketing management. Subjects are all current or future consumers who have not received any professional training in aesthetics. They choose the products intuitively based on their preference. There are not any additional requirements to evaluate product attributes or aesthetics.

4   Results and Discussion

The number of subjects that took part in the first stage PDP personality test was 105, 98 questionnaires were effective. The results are as follows: koala (51 subjects), owl (15 subjects), peacock (20 subjects), tiger (9 subjects), and chameleon (3 subjects); the distribution of subjects by gender and personality trait is shown in Fig. 2:
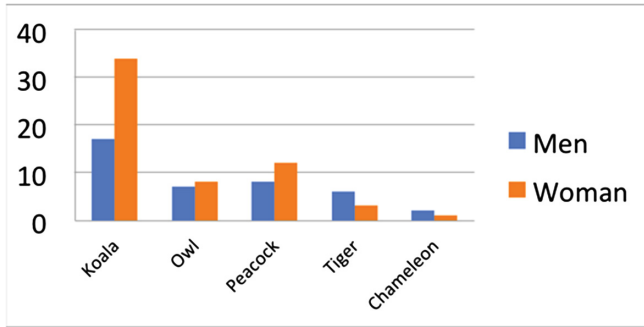

Fig. 2. Distribution of personality traits

After subjects complete the personality test in stage one, they intuitively choose 10 products they prefer from the 41 products of Dechnology 2014 New Collection to Humart. The statistical analysis is carried out in three parts, the first is to organize the number of votes for each product and personality traits into a table for hypothesis testing; the second is to find products that received the most votes; and the third is to compare the similarities and differences between popular products and personality traits. Results of the statistical analysis are described below.

The 10 products selected by subjects with each personality trait are tallied, and a line chart is used to show the distribution of product preferences of different personality traits, in which the X axis indicates product number and Y axis indicates the number of votes. The distribution of points shows the preference of each personality trait for each product. The number of votes is shown in Fig. 3: personality trait is represented by the first letter K(Koala), O(Owl), P(Peacock), T(Tiger), and C(Chameleon).
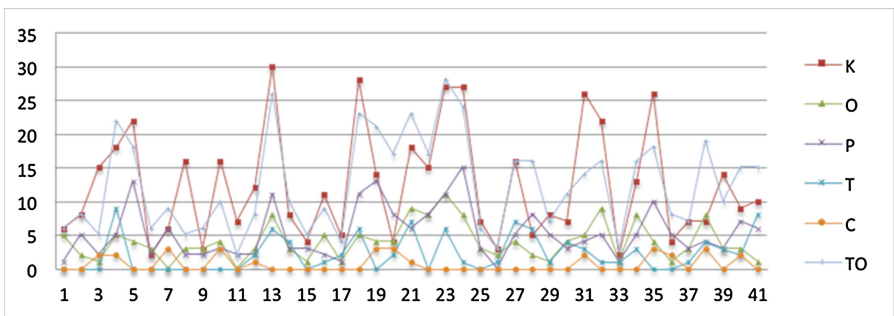

Fig. 3. Product preference of different personality traits

This study hypothesized that different personality traits are significantly correlated with preference for Dechnology products, and thus tests the hypotheses using the products selected by consumers from the questionnaire, which contains 41 products of the Dechnology 2014 New Collection to Humart. The five hypotheses are as follows (Table 4):

H1: The koala personality trait is significantly correlated with consumers' preference for Dechnology products.
H2: The owl personality trait is significantly correlated with consumers' preference for Dechnology products.
H3: The peacock personality trait is significantly correlated with consumers' preference for Dechnology products.
H4: The tiger personality trait is significantly correlated with consumers' preference for Dechnology products.
H5: The chameleon personality trait is significantly correlated with consumers' preference for Dechnology products.

Table 4. Testing of independence with different personalities

Hypothesis	Chi-Square	Criteria (d.f. = 40)
H1	59.65*	55.76
H2	59.92*	55.76
H3	59.89*	55.76
H4	59.70*	55.76
H5	59.66*	55.76

Note:* means Chi-square value higher than bracket criteria.

With 95% confidence level, The Chi-square values from H1 through H5 are all between Chi-square = 59.65 − 59.92, which are higher than bracket criteria 55.76. Such results verify that there exists a significant correlation between the five personality traits and preference for Dechnology products. In other words, consumers' product choice is influenced by their personality traits, which results in specific product preferences.

Products that received 50 % or more votes from each personality trait are shown in Fig. 4:
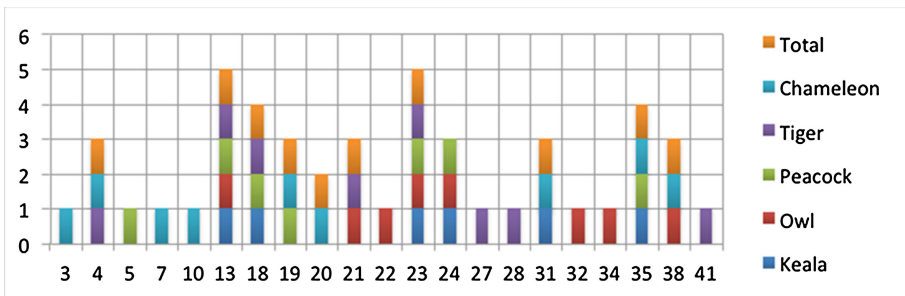
Fig. 4. Product preference of each personality trait

Table 5. Products with multiple personalities

Product	Name	Product personality
#12	Smart Gas Communicator	1. Communication technology product 2. Gas detection and fire alarm 3. Household protection 4. Automatic recording and monitoring
#18	I-hover (I-hover: Baby Bedside Hanging Bell)	1. Prevents injuries 2. Facial detection technology 3. Remote monitoring 4. Automatically determines the baby's condition
#23	Siproperly (sit properly)	1. Posture adjustment reminder 2. Automatically adjusts force 3. Pressure sensor technology 4. Alleviates pressure of the upper body

In the bar chart shown in Fig. 4, X indicates product number and Y represents the number of personality traits that preferred the product. The chart shows the distribution of product preferences of different personality traits, many of the products were preferred by multiple personality traits, e.g. product No.3 was preferred by consumers with Koala, Owl, Peacock, and Tiger personality traits. Preliminary analysis of the product showed two possibilities, one is that its design and attributes include technology, detection, safety, communication, automation, etc., and was determined to have multiple personalities. Products number 18, 23 and 24 also had similar personalities. Another possibility is that product personalities are given by consumers, and different consumers therefore interpret products differently, meaning that the same product may have different personalities (Table 5).

In the unique case of Tiger, products preferred numbers were 27, 28 and 41, which means that all these three products selected by only one personality trait. The product personalities corresponding to personality traits, as shown in Table 6, range from exterior design to intrinsic attributes. Observations from all these three products are transportation related, the intrinsic attributes are all rugged, and all have the dominant personality of consumers with Tiger personality traits.

Table 6. Product personality corresponding to personality trait

Product	Product personality	Personality trait
#27		
#28	Ruggedness 1. Outdoorsy 2. Tough 3. Masculine	Tiger 1. Practical ability 2. Decisive 3. Dominant
#41		

5 Conclusions and Suggestion Recommendations

In the two stages of tests, this study first learns the personality traits of the subjects, and then issues a manual of 41 products in the Dechnology 2014 New Collection to Humart for the subjects to choose 10 from. Subjects were asked to choose the products intuitively based on their preferences. This study assumes that there is a significant correlation with consumers' preference for Dechnology products, and that product personalities are correlated to consumers' personality traits. Conclusions of this study are as follows:

1. The hypothesis testing found that the personality traits of consumers are significantly correlated with Dechnology products. Consumers' personality traits will affect their product selection, meaning that consumers with different personality traits will have specific product preferences.
2. After analyzing the differences and similarities of product choice by consumers with different personality traits, this study found that consumers with different personality traits have specific preferences when choosing products. Preliminary analysis of the products' exterior design to intrinsic attributes showed that the products' personalities were consistent with the personality traits of consumers that chose them.
3. Observing the products selected by consumers with different personality traits, some products have multiple personalities that are preferred by consumers with different personality traits. Preliminary analysis of the product showed two possibilities, one is that its design and attributes include technology, detection, safety, communication, automation, etc., and was determined to have multiple personalities. Another possibility is that product personalities are given by consumers, and different consumers therefore interpret products differently, meaning that the same product may have different personalities.

In recent years, many creative products have emphasized personalization to satisfy the needs of consumers who hope to be unique and different. This study concluded that consumers' personality traits are correlated with product personalities, and that the product is worth further research. Further studies will conduct a matching test and use fuzzy evaluation to explore issues concerning the perception of product personality(Lin and Chang 2008).

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