Conjoint Analysis: A Study of Canned Coffee in Taiwan

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Summary
This paper intends to explore consumer preferences for canned coffee attributes, to determine the optimal combination for consumers, and to provide manufacturers a reference for their marketing strategies.
In this study, consumers in Taiwan were divided into several demographic regions (Northern, Central, and Southern areas) and individual preferences for instant coffee attributes were compared. By adopting conjoint analysis we found price was the major concern for all consumers. In addition, consumers in Northern and Central areas cared more about flavor, while Southerners more about the brand name. Consumers in Taiwan showed significantly demographical difference in their preferences over the combination of canned coffee attributes.

Key words:
conjoint analysis, canned coffee, product attributes, consumer preferences

1. Introduction

Opportunity recognition and exploitation are the main concern for new product development [1] and entrepreneurship [2]. However, different customer segments in the market have divergent perceptions regarding product attributes. Smith et al. [3] suggest the subtypes of value that can be created from different value creating processes. For example, Starbucks creates functional value mainly via product attributes and appropriate features (such as product taste, package, customization, hot drinks for cold days, and cold drinks for warm days).
A. C. Nelson, a survey to global retail information, found drinks were categorized as the fastest-growing products in the world. The survey covered 47 countries and markets in North America, Europe, Mideast, Africa, Asia-Pacific Region and Latin America and found drinks industry as one of the prevailing industries. Among all drinks, liquors, teas and coffee serve as the three major dominant drinks.
As franchised chains, such as Starbuck Coffee, Yes Coffee, Danty Coffee, and Seattle Coffee, enter Taiwan, the population of coffee drinkers grow significantly. Instant coffees, Three-in-One or Two-in-One, have shown double-digit growth rate and vigorated coffee drinks market [4]. Coffee as a drink has claimed a place in every household, as various coffee products are shelved in convenience stores nationwide. Evidently, new products are introduced to join the ever-fierce market competition.
In recent years, more and more companies joined the ever-heterogeneous instant coffee market competitions. Consumers are faced with a variety of choices over brands, taste, packages, content volumes, and prices. What prompts the consumers in selecting a certain coffee product? Do they demonstrate specific preference for their purchases? What influences their purchase behavior? What are the attributes for the coffee products they purchase? Hence, a study of the combined attributes of the factors for purchasing their coffee products will determine the preferred instant or canned coffee products.
The purpose of this study is (1) to determine the characteristics and priority of consumer preference structures; (2) to segment the various preference structures and characteristics of demographic variables of consumer's groups; and (3) to determine attributes combination of preferred instant coffees for various structural consumer groups as reference for manufacturer's marketing segmentation of the instant coffees.

2. Literature Review

Relevant studies of coffee predominantly investigated consumer behaviors. For example, Tseng [5] surveyed neighboring consumers of convenience stores in Taiwan and found that 67.8 percent of surveyed consumers of instant coffee were between 20 and 29 in terms of age level. The preferred brand was Mr. Brown, which enjoyed the predominant market share and the longest history in the market. Lin [6] also pinpointed, consumers of age 15 to 30 accounted for 66.5 percent of sale in instant coffee, particularly canned coffee. Consumers preferred canned coffee over coffee in Tetra-Pak because of better taste and adequate supply. Mr. Brown coffee enjoyed the most preferred brand because of higher exposure through commercials and advertisements.

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Lu and Hung [7] studied the preference for instant coffee and consumption characteristic demonstrated by young consumers. They found that over eighty percent of the young consumers of age between 19 and 22 preferred instant coffee. Their preferred brands included Mr. Brown, La Gauche de la Seine, and Muster, available mostly at convenience stores. Their "taste-oriented" preferences for instant coffee were basically focused on the variety, brewery, and taste. However, some "brand-oriented" young consumers were easily affected by the promotion, advertisements, commercials, and packaging; while some other "price-oriented" youth groups were concerned about price and volume. In a study of college students in the Metro-Taipei, Su and You [8] found the young consumers of instant coffee did not seem to care about ingredient indication; their purchases were critically influenced by preoccupied product image and reputation, even the package patterns and colors.

In another study, Cristovam et al. [9] investigated the gender characteristic of preference for Italian concentrated coffee. The subjects were 100 consumers who consumed six brands of rich coffee and demonstrated the gender difference in preference for Italian coffee and consumption patterns of milk. Consumers seemed to accept blend coffee and reflected their change in consumer preference.

Heidema and Jong [10] undertook a covariance analytic study of perceptive characteristics of eight brands of coffee in five European countries and found consistent variations in samples, nationality, gender and age, wherein gender and age showed significant impact upon brands of coffee, and the content volume of four brands of coffee showed mutual influence. Besides, De Jong [11] conducted a study of perceptive characteristics among European consumers of eight brands of coffee and found the expressive variation of product structure reached an average of 92 percent and showed attribute consistency in most products. The significant relevance in product attribute resulted in cognitive description of consumer preferences in various nations.

Ahmed et al. [12] examined the influence of COO (country of origin) relative to product attributes of bread and coffee in Singaporean's preferences of domestic and foreign food products. The results suggested that in the presence of some specific product attributes such as price and brand, the impact of COO was weak.

Pelsmacker et al. [13] investigated the ethical consumption behavior through consumer's coffee-buying decision. Consumers in Belgium show their preferences and make trade-offs between different attributes of a coffee product by simulating real marketplace situations. It was found that consumers in different age had the extent difference in willing to pay for the fair-trade attribute when buying coffee. Therefore, a product or service based upon consumer-oriented attributes will become pivotal.

From afore-mentioned literature, few studies had undertaken on the overall attributes of instant coffee from consumer preference perspective. It is suggested that preferred coffee products be developed for potential markets when the favorable combined attributes of consumers and consideration factors toward purchase of instant coffee products can be determined.

3. Proposed Methodology

In traditional theory of supply and demand, effect is a function of a product; therefore, price is a considering factor for interpreting consumer demand. However, when consumers face a purchase decision of a certain product, they are confronted with various combinations of product attributes for a heterogeneous product. The human purchase decision involves multiple considerations, so consume preference is a function of product attributes rather than a function of the product.

This study adopted conjoint analysis to determine the characteristics of instant coffees as the basis for analyzing consumer preference for instant coffees and for further investigating the variations between subjects in various regions and market segmentation.

Green and Srimivasan [14] indicated that conjoint analysis is an analytic method with decompositional approach for evaluating the preference structure of the known testees and overall assessment.

Three assumptions are made: First, there is trade-off relation between attributes; secondly, the overall value of the testees is added; and thirdly, no interactional outcomes upon the overall effect will be considered. Hence, the overall effect is yielded by adding up the cost effect of each attribute and represented as:

$$U_h = \sum_{j=1}^{J} V_j = V_1 + V_2 + \cdots + V_J \quad (1)$$

Where U_h represents the overall effect of the h-th product

$V_1 + V_2 + \cdots + V_J$ represents the attribute effect value of 1, 2, …,J in product h.

The applications of conjoing analysis are widely found. Hair et al. [15] suggested, if the proposed attribute benchmark is not available in the market, then attribute combination of consumer preference can be determined and the market share for products of various attribute combination can be estimated. Consequently, researchers may determine with conjoint analysis whichever attributes are crucial for consumers and which products with whatever attribute combination are most acceptable by consumers.

Green and Rao [16] had applied conjoint analysis to the realm of marketing for determining the conjoint impact of

two or more variables upon variable ranking. Thus, the conjoint analytical mode can be represented as:

$$Y_h = \sum_{j=1}^{J} V_{jk} + \sum_{j \prec j'}^{J} T_{jk} T_{j'k} + ... + T_{1j} T_{2j} ... T_{JK} \qquad (2)$$

Where Y_h represents an overall estimate of consumer toward a product, that is, the composition effect value of product h.

j represents attributes of the product, $j = 1,2,...,J$.

k represents the attribute benchmark of the product, $k = 1,2,...,K$.

$\sum_{j=1}^{J} V_{jk}$ represents the main effect of attribute benchmark of the product.

$\sum_{j \prec j'}^{J} T_{jk} T_{j'k}$ represents the interaction effect of two attribute benchmark of the product.

$T_{1j} T_{2j} ... T_{JK}$ represent the interaction effect of multiple attribute benchmarks.

Fractional factorial design is often adopted in the conjoint analysis, wherein the main effect and the interactional effect of the two attributes benchmarks are retained [17]. Thus, equation (2) can be simplified as:

$$Y_h = \sum_{j=1}^{J} V_{jk} + \sum_{j \prec j'}^{J} T_{jk} T_{j'k} \qquad (3)$$

Green and Srinivasan [14] specified the processes of a conjoint analysis as: 1. Choose preference mode; 2. Data collection; 3. Construct contoured subjects; 4. Describe subjects; 5. Measure variables; and 6. Evaluate parameters, as shown in Table 1.

Table 1 Processes and modes of conjoint analysis

Analysis Process	Method
1. Choose preference mode	vector models, ideal-point models, part-worth utility models
2. Data collection	Bifactorial (trade-off), Full Concept Method (concept assessment)
3. Construct contoured subjects	Fractional factorial design, Balance incomplete block design, Partially balance incomplete block design
4. Describe subjects	textual description, narration, picture demo, object demo
5. Measure variables	Econometrics scale (ratio scale, Interval scale) Non-econometrics scale (ordinal scale, nominal scale, Pairwise Comparison scale)
6. Evaluate parameters	MONANOVA, PREFMAP, LINMAP, LOGIT, PROBIT

Source: Green and Srinivasan, 1978; Yuan, 2002.

4. Research Design and Pragmatic Model

4.1 Determination of Attributes of Canned Coffee

This study is based upon the Yearbook 2003 of ICT (Integrated Consumer Tendency) Marketing, surveyed 386 subjects who purchased coffee drinks in the past three months, including 191 Northerners, 88 Central Residents, 91 Southers, and 16 Easterners in various counties of Taiwan. Results of factors of purchase are broken down as Table 2.

Table 2 Factors of instant coffee purchase

	Taiwan	North.	Central.	South.	East.
Taste/flavor	55.4%	48.7%	59.1%	69.2%	37.5%
Name brand	47.9%	50.3%	43.2%	47.3%	50.0%
Price	22.0%	21.0%	23.9%	14.3%	25.0%
Package	20.3%	13.0%	22.8%	18.7%	6.3%
Content vol.	9.6%	11.5%	10.2%	5.5%	6.3%
Samples	386	191	88	91	16

Source: ICT Marketing Yearbook 2003.

The top five factors to be considered for coffee purchase are taste, name brand, price, package, and content volume. Therefore, the five factors contribute to crucial attributes for consumers to purchase instant or canned coffee.

As the ICT Yearbook [18] indicated, the top four name brands are Mr. Brown, Wincafe, UCC and 36 Francs, while the dominant consumed packages are in can, tetra pak, and cup. The most preferred taste of instant coffee is blend, Blue Mountain, Cuppucchino, and Mandheling.

Most packages contain a volume capacity between 120 cc and 500 cc. No standardized categorization was found. This study took 250 cc as a criterion for categorization: less than 250 cc and more than 250 cc.

The price of the canned or instant coffee, taking the market price as a basis and the pricing policies, as suggested in Wang's (2003) study, for 250 cc cupped coffee (La gauche de la Seine from Unipresident Corp.) as reference, ranges from NT$20 to NT$30 (or USD $0.69 to 0.99). In this study, the levels of price attributes are: NT$15-20 (USD $0.49 to $0.69), NT$20-25 (USD $0.69 to $0.89), and higher than NT$ 25 (USD $0.99), respectively.

4.2 Questionnaire Design

The questionnaire includes two parts. The first part contains personal information as variables for market segmentation; while the second part is a survey based upon

conjoint analysis for determining the preference ranking of test properties.

Data in this study are collected with Full Concept Method; the combined attributes of all tested products are recorded on a card. The attributes of name brand, package, taste, content volume, and price construct a matrix of items. That means a combination of 288 Stimuli. The use of orthogonal arrays with the SPSS (Statistical Package for the Social Science) For Windows 12.0 reduced the test items from 288 to 16 (as in Table 3) and produces a card for easy testing of the testees and better reliability of the answering the survey.

Table 3 16 cards of test properties matrix

Item	produces cards of test properties matrix					
	brand	package	flavor	volume	Price	
					NT$	USD $
1	Brown	can	general	< 250cc	15~20	.49-.69
2	36francs	can	general	> 250cc	15~20	.49-.69
3	Brown	can	Mandheling	< 250cc	>25	>.89
4	Brown	Tetra Pak	Blue mountain	> 250cc	15~20	.49-.69
5	UCC	cup	blend	> 250cc	>25	>.89
6	36francs	cup	Blue mountain	< 250cc	15~20	.49-.69
7	Wincafe	can	Blue mountain	> 250cc	>25	>.89
8	Wincafe	can	cappuccino	> 250cc	15~20	.49-.69
9	Wincafe	cup	Mandheling	< 250cc	15~20	.49-.69
10	UCC	can	Blue mountain	< 250cc	20~25	.69-.89
11	UCC	can	cappuccino	< 250cc	15~20	.49-.69
12	36francs	can	Mandheling	> 250cc	20~25	.69-.89
13	36francs	Tetra Pak	cappuccino	< 250cc	>25	>.89
14	UCC	Tetra Pak	Mandheling	> 250cc	15~20	.49-.69
15	Brown	cup	cappuccino	> 250cc	20~25	.69-.89
16	Wincafe	Tetra Pak	general	< 250cc	20~25	.69-.89

4.3 Data Sampling

The subjects (instant coffee consumers) in this study were from various demographic regions of Taiwan, namely: Northern, Central and Southern regions, represented by residents of Taipei City and County, .Taichung City and County and Kaohsiung City and County, respectively. Qualified subjects were those who had purchased instant coffee within the past three months.

In a conjoint analysis, the size of sampled subjects is not specified. Cattin and Wittink [19] suggested a size ranging from 100 to 1,000; and in most typical studies, a size between 300 and 500 is most common. Akaah and Korgaonkar [20] even suggested a sample size of less than 100, but insisted the representativeness of the entire target population. The sample size in this study is 385, including 209 Northerners, 95 Central residents and 91 Southerners. Surveyors were sent for collecting data by random sampling at primary outlets of instant coffee, including convenience stores and warehouse stores, and supermarkets.

4.4 Constructing and Evaluating Pragmatic models

This study added up the total effect values of test items by adopting a model of composition effect function. The effect mode can be represented as:

$$U_h = \sum_{j=1}^{5} V_{jk}\left(X_{jk}\right) \qquad (4)$$

The overall effect of consumers to product h, U_h could not be observed and was therefore unavailable. However, there was a linear relationship with the estimated outcomes of consumers [21]. Thus, the overall effect is represented as:

$$U_h = a + bY_h + e_h \qquad (5)$$

Can be rewritten as:

$$Y_h = \left(\frac{1}{b}\right)(-a + U_h - e_h) \qquad (6)$$

Where Y_h represents the estimated observable outcome of consumers and e_h is zero value of normal distribution, the difference is the deviation of the constant. Replace equation (6) with (4). According to this study, an equation of pragmatic model function can be established by inserting the attribute bench mark of instant coffee, and be represented as:

$$Y_h = \alpha + \sum_{j=1}^{5}\sum_{k=1}^{k_j} V_{jk} X_{jk} + \varepsilon_j \qquad (7)$$

Where Y_h is the overall estimate value of test items by consumers, i.e., the composition value of test item h, $h = 1,2,...,16$ test items.

α denotes the diagonal item; V_{jk} denotes estimate parameter;

j denotes the attributes of product, $j = 1,2,...,5$;

k denotes the benchmark of products, $k = 1,2,...,k_j$;

X_{jk} denotes the k th bench mark of attribute j is a virtual variable; and

ε_j denotes the error term.

After setting the virtual variables as Table 4, the following equation of estimation can be inferred as:

$$Y_h = \alpha + V_{11}X_{11} + V_{12}X_{12} + V_{13}X_{13} + V_{21}X_{21} + V_{22}X_{22} + V_{31}X_{31} + V_{32}X_{32} + V_{33}X_{33} + V_{41}X_{41} + V_{51}X_{51} + V_{52}X_{52} + \varepsilon_j \quad (8)$$

With ordinary least square regression (OLS), the regression coefficient α and the various attribute composition effect V_{jk} are obtained and defined as follows (Table 4).

Table 4 Definition of attribute bench mark for instant coffee

brand	(X_{11}, X_{12}, X_{13})	Brown	(1,0,0)
		Wincafe	(0,1,0)
		UCC	(0,0,1)
package	(X_{21}, X_{22})	36 francs	(0,0,0)
		Can	(1,0)
		Tetra pak	(0,1)
		cup	(0,0)
flavor	(X_{31}, X_{32}, X_{33})	blend	(1,0,0)
		Blue mountain	(0,1,0)
		cappucchino	(0,0,1)
		Mandheling	(0,0,0)
Content vol.	(X_{41})	< 250cc	(1)
		> 250cc	(0)
price	(X_{51}, X_{52})	NT$15~20 (US$ .49~.69)	(1,0,0)
		NT$20~25 元 (US$ .69~.89)	(0,1,0)
		> NT$25 (> US$ .89)	(0,0,0)

Source: this study

After obtaining the composition effect of various attribute bench mark, the relative importance of all attributes can further be obtained. The relative importance means the value of maximal effect minus the minimal effect of attribute divided by the sum of the maximal effect minus the minimal effect of all attributes and can be represented as:

$$RIA_j = \frac{A_j(\max(U) - \min(U))}{\sum_{j=1}^{J} A_j(\max(U) - \min(U))} \quad (9)$$

Where RIA_j representing the relative importance of attribute j, and A_j represents attribute j.

5. Analysis of Empirical Results

5.1 Composition Effect of Instant Coffee

The composition effect of all attributes of instant coffee for consumers in all regions of Taiwan is specified as (Table 5): blend coffee was most preferred flavor with effect value of 0.4422. While Mr. Brown was the most welcome brand, with an effect value of 0.6610. Cup coffee, priced more than NT$25 (US$ 0.89) with content volume more than 250 ml was most preferred by consumers. The most unfavorable combination of attributes for instant coffee was: 36 Francs (brand), canned, cappucchino, less than 250 ml and priced between NT$15~20 (US$ 0.49~0.69).

Table 5 Cost-benefit of instant coffee attribute benchmark in all regions

		Nationwide	Northern	Central	Southern
Brand	Brown	0.6610	-0.5000	0.7500	3.5000
	Wincafe	0.5084	2.2500	1.7500	-1.5000
	UCC	-0.1110	1.2500	1.0000	3.0000
	36 francs	-1.0584	-3.0000	-3.5000	-5.0000
Package	can	-0.6056	-0.8333	-1.1667	1.0000
	Tetra pak	0.1830	1.5417	-0.5417	-0.7500
	cup	0.4226	-0.7083	1.7083	-0.2500
Flavor	bend	0.4422	1.5000	3.5000	0.0000
	Blue mountain	-0.1247	-0.2500	-0.5000	-1.5000
	cappucchino	-0.2357	-4.5000	-1.0000	1.0000
	mandheling	-0.0818	3.2500	-2.0000	0.5000
Content Volume	<250cc	1.5481	0.5000	-1.5000	1.5000
	>250cc	3.0961	1.0000	-3.0000	3.0000
Price	NT$15~20 US$ .49~.69	1.0047	1.2727	1.0000	2.8182
	NT$20~25 US$ .69~.89	2.0094	2.5455	2.0000	5.6364
	>NT$25 >US$ .89	3.0142	3.8182	3.0000	8.4545

The most preferred combination of attributes for instant coffee consumers in Northern Taiwan was: Falvor: Mandheling with effect value of 3.25; brand: Wincafe,

2.25; price: over NT$25 (US$ 0.89); package: Tetra Pak; contents: more than 250 ml. The most unfavorable combination of attributes for instant coffee was: 36 Francs (brand), canned, cappucchino, less than 250 ml and priced between NT$15~20 (US$ 0.49~0.69).

In Central region, the most preferred combination of attributes for instant coffee was: Flavor: blend with effect value of 3.5; brand: Wincafe, 1.75; price: over NT$25 (US$ 0.89); package: cup; contents: less than 250 ml. The most unfavorable combination of attributes for instant coffee was: 36 Francs (brand), canned, Mandheling, more than 250 ml and priced between NT$15~20 (US$ 0.49~0.69).

In Southern region, the most preferred combination of attributes for instant coffee was: Brand: Mr. Brown, with effect value of 3.5; price: over NT$25 (US$ 0.89), with effect value of 8.4545; flavor: cappucchino; package: canned; contents: more than 250 ml. The most unfavorable combination of attributes for instant coffee was: 36 Francs (brand), tetra pak, blue mountain flavor, less than 250 ml and priced between NT$15~20 (US$ 0.49~0.69).

It worth noting that the preferred attribute combination in Taiwan, Northern, Central, and Southern regions did not appear in the predesigned 16 cards for the enlisted product attributes. This illustrated the advantage of conjoint analysis and consumers' desirable products can be redesigned by recombining the preferred attributes.

5.2 Relative Importance of Instant Coffee

It is known from Table 6 that the nationwide priority rankings for purchasing instant coffee are: price (28.7%), brand (24.62%), content volume (22.17%), package (14.72%), and flavor (9.71%). As shown, price was the major concern for the purchase of instant coffee, while packaging and flavor were not the decisive factors. Therefore, manufacturers should pay more emphasis upon pricing policy and corporate image than packaging materials and flavors.

Table 6 Relevancy of instant coffee in various regions

in percentage (%)

	Brand	Package	Flavor	Content	Price
Nationwide	24.62	14.72	9.71	22.17	28.78
	(2)	(4)	(5)	(3)	(1)
Northern	28.50	12.89	42.07	2.71	13.82
	(2)	(4)	(1)	(5)	(3)
Central	30.66	16.79	32.12	8.76	11.68
	(2)	(3)	(1)	(5)	(4)
Southern	42.74	8.80	12.57	7.54	28.34
	(1)	(4)	(3)	(5)	(2)

Note: the numbers within parentheses means the preference ranking

Consumers in the Northern region demonstrated their preference ranking of product attributes as: flavor (42.07%), brand (28.50%), price (13.82%), package (12.89%) and lastly, contents (2.71%). That is, the Northerners concern primarily the flavor, rather than package and content volume in purchasing instant coffee.

Consumers in the Central region demonstrated their preference ranking of product attributes as: flavor (32.12%), brand (30.66%), price (16.79%), price (11.86%), and lastly, contents (8.76%). That is, the Central residents concern primarily the flavor, rather than the price and content volume in purchasing instant coffee.

Consumers in the Southern region demonstrated their preference ranking of product attributes as: brand (42.74%), price (28.34%), flavor (12.57%), package (8.80%) and lastly, contents (7.54%). That is, the Southerners concern primarily the name brand, rather than package and content volume in purchasing instant coffee.

To summarize, flavor is a major concern for consumers in the Northern and Central regions, with relative importance of the Northern region (42.07%) higher than that of the Central region (32.12%). That indicated Northerners paid high attention to flavor when purchasing instant coffee, with Northerners' preference over Mandheling and Central consumers in favor of blend flavor.

Name brand serves as the secondary attribute concern in Taiwan nationwide, and in Northern and Central regions for instant coffee consumption. However, Southerners deemed name brand the primary concern, with relative importance of 42.74% in contrast with 30.66 for Central, 28.50% for Northern regions, and national average 24.62%. Southerners preferred Mr. Brown, whereas Central and Northern consumers preferred Wincafe.

Consumers in Northern, Central, and Southern regions considered the content volume the least important attribute for purchasing instant coffee with Northern region showing the lowest relative importance of 2.71%. Northern and Southern consumers of instant coffee preferred content volume over 250 ml, while the Central consumers less than 250 ml.

Price is the first considering factor for consumers nationwide, however not for consumers in Northern, Central, and Southern regions upon purchasing instant coffee. This revealed the advantage of conjoint analysis. Consumer preference for product attributes can be identified when regions were subdivided. Consumers nation widely preferred pricey instant coffee, with unit price of more than NT$25 (US$ .89) as preferred choice. The finding can serve as a reference for instant coffee suppliers for pricing policies.

5.3 Ranking of the Stimuli

The total effect of all test item cards can be obtained by adding up the compositional effect of each attribute. The total effect the 16 product combinations are shown as in

Table 10. On a national average, card number five revealed the highest total effect of 11.4352; while card number 11 the least total effects of 6.1716. In another word, the test attributes on card number five were most preferred, while those on card number 11 the least. Assume there are 16 instant coffee products on the market, the consumer nationwide will most prefer UCC, cupped, blend flavor with content volume over 250 ml and NT$25 (US$ .89). In contrast, canned UCC cappucchino flavor less than 250 ml and under NT$25 (US$ .89) is least preferred.

Northern consumers gave product combination on card number 16 the highest total effect. That is, they preferred product number 16 most, and the number 11 least. And Central consumers preferred number 5 most, and number 12 least; Southern consumers preferred number 3 most, and number 6 least. In general, product combination number 5 is the most enjoyable instant coffee for all regions, Northern, Central, and Southern regions (within the top three in all regions).

The composition effect of product attribute is a relative value and can be compared only with the effect values of all products in a group or by a consumer, rather than with the preference of various groups and consumers. To investigate the segmentation difference of all regions, this study will explore the difference between the effect value of all segmentation attributes and their relative importance in terms of their ranking order.

6. Conclusions

This study intended to investigate the preference for instant coffee demonstrated by regional consumers of the nation. The findings were: Price of instant coffee products was consumers' primary concern nationwide, followed by the brand, capacity, packing materials, and finally the taste. Consumers preferred Mr. Brown most, packed in cups, blend flavor, over 250 ml in contents and price over NT$ 25 (or US$ .89).

In terms of regional difference, Northerners concerned most about the flavor, followed by name brand, price, package, and lastly content volume of the instant coffee products. The most preferable attributes were Wincafe, in tetra pak, Mandheling flavor, volume more than 250 ml and price more than NT$25 (US$ .89).

In Central region, consumers concerned most about flavor, trailed by name brand, package, price and content volume. They most preferred Wincafe, cupped, blend flavor, with content volume less than 250 ml and price over NT$25 (US$ .89).

In Southern region, consumers concerned most about name brand, followed by price, flavor, package, and content volume. They most preferred Mr. Brown, canned cappucchino, with content volume more than 250 ml and price over NT$25 (US$ .89).

The following conclusions can be drawn from the research findings: Consumers in Northern and Central regions showed consistent preference ranking of instant coffee attributes as flavor, name brand; content volume was least considered attribute in all regions; however, consumers preferred higher content volume package, while consumers in Central region preferred instant coffee with content volume under 250 ml; and consumers in all regions showed positive effect over higher-priced instant coffee. The findings might serve as a reference for their product pricing and design.

7. Suggestions for marketing strategies

Identifying market segmentation is an aspect of marketing, and a marketing plan should address the demands of each market sector. This study took consumers as start point. The findings shall be a concern for manufacturers and a reference for their marketing strategies.

This study found that name brand and flavor were the two highly considered items by consumers in all regions for the purchase of instant coffee products. Hence, manufacturers should view highly of the two attributes when promoting the products to meet demands of local consumers. Corporate image shall be promoted to impress and attract consumers into purchasing various products

Manufacturers should undertake surveys and test consumers for any new flavor of products being marketed, so they can understand the acceptance level of the new products and energize refreshness into consumers' life. This study found, the most acceptable price was over NT$25 (US$ .89), followed by NT$20~25 (US$ .69~.89) and NT$ 15~20 (US$ .49~.69). The researchers of this study suggested the coffee product be priced over NT$25. However, the pricing of the product shall remain flexible when there is gap between consumer perception and suggested retail price to ensure optimal acceptability.

In terms of packaging, consumers preferred instant coffee products available in cup and cans and with content volume over 250 ml. Manufacturers shall take this finding as their guiding post for marketing new products. In terms of locations of purchasing instant coffee, convenience store ranked as number one, followed by grocery center and supermarkets. Consequently, the path of sale shall take convenience store as primary concern.

Only eight percent of the new products in the food industry will be marketed, and about 17 percent can take a share in the market. Generally, only 1.4 percent of the new products will succeed and survive (Sloan, 1994). Periodical promotion of new products is sine qua non for sustaining the product line of the manufacturers. The life cycle of any food product is comparatively short due to fierce competition. Instant coffee, like other drinks, will not be available in all tastes and flavors. Manufacturers

Table 7 Preferences and ranking of 16 products demonstrated by consumers in all regions

	Combination of instant coffee attributes and attribute benchmark					Nationwide		N.		C.		S.	
	brand	package	flavor	Cont. vol.	price	preference	ranking	preference	ranking	preference	ranking	preference	ranking
1.	brown	Can	blend	<250cc	NT$15~20 US$.49~.69	7.6215	12	7.6705	10	11.8750	3	14.9002	7
2.	36francs	Can	blend	>250cc	NT$15~20 US$.49~.69	7.4501	13	5.6705	11	6.1250	13	7.9002	15
3.	Brown	Can	Mandheling	<250cc	>NT$25 >US$ .89	9.1070	6	11.9660	5	8.3750	8	21.0365	1
4.	Brown	Tetra Pak	Blue mountain	>250cc	NT$15~20 US$.49~.69	9.3912	4	8.7955	8	7.0000	10	13.1502	9
5.	UCC	Cup	blend	>250cc	>NT$25 >US$ .89	11.4352	1	12.5910	3	15.5000	1	20.2865	2
6.	36francs	Cup	BM	<250cc	NT$15~20 US$.49~.69	6.3634	15	3.5455	15	6.5000	12	3.6502	16
7.	Wincafe	Can	BM	>250cc	>NT$25 >US$ .89	10.4595	3	11.7160	6	9.3750	6	15.5365	5
8.	Wincafe	Can	cappuccchino	>250cc	NT$15~20 US$.49~.69	8.3390	8	4.9205	12	6.8750	11	12.4002	10
9.	Wincafe	Cup	Mandheling	<250cc	NT$15~20 US$.49~.69	7.9731	10	12.2955	4	10.2500	4	9.1502	14
10.	UCC	Can	BM	<250cc	NT$20~25 US$.69~.89	7.2873	14	8.9433	7	9.1250	7	15.7184	4
11.	UCC	Can	cappuccchini	<250cc	NT$15~20 US$.49~.69	6.1716	16	3.4205	16	7.6250	9	15.4002	6
12.	36francs	Can	Mandheling	>250cc	NT$20~25 US$.69~.89	7.9308	11	8.6933	9	1.6250	16	11.2184	12
13.	36francs	Tetra pak	cappuccchino	<250cc	>NT$25 >US$ .89	8.0223	9	4.0910	13	5.7500	14	11.2865	11
14.	UCC	Tetra pak	Mandheling	>250cc	NT$15~20 US$.49~.69	8.6621	7	14.0455	2	5.7500	14	14.6502	8
15.	Brown	Cup	cappuccchino	>250cc	NT$20~25 US$.69~.89	10.5245	2	3.5683	14	9.7500	5	18.9684	3
16.	Wincafe	Tetra pak	blend	<250cc	NT$20~25 US$.69~.89	9.2622	5	14.0683	1	14.5000	2	10.9684	13

Source: This study

have to identify the likes and dislikes of the consumers and ante up the most desired and preferred product to lock in their consumer groups and flourish.

8. Research limited

Conjoint analysis has a number of limitations. Firstly, the number of attributes and levels should be limited to avoid respondents judging a large number of trade-off tasks, which could lead to respondent fatigue and less valid response patterns. Secondly, conjoint analysis does not give an absolute indication of the importance of attributes in all conceivable circumstances. The importance of attributes and the part-worth utilities that result from the analysis are relative indications given the framework of attributes studied.

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