An Empirical Survey of Japanese Life Insurance Customers
-- Comparative Market Analysis Based on Consumers' Recognition Data --

by

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Abstract

This study aims to investigate characteristics of Japanese life insurance customers' behaviors and motives based on empirical data sources. The data was collected from a questionnaire survey conducted by Japan Post in November, 2005. In this study, customers' evaluation view points are classified by several analytical methods and also estimation of their willingness to pay is to be studied.

This research especially takes notice of customers of life insurance services provided by Japan Post, which is known as "Kan-po" for short. Japan Post is one of the biggest public corporations and it has been managed by the government. Comparing to those provided by private corporations, those provided by Japan Post have been said to be purchased by wider range of customers.

Mainly in this study, the differences between "Kan-po" and other private ones from the perspective of customers' attitudes are comparatively analyzed. In conclusion, clearly different evaluation view points towards "Kan-po" and other private ones are summarized and from there, some implication for the new branding of "kan-po" which is going to be privatized in about one year time is to be introduced.

<Key Words> Life insurance, Correspondence map, Item response theory, Latent trait analysis

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1. Objectives and structure of this study

The main purpose of this study is to analyze consumers' decisions on which life insurance products to be purchased. To do so, for the first stage, image mapping of several insurances is to be surveyed and the position of "Kan-po" among others is to be grasped. From this, it becomes easier to understand which factors are meaningful for the customers to decide which insurance products to purchase.

Secondly, "Latent Trait Analysis(LTA)" is employed to segment Japanese life insurance market. Using LTA, one can reduce a set of many binary or ordered-category variables to a small set of factors.-with LTA, these factors are called latent traits. Just as with factor analysis, this can be done for data reduction, data exploration, or theory confirmation[2]. In this study, consumers' responses to questions about aspects of insurance products are employed for this method, and investigate characteristics of the peoples' responses to those features. In the field of life insurance studies, it is the first time to employ this approach[3].

Lastly, the output of the research is summarized and also implication for the marketing and new branding strategy of "kan-po" is discussed, which is followed by the future study plan. For these consecutive analyses, data set gathered from questionnaire contains a broad range of detailed households' information. This was conducted by the Research Institute of Japan Post in November, 2005.

2. Literature Review and Discussion Points

Surprisingly, there is not a sufficient accumulation of analyses of life insurances, but most of those seem to be focused on estimation of life insurance demand of households. Some of the typical and leading studies are as follows; Matsuura and Shiraishi(2004), Kasuga and Matsuura(2000), Kanda(2000), and Masuda(2000) have investigated the relations between life insurance demand and other demographic

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[2] LTA models are found to be flexible and useful, and it can be used in many specialized ways. Their power and flexibility derive from the fact that they are formalized probability models--they include a "theory" that relates the unobserved (latent) construct(s) of interest--educational attainment, disease severity, program effect, etc.--to the observed (manifest) variables that are actually measured.
[3] With educational testing in particular, this method has proven very effective. Many well-known tests of academic ability and attainment, such as the SAT, the GRE and the LSAT, are analyzed. In this context, latent trait models let one precisely measure the difficulty or easiness of each item, determine the association of each item with the construct being measured, and determine which items are biased in the sense of having different meanings or measurement characteristics in

factors to analyze the financial demand of households. Some other studies have been concentrating around more detailed or specific financial demand behaviors, for instance, Kasuga and Matsuura(2000), Saito(2000), Tachibanaki and Shimono(1994), Nagai(2001) and others especially focused on the relations between characteristics of life insurance products and their demand towards them.

Recently the topic of privatization of "Kan-po" is being roused and at the same time the interest in the position of "Kan-po" in the market is also raised, then some analyses can be seen focusing on this issue from perspective of comparing with other private life insurances. But most of them followed the predecessors' method which is based on demand estimation analyses, there the evaluation view points of the consumers themselves or "acknowledgement of subjects" are not paid attention to.

Regarding this point, which has not been included in the most of the past typical literatures, baring in mind that Japanese life insurance market structure is facing a drastic change, this might has a big impact on consumers' behaviors, it is important to survey the households' demand for life insurances based on these consideration data which is also available from the questionnaire mentioned above.
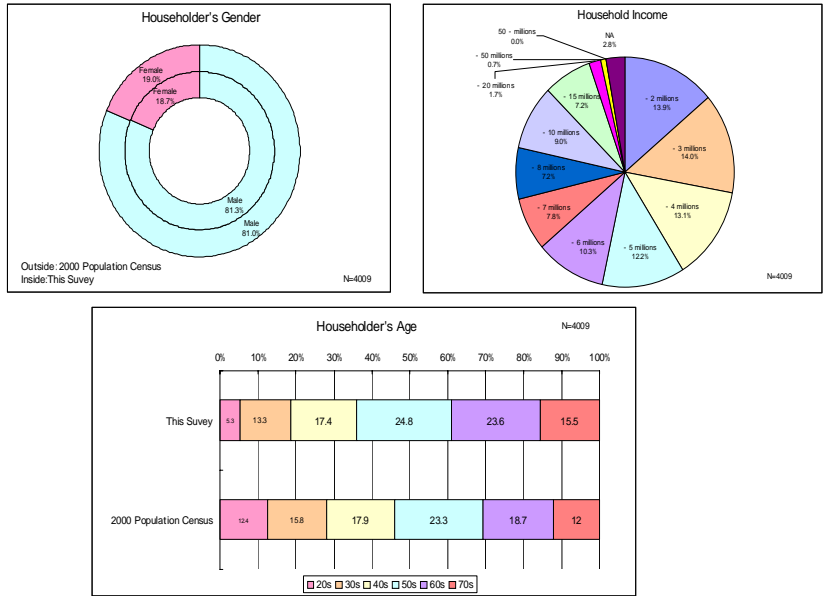
Ⅲ. Data Analysis

3.1   The data and basic descriptive statistics

The data was collected using a questionnaire between 11 October and 10 November 2005. The questionnaire contains a broad range of detailed households information. This data set contains the data needed for the analysis here, such as private insurances, "Kan-po", and purchasing intentions. The number of valid responses was 4,009[4], which represents response rate of 46%. The basic characteristics of samples are shown in chart 1.

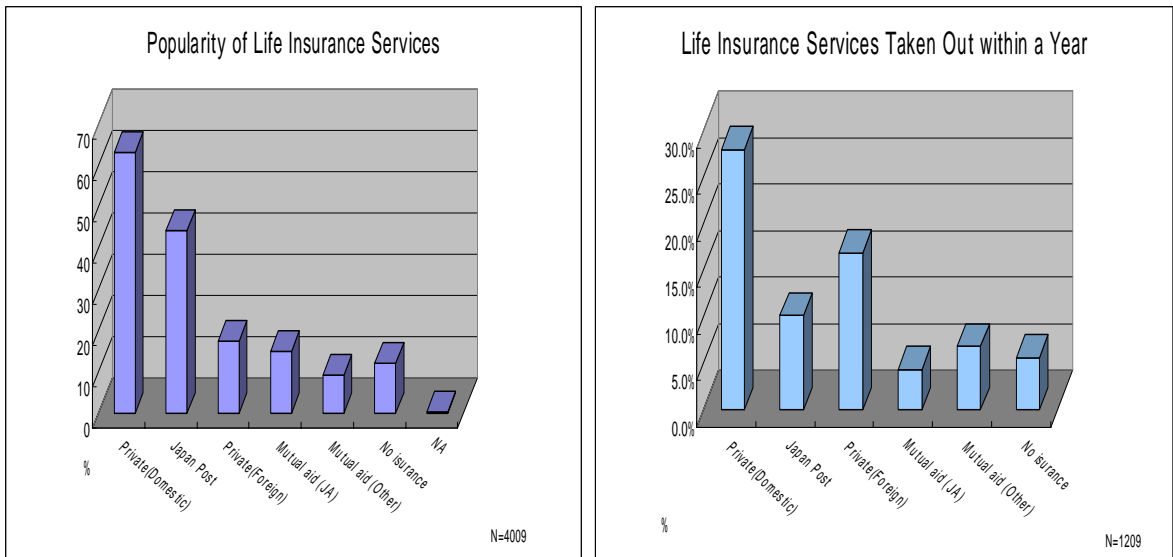different subpopulations and so on.
[4] Out of 4,009, 3,182 responses were from households with two members or more, and the 827 were from single-person households.

Chart 1: Basic Characteristics of Samples

Householder's Gender

Female 19.0%
Female 18.7%
Male 81.3%
Male 81.0%

Outside: 2000 Population Census
Inside: This Suvey

N=4009

Household Income

50 - millions 0.0%
- 50 millions 0.7%
- 20 millions 1.7%
- 15 millions 7.2%
- 10 millions 9.0%
- 8 millions 7.2%
- 7 millions 7.8%
- 6 millions 10.3%
- 5 millions 12.2%
- 4 millions 13.1%
- 3 millions 14.0%
- 2 millions 13.9%
NA 2.8%

N=4009

Householder's Age

N=4009

	20s	30s	40s	50s	60s	70s
This Suvey	5.3	13.3	17.4	24.8	23.6	15.5
2000 Population Census	12.4	15.8	17.9	23.3	18.7	12

The ratio of purchasing of any life insurance products is 87.6 %, and within the last one year, the ratio of newly purchasing life insurance products is 30.2% as shown in chart 2.

Chart 2: Tendencies towards Life Insurances 1

Popularity of Life Insurance Services

Private(Domestic)
Japan Post
Private(Foreign)
Mutual aid (JA)
Mutual aid (Other)
No Isurance
NA

%

N=4009

Life Insurance Services Taken Out within a Year

Private(Domestic)
Japan Post
Private(Foreign)
Mutual aid (JA)
Mutual aid (Other)
No Isurance

%

N=1209

Any insurance fallen due within a year is 12.1%, and any insurance lapsed or

surrendered within a year is 7.7% as shown in chart 3.

Chart 3: Tendencies towards Life Insurances 2
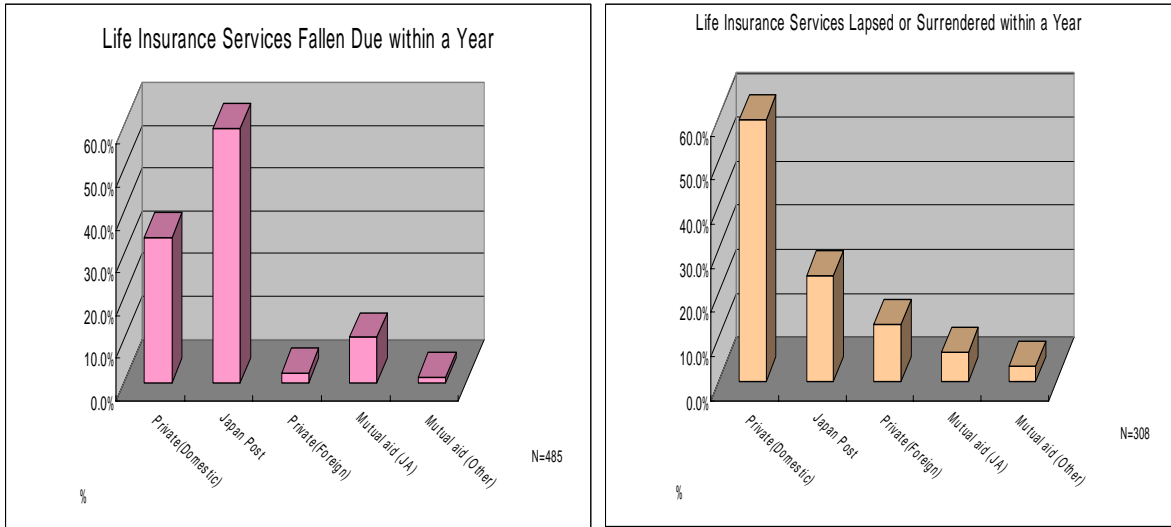
3.2   How they decide what to purchase

Chart 4 is showing the consumers' reasons why they selected the insurance product. Comparing with private insurance products, "Kan-po" purchasers' any one reason out of seven is significantly outstanding, but as a whole, they appreciate "premiums", "insurance function" and "savings function".

Also chart 5 shows that consumers' image map of several different insurance services. From this correspondence analysis method[5], mainly two clusters can be observed, one is a category of "product characteristics" and the other is of "service provider characteristics". "Kan-po" is being grouped as the latter one accompanied with mutual aid(JA).

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[5] Correspondence analysis is a method of factoring categorical variables and displaying them in a property space which maps their association in two or more dimensions. It is often used where a tabular approach is less effective due to large tables with many rows and/or columns. Though not limited to that arena, correspondence analysis been popular in marketing research, as to display such variables as customer color preference, size preference, and taste preference in relation to
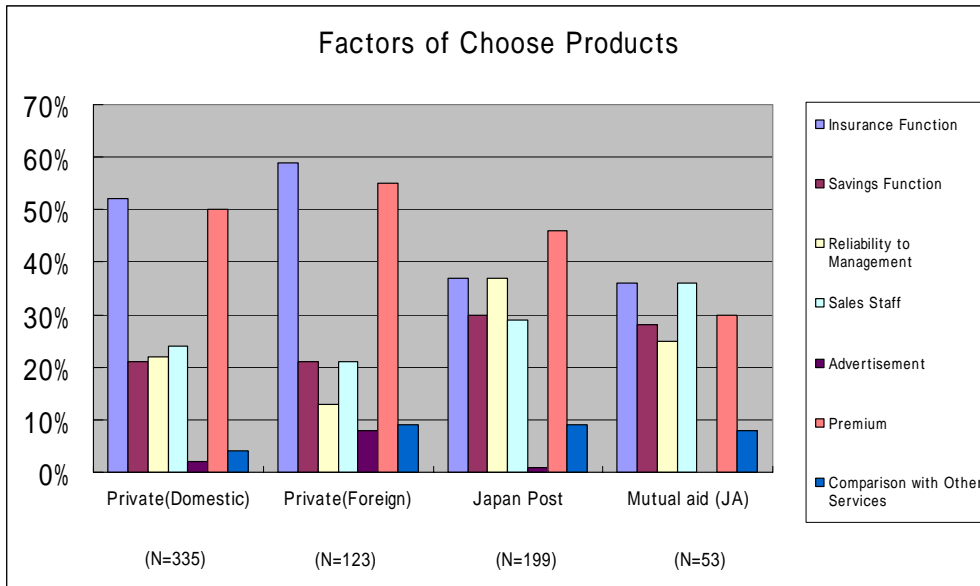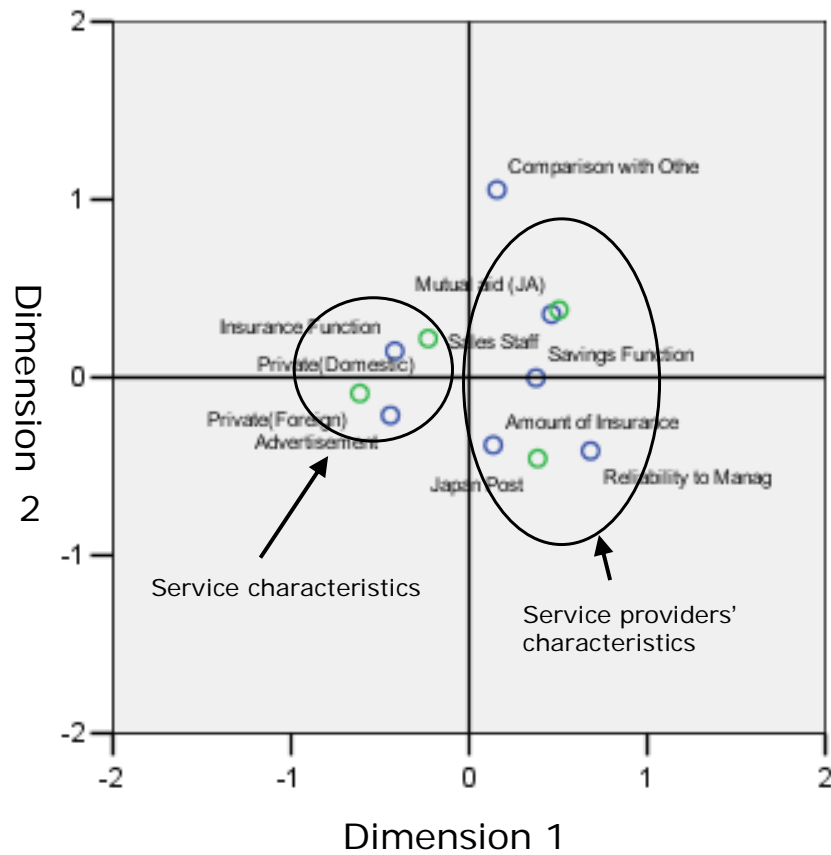
Chart 4: Factors of Choose Products

Factors of Choose Products

Legend:
- Insurance Function
- Savings Function
- Reliability to Management
- Sales Staff
- Advertisement
- Premium
- Comparison with Other Services

Private(Domestic) (N=335)
Private(Foreign) (N=123)
Japan Post (N=199)
Mutual aid (JA) (N=53)

**Chart5: Positions of Each Service Providers**

preferences for Brands A, B, and C.

3.3   Latent Trait Analysis based on "Item Response Theory"

Item Response Theory is the study of test and item scores based on assumptions concerning the mathematical relationship between abilities (or other hypothesized traits) and item responses. Other names and subsets include Item Characteristic Curve Theory, Latent Trait Theory, Rasch Model, 2PL Model, 3PL model and the Birnbaum model.

In the following chart 6, the x-axis represents student ability and the y-axis represents the probability of a correct response to one test item. The s-shaped curve, then, shows the probabilities of a correct response for students with different ability (theta) levels. In this report, this IRT is applied to customers' evaluation view points towards life insurance products

Chart 6: ITR Function
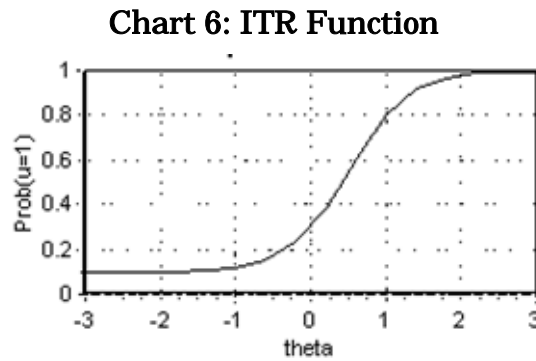
Based on this theory, normal distribution was assumed, the feature of each factor is shown by 'Importance level' and 'Discrimination level'. Through these, deciding factors which insurance services to be purchased are analyzed. The interpretation of 'Importance level' shows how they value each factor. The higher this level is, the more people value that factor. On the other hand, 'Discrimination level' is expressing the size of the change in the factor. That is, it is meant that a factor which is of big in this level, it is a factor of a big differentiation among samples according to the people's acknowledgement. Item Response Theory, ie 2-parameter-logistic model is given as follows.

$$P(\theta) = \frac{1}{1 + \exp(-Da(\theta - b))}$$

a: Discrimination parameter,

b: importance parameter,

   : ability level,

D: an invariable   1.7

The results of the analysis of private insurance purchasers is shown in chart 7 and table 1 and 2.

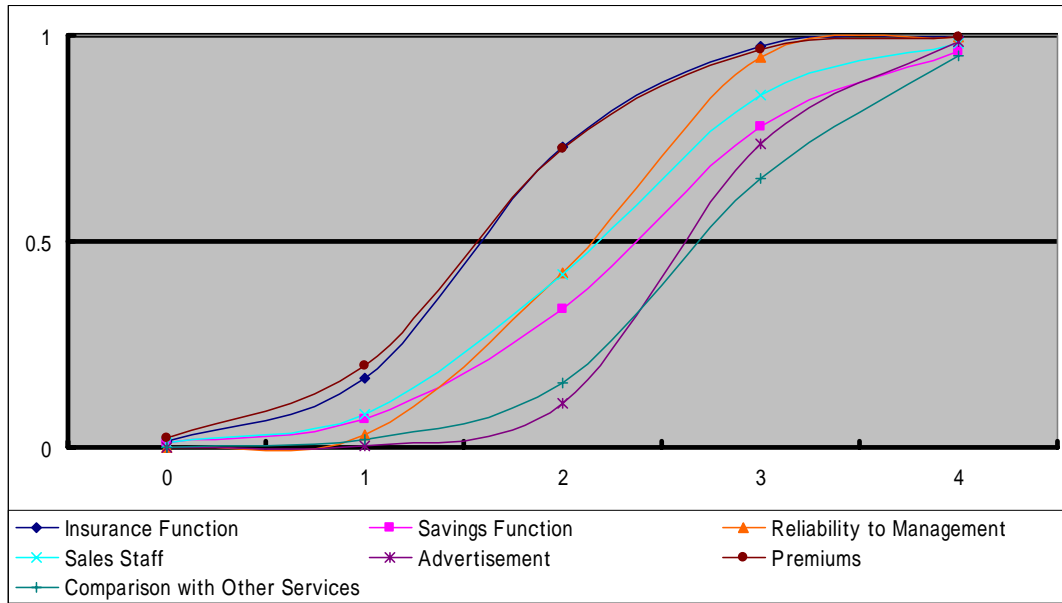### Chart7: Analysis 1 – Domestic Private Insurance Companies

Table 1: Output of parameters (private companies)

Rank	Importance	Discrimination
1	Premium	Reliability to Management
2	Insurance Function	Advertisement
3	Sales Staff	Insurance Function
4	Savings Function	Premium
5	Reliability to Management	Comparison with Other Services
6	Comparison with Other Services	Sales Staff
7	Advertisement	Savings Function

Table2: Ranking of factors in each theta segment

	Relative Importance of each factor in a Latent Trait Scale			
Rank	0	1	2	3
1	Premium	Premium	Insurance Function	Insurance Function
2	Insurance Function	Insurance Function	Premium	Premium
3	Sales Staff	Sales Staff	Reliability to Management	Reliability to Management
4	Savings Function	Savings Function	Sales Staff	Sales Staff
5	Reliability to Management	Reliability to Management	Savings Function	Savings Function
6	Comparison with Other Services	Comparison with Other Services	Comparison with Other Services	Advertisement
7	Advertisement	Advertisement	Advertisement	Comparison with Other Services

The likewise analysis regarding "Kan-po" purchasers is shown in chart 8, table

3 and 4. From these several charts and tables imply that consumers recognize and value different aspects of these two products differently but typically, this comparison can be summarized in table 5 and 6.
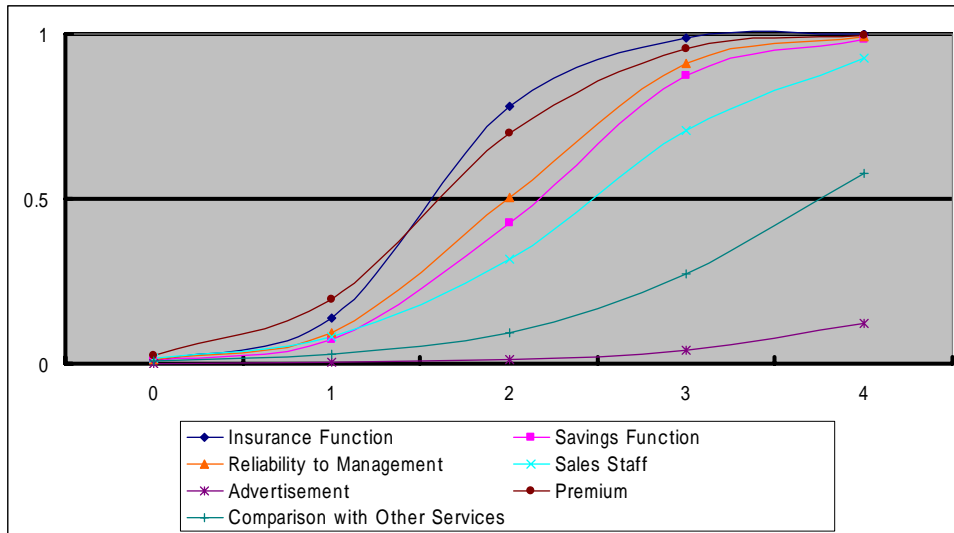
Chart 8: Analysis 2 – "Kan-po

Table 3: Output of parameters ("kan-po" by Japan post)

Rank	Importance	Discrimination
1	Premium	Insurance Function
2	Sales Staff	Reliability to Management
3	Reliability to Management	Premium
4	Savings Function	Savings Function
5	Comparison with Other Services	Sales Staff
6	Insurance Function	Comparison with Other Services
7	Advertisement	Advertisement

Table4: Ranking of factors in each theta segment

	Relative Importance of each factor in a Latent Trait Scale			
Rank	0	1	2	3
1	Premium	Premium	Insurance Function	Insurance Function
2	Sales Staff	Insurance Function	Premium	Premium
3	Reliability to Management	Reliability to Management	Reliability to Management	Reliability to Management
4	Savings Function	Sales Staff	Savings Function	Savings Function
5	Comparison with Other Services	Savings Function	Sales Staff	Sales Staff
6	Insurance Function	Comparison with Other Services	Comparison with Other Services	Comparison with Other Services
7	Advertisement	Advertisement	Advertisement	Advertisement

Table 5: Comparison of "Importance level" between two services

Importance			
	Private(Domestic)		Japan Post
Insurance Function	-2.1121		-2.4574
Savings Function	-2.2929		-2.3665
Reliability to Management	-3.326		-2.2831
Sales Staff	-2.2562		-2.0331
Advertisement	-4.182		-3.2709
Premium	-1.8883		-1.8351
Comparison with Other Services	-3.177		-2.4459

Table 6: Comparison of "Discrimination level" between two services

Discrimination			
	Private(Domestic)		Japan Post
Insurance Function	2.6117		3.0893
Savings Function	1.9497		2.2215
Reliability to Management	3.1733		2.2897
Sales Staff	2.0963		1.6527
Advertisement	3.1286		1.1396
Premium	2.3733		2.2561
Comparison with Other Services	2.3308		1.3025

The tables above show that from "Importance level" factors, reliability to management and sales staff are more valued for "Kan-po" and insurance and savings function are more valued for private insurances. On the other hand, from "Discrimination level" factors, reliability to management and sales staff are more discriminated for private companies, and insurance and savings function are more discriminated for "Kan-po".

4.   Conclusion

Up to now mainly based on the consumers' consideration data, the comparative analyses between private and "Kan-po" insurance products have been conducted, the outputs from these imply that consumers view points or evaluation miza towards these two service groups are differentiated.

Private insurance products can be summarized that they are purchased by core factors regarding insurance functions themselves, and "Kan-po" is selected by reliability to management, that is, trust towards the service provider which is "Nation" at this stage. This means that "Kan-po" which has been selected and also appreciated by its

trustworthiness for the management body and sales staff, has to consider carefully and contemplate for the new brand of after-privatized "Kan-po".

Also, under the circumstances that the position of life insurances as a whole must be becoming greater in due course in the households' financial products selection, the importance of this kind of analyses based on recognition data must be providing new axes and scope for the researchers, the process and output shown here are expected to have some implication in this field of study.

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