DETERMINING CORPORATE PATTERNS WITH HIGH RATES OF SUCCESS, USING THE SQC TECHNIQUES

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Introduction

The section to which I am attached is involved in the sales, planning, construction, and operation of software packages dealing with accounting and finance for use in integrating business systems for our clients. The people who conduct our sales activities are, above all, highly experienced veteran employees, possessing the vital attributes of experience, acuity, and guts. These attributes are indeed important factors in sales negotiations, but it is difficult for anyone who is not a highly experienced sales veteran to conduct sales activities effectively and efficiently.

It is assumed that the formulation of a scientific sales approach would enable even inexperienced employees to conduct sales activities in the manner of a veteran.

Therefore, we developed the idea that if we could determine a scientific sales approach, it would probably be possible for a relatively inexperienced employee who had worked for only one or two years to carry out sales (business) activities in an effective, efficient way. Based on this idea, we analyzed information we had obtained from questionnaires conducted at seminars, by using the SQC technique. We then determined (extrapolated) a scientific sales approach method, dubbed the " 'Promising Customer Discrimination Index' of the preliminary survey level."

1. The Questionnaire Conducted at Accounting Seminars

We carried out data analysis of all the data obtained from 99 samples of the data obtained from questionnaires conducted at seminars. We have indicated in tables summarized basic statistics which show the observation data contents and the participation state, obtained from the observation data. Refer to Diagrams 1-1 and 1-2.

Sample No.	Company Name	Negotiation Ranking					I. Purpose in Participating				No. of Employees	No. of Data System Personnel	Use of Pkg.
		1	2	3	4	5	1	2	3	4			
1	AAA	0	0	0	1	0	1	0	1	0	16326	4	0
2	BBB	1	0	0	0	0	0	0	1	0	1728	30	1
3	CCC	0	0	0	1	0	0	1	1	0	199	0	0

Diagram 1-1

Diagram 1-2

1. No. of DM mailings for the accounts seminors

No. of DM mailings sent	1,117	392 companies
No. of DM replies received	98	66 companies

	Mailings	Companies
Response Rate	8.8%	16.8%

[DM Mailing Corporate Data] [Unit: ¥100million]

Business Type	Scale of Sales	Business Type	Scale of Sales
Medical Manufacture	200	Cosmetic Products Manufacture	200
Medical Wholesale	500	Cosmetic Products Wholesale	500
Publishing	50	Department Stores	500
General Trading	500	Restaurant Industry	300

2. Conditions of Accounting Seminars Held

(1) Attendance

No. of Attendance		%	
People	Companies	People	Companies
74	52	76%	79%

(2) Conditions of Questionnaire

Issue	Response Rate	%	
With Comments	17	25%	
System Growing Stale	28	41%	66%
Others	23	34%	
Total	68	100%	

Response rate to questionnaire: 92%

2. Positioning Analysis

We added data obtained by oral questioning to the above 99 samples and carried out positioning analysis based on quantification method of the third type.

First we used all the observation data as a comprehensive approach to the survey results. That is, we tried an initial interpretation including purpose of participation, issues involved, degree of reference, comments, rank and position, etc. However, the cumulative proportion of the *eigen*-value was small, and did not result in any particular clear trend.

Therefore, we next made judgments based on the contents of the questions, from the point of view of the direct motive of customers' needs. We tried analysis using the part of the contents of the questions and issues in the survey.

We used the *eigen*-values as the variance of both factor scores and sample scores. The results were as follows.

The cumulative proportion of the *eigen*-value is 73.3%. The amount of data is summarized on the three factor axes. Refer to Diagram No. 2-1.

In order to look at the composition of this data, we made the Factors Z1-Z2, Factors Z1-Z3 and Factors Z2-Z3 plotted graphs. The data configuration of the contents of the topics of the questions (= the variable direction) and the customers (= the sample direction) are indicated in each of the diagrams. Refer to Diagrams 2-2, 2-3, 2-4, 2-5, 2-6 and 2-7.

The variable score and the sample score diagrams were created by making scatter diagrams of the variable direction and the sample direction, plotting the positions simultaneously, and combining them into diagrams. Refer to Diagram No. 2-8.

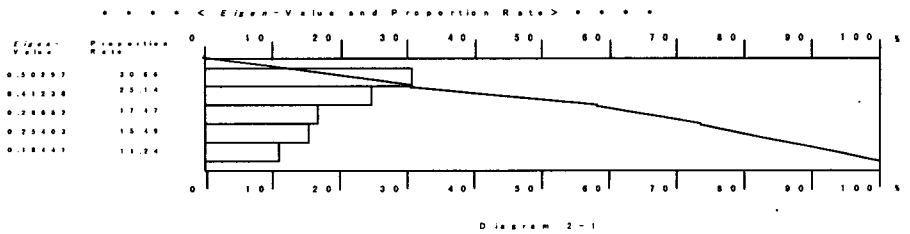
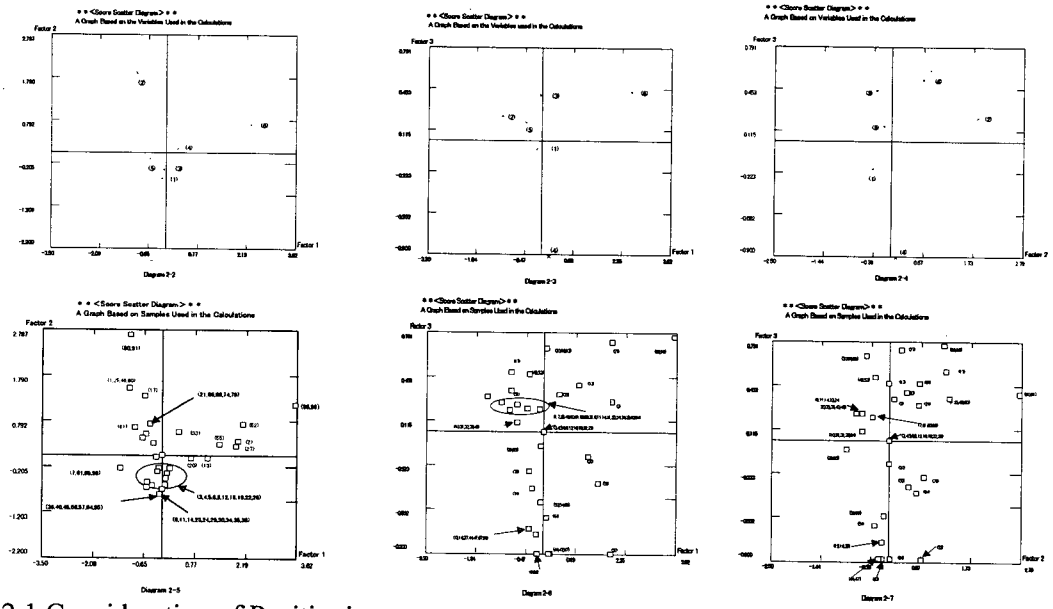


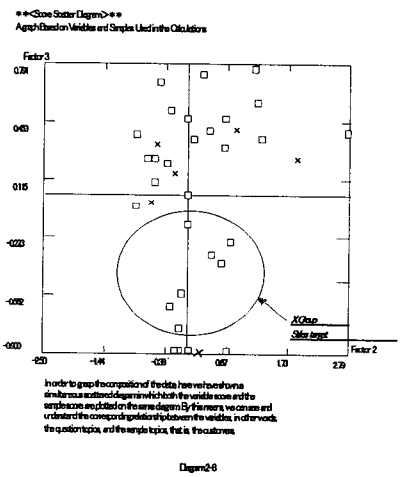
Diagram 2-1



2.1 Consideration of Positioning

First, concerning the naming of the axes, we thought about the meaning of the variable contents, that is, the parts of the questions and issues in the survey topics, and added this to our consideration, but this was an area which could not be accurately defined. The following concepts can be suggested - Z1: new desires, expansion, relation to new functions; Z2: flexible response to changes in business contents; Z3: common ownership of information, etc.—but there are still vague areas. (Incidentally, Z1 as shown from the position of X6, is expansion and relation to new functions, but it includes emphasis on natural language information as expressed in comments written by customers.)

Accordingly, we will keep the contents of the naming of the axes merely as a matter of



reference, and are concentrating instead on continuing to search for a connection with the data composition, considering the sample direction, that is, the plotted position of the customers.

First, when dividing customers into groups, concerning the groups plotted at the point of origin and the area near there, it is appropriate to categorize them as those of average needs.

Next, there are no particular outstanding features around the Nos. 1, 2, 3 and 4 quadrants, but for the target of sales activities, we became aware of the following fact: the existence of blank areas where there were no responses to the survey questions in Diagram No. 2-8. In other words, since there is a group of customers (sample) who did not respond to the questions in the area near the No. 3 and No. 4 quadrants, in the minus direction of (2) Z3. We learned this, and positioned the area as a target group for business negotiations. That is, from the fact of the obvious importance of "international accounting

standards" as a key sales concept in the management accounting genre, and from practical business expertise, we marked the part in question of Diagram 2-13 as a group related to "international accounting standards".

So, in order to investigate the degree of connection between the contents of the questionnaire items and the factor axes, we looked at the trends in the variable score and the degree of contribution of (3) factors 2, 3, 4, and 5. Refer to Diagram 2-9.

Looking at the degree of contribution, we found that variable No. 2, that is, "flexibility towards changes in business contents," had a big influence on factor 2; and that variable 5, that is, "conditions of growing stale," had a big influence on factor 4. We see that for the contents of the question items, "growing stale" exists as a keyword. Refer to Diagram 2-10. So, we proceeded to develop the following hypothesis and to examine it.

Hypothesis: "Growing stale exists as a key phrase."

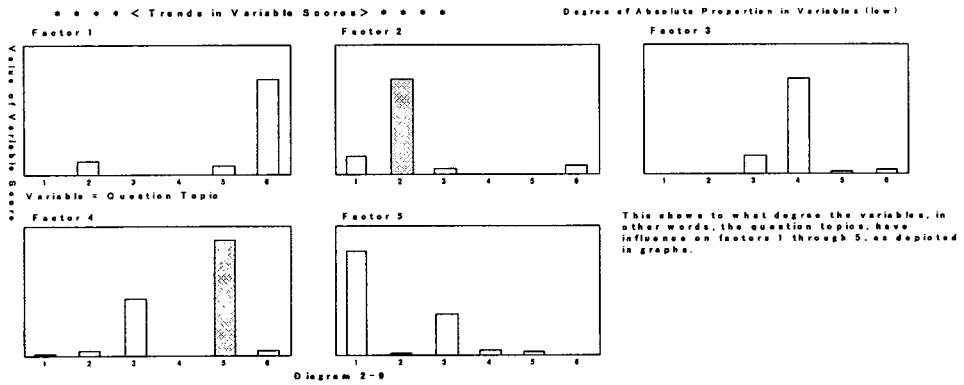


Diagram 2-9

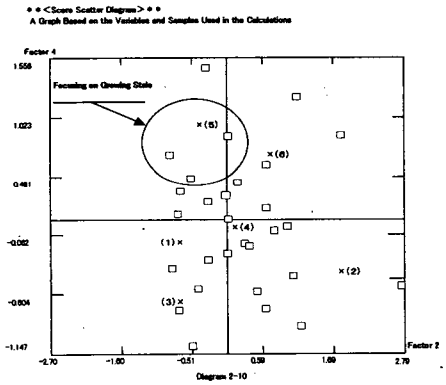


Diagram 2-10

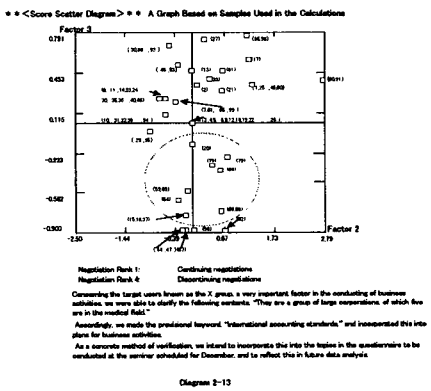


Diagram 2-13

3. Verification of the Hypothesis

When we dig deeply into the parts concerning the group mentioned, the following was ascertained. We were able to confirm the result that, of the 11 users of the "growing stale" conditions, which were our first target, negotiations are pending with one company, while the other ten companies are currently continuing negotiations. Refer to Diagram No. 2-13.

Moreover, concerning the customers we mentioned as the target for sales strategy in 2.1, the

following became clear. From the profile information of the results of the questionnaire, we found that there are five parties, which are either large corporations or in the medical field. There we placed "international accounting standard" as the key phrase, and used it as a central theme in sales activities.

Based on our consideration of the above, as a concrete policy, we will give feedback for use in the items in the survey questions for the survey to be carried out at the seminar slated for this December. The plan will lead to specific actions, while we prepare the contents of questions after thoroughly checking them in this way, so that they will be of use in collecting information, and proceed with even more data analysis.

4. The Discriminant Functional Formula Approach

The discriminant analysis approach

We have now spent about two weeks investigating business activities orally, etc. Working on the information obtained from those activities, and adding that which could become an external criterion, we sought a discriminant function. That is, for an external criterior, among the variable items contents such as continuing negotiations, keeping on hold, introducing to another section, discontinuing negotiations, and keeping the relationship pending, we used the two options of continuing negotiations and discontinuing negotiations, and did two-group discriminant analysis.

The Stages of Variable Choice

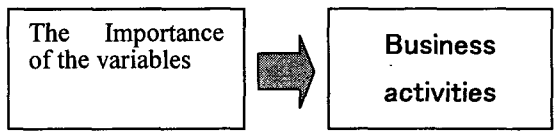
In making the discriminant functional formula, we carried on with analysis while considering the following. In order to develop the discriminant functional formula, we set both the F-in value and the F-out value at 1.5, and carried out the operations of
choosing and deleting the variables in a step-by-step process. Refer to Diagram 4-1.

In the process of interpretation, we used the variables in order from those with the largest F value. This resulted in our knowing that the notable variables are the ones being selected, in terms of both the importance of the variables and as essential items for oral investigation of business activities.

Diagram 4-1

[Pattern 1]

3	Total package	1
12	For reference Ordinary	6
14	Comments, etc	8
5	Management accounting	3
20	Position ranking	3
23	Data system personnel	2
1	Corporate accounting	11
22	No. of employees	4
2	Construction techniques	10
7	Information sharing	12
10	Other, freely	5
26	Package use	9
4	Other, freely	7



<Topics emphasized in hearing>

We used a method of increasing and decreasing the variables which lists them in order of highest F value, and eliminates those with the lowest F values.

The valuables above were included, but position ranking and others were eliminated.

Discriminant functional formula model 1: one which uses variables where the F value is

Discriminant functional formula model 2: 1.5 or more

Discriminant functional formula model 3: one which uses cost control as the variable in the question item

one which uses "growing stale" as the variable in the question item

The discriminant functional formula models 2 and 3 use cost control and "growing stale" as the variables in the question items. Since the F value of each variable is slightly smaller than 1.5, the discriminant functional formula models 2 and 3 result in a slightly higher rate of false discrimination than for model 1. When each variable was put into each discriminant functional formula, the

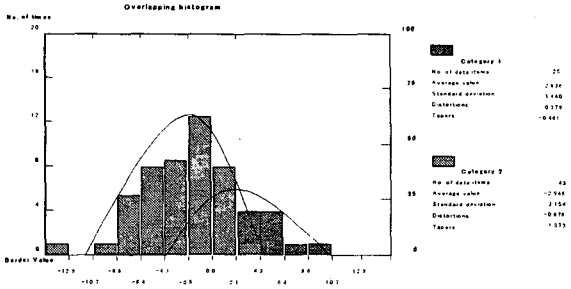


Diagram 4-2

coefficient of the discriminant functional formula using the "cost control" variable is +1.431, while the coefficient using the "growing stale" variable is -1.288. These coefficient symbols mean that the contents of the cost control and "growing stale" variables each have an influence on discontinuing or continuing negotiations respectively at the time of discrimination. We will show histogram charts for the discontinuing negotiation group and the continuing negotiation group, and a chart of overlapping area. (Refer to Diagrams 4-2.)

In the final result, the discriminant function appears as discriminant functional formula model 1 in the following way.

$f(x) = -0.259 + 1.626X_1$(corporate accounting) $+ 1.910X_2$(construction techniques) $- 4.541X_3$(total package software) $- 6.155X_4$(others) $- 2.537X_5$(management accounting) $+ 1.385X_7$(common ownership of information) $+ 4.224X_{10}$(others) $+ 2.527X_{12}$(ordinary degree of reference) $- 2.876X_{14}$(comments, etc.) $+ 0.000X_{22}$(number of employees) $- 0.154X_{23}$(information for system personnel) $+ 2.732X_{26}$(package use) $+ \varepsilon$

Using this discriminant functional formula model, discriminant function values for negotiation rank 2 and negotiation rank 5 are indicated in Diagrams 4-1 found by substituting the variables. It was confirmed that the results of the discriminant analysis matched the actual results.

Diagram 4-1

[Model 1-1 Negotiation Rank 2]

		X1	X2	X3	X4	X5	X7	X22	X23	X26	Group	Discriminant Functional Value	Result
1	Publishing	1	1	1	1	1	1	2	110	3	1	2.05	
2	Publishing	1	1	1	1	1	1	2	110	3	1	2.05	
14	Distribution	1	2	2	1	2	1	1	450	0	2	-5.26	Continuing

[Model 1-2 Negotiation Rank 5]

		X1	X2	X3	X4	X5	X7	X22	X23	X26	Group	Discriminant Functional Value	Result
1	Dining out	1	1	1	1	1	1	1	2585	8	2	0.56	
2	Distribution	2	2	1	1	1	1	1	1843	0	1	6.47	Discontinuing
3	Publishing	2	2	1	1	1	1	1	261	0	1	5.9	Discontinuing
4	Paper	1	1	2	1	1	1	1	270	0	2	4.74	
6	Medical	2	1	1	1	1	1	1	4325	80	2	-9.42	

We will continue conducting our analysis operations, while examining the data of attributes, that is, the customer profile information, and conducting positioning analysis, using the quantification method of the third type, and also doing discriminant analysis using the quantification method of the second type.