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Abstract	The items of the enquete in this study were framed on the following 3 broad premises, (a) Changes in organization follow growth of firms. (b) Measurements of organizational efficiency consist of "productivity," "adaptability" and "flexibility," where "productivity" represents degrees of efficient of response to stable stimuli maintaining stable form, "adaptability" that to gradually-changing stimuli gradually changing itself, and "flexibility" that to occasional stimuli occasionally changing itself and recovering after such stimuli end. (c) Functioning of organization - that is, the process of Cause Variables, Intervening Variables and End-Result Variables - and their relations are intricately interwoven as shown in Figure I. The Figure exhibits relations between top-management (Cause Varis. I), structure of organization (Cause Varis. II), disposition of organization I (intervening Varis.), disposition of organization II (Result Varis. I), product strategy and Business Result (Result Varis. II). The questionnaire was sent in February 1973 to some 800 firms listed on the Tokyo Securities Exchange and answers came from about 280 firms. Effective answers were from 260 firms, whose break-down by industrial sections was electrical equipment (56 firms), machinery (15), chemicals (55), transport equipment (22), food (22), trade & real estate (45) and bank & insurance (45). For the classification by size we used the number of employees, not the amount of capital, because the object of study was firm organization.
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A POSITIVE STUDY IN ORGANIZATION AND OTHER RELATED MATTERS

—referring mainly to a survey of organizational effectiveness
on 260 firms of Japan —

by

Ryūei Shimizu

The items of the enquête in this study were framed on the following 3 broad premises. (a) Changes in organization follow growth of firms. (b) Measurements of organizational efficiency consist of “productivity,” “adaptability” and “flexibility,” where “productivity” represents degrees of efficient of response to stable stimuli maintaining stable form, “adaptability” that to gradually-changing stimuli gradually changing itself, and “flexibility” that to occasional stimuli occasionally changing itself and recovering after such stimuli end. (c) Functioning of organization—that is, the process of Cause Variables, Intervening Variables and End-Result Variables—and their relations are intricately interwoven as shown in Figure I. The Figure exhibits relations between top-management (Cause Varis. I), structure of organization (Cause Varis. II), disposition of organization I (intervening Varis.), disposition of organization II (Result Varis. I), product strategy and Business Result (Result Varis. II).

The questionnaire¹⁾ was sent in February 1973 to some 800 firms listed on the Tokyo Securities Exchange and answers came from about 280 firms. Effective answers were from 260 firms, whose break-down by industrial sections was electrical equipment (56 firms), machinery (15), chemicals (55), transport equipment (22), food (22), trade & real estate (45) and bank & insurance (45). For the classification by size we used the number of employees, not the amount of capital, because the object of study was firm organization.

1. *Some Hypotheses Drawn from Simple Computation of Qualitative Organization Factors*

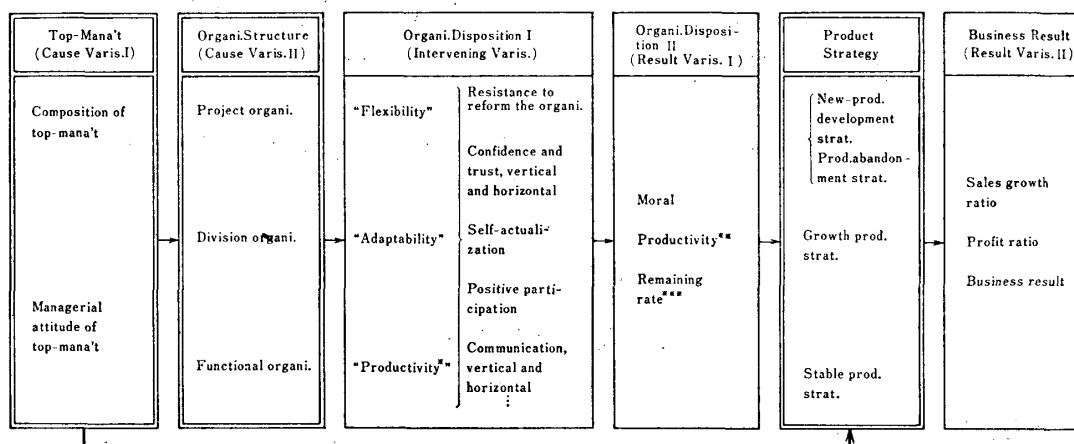
First in the Section our analysis refers mainly to simple computation of qualitative factors (among organization-structural or institutional factors) which are not quantifiable or are quantified later but not yet at this stage.

In all the inserted tables below, underlined figures show notable values, e.g., the largest one in the item concerned.

And business result means a composite value of the sales growth ratio and

1) See the last pages of this chapter.

Figure 1.



Note: * This "productivity" represents the efficiency of routine work function in organization
 ** This "productivity" denotes results of functions, e. g., the degrees of achieving targets.
 *** This "remaining rate" equals "1-turnover rate of labour".

the profit ratio of capital (exactly total liabilities and net worth). The method of computation was as follows. Assuming $A = 1972 \text{ sales} / 1967 \text{ sales}$, mark zero was given if $A < 1.3$, 1 if $1.3 \leq A < 1.75$, 2 if $1.75 \leq A < 2.18$, 3 if $2.18 \leq A < 2.67$, and 4 if $2.67 \leq A$. The standards for this sectioning were selected so that, on plotting the sales growth rates of all samples, namely 260 firms, pentamorous division was available. Similarly for profit rate, marks 0, 1, 2, 3 and 4 were given respectively to $B < 1.08\%$, $1.08\% \leq B < 1.97\%$, $1.97\% \leq B < 4.40\%$, $4.40\% \leq B < 8.00\%$, and $8.00\% \leq B$, assuming $B = \text{profit} / \text{capital}$ of 1972.

By these two kinds of marks of A and B we calculated as: business result $= \sqrt{(\text{mark of } A)^2 + (\text{mark of } B)^2}$. This calculation presupposes that business result is conceivable from sales growth and profit, attaching equal weight to both.

The patterns of growth were set by grouping all samples into five types. Pattern-1 denotes a sustained high rate-type, that is, 30% or more continuously from 1963 to 1972 annually; pattern-2 an accelerating rate-type, that is, more than 25% over the ten years and more than 30% for the latter half of this period; pattern-3 a refracting type, that is, more than 20% for the whole period but less than 15% for the latter half; pattern-4 is a stable growth-type with a rate of 15 to below 25 (excl.)%; pattern-5 a low rate growth-type, less than 15% over the period.

1-1. Grade of task structure

First, in order to see the grade of task structure, let's observe answers to Question 4-2, "To what extent is rationalization or labor-saving is advanced?" and Q. 4-1, "Has any reform of system been performed in the past three years?"

In those industries marking such items as definite provision of budgeting procedures (Q. 4-2, e; hereafter question and answer numbers shall be com-

pactly written as this), publication of job evaluation standards (do, f), and publication of eligibility to promotion (do, g) it is conceived that the contents of and interrelations between tasks are made definite. As is seen in the first row of Table 1, while in elect. equip. and machinery the grade of task structure is low, while in bank (and insurance) it is high. And industries with many answers on set-up of "speciality task" system (Q. 4-1, c) and reinforcement of project structures such as project team (do, d) appear to have a less number of, say, bureaucratic strata and hence the structural grade is low. As the second row of the table shows the structure is lowest for elect. equip. and highest for bank. Such characteristics by industries may be due to a situation that in the elect-equip. industry technical innovation is violent resulting in incessant changes of main product and accordingly organization with "adaptability" and "flexibility" and hence a lower grade of task structure is more efficient, while in bank the products are mainly services such as depositing or crediting which are very stable and so organization with high "productivity" and high structure is more efficient.

High-grade structure will decrease efficiency if specialization or bureaucratism goes too far. So adjustment of such excessively high structure is attempted through decreasing of section-subsection strata, promotion of decentralization or reinforcement of general staff. By the row III of the table abolition of section-subsection system (4-1, a) and strengthening of general staff (4-1, f) are most numerous in bank with the highest structure.

In industries with many tasks of routine work level-up of "productivity" leads to that of organizational efficiency. Among mfg. sections those with stable technology and small sorts of products are intending to raise "productivity" by computerization of routine work. As the row IV of Table 1 shows, computerization of cost accounting (4-2, i) and clear provision of sales information flow (4-2, j) are most advanced in transport equip. with such technology and product, and least in food with a plenty of product sorts. This applies also with service industries. As the row V shows in bank, with very stable business, real-time system on credit accounts (4-2, j') and modeling of sales forecast, and appraisal of firms (4-2, f') and uniformity of papers (4-2, i') are popularly employed, but in trade not so much. From the above, on the task structure we may have:

Hypothesis 1 To observe the grade of task structure by industrial sections, it is high in industries with stable technology and less products sorts, and reversely low in those with unstable technology, new-developed products and varietiful sorts of products. In industries for which high structure is desirable, level-up "productivity" and organizational efficiency are intended by means of computerization of routine work or other means, but in cases of its excessive advance recovery of "flexibility" is contemplated through decentralization. In industries for which low structure is wished, increase of "flexibility" and improvement of efficiency are attempted by reinforcement of project structures and so forth.

Table. 1 Grade of Task Structure (by industries)

		Elect. Equip.	Machinery	Chemicals	Trans. Equip.	Food	Trade, Real Est.	Bank, Insurance
I	Definite provision of budgeting (4-2, e)	<u>44.64</u>	<u>33.33</u>	52.73	63.64	40.91	44.44	<u>64.44</u>
	Publication of job evaluation standards (4-2, f)	<u>39.29</u>	<u>40.00</u>	40.00	54.55	31.82	42.22	<u>62.22</u>
	Publication of eligibility to promotion (4-2, g)	<u>41.07</u>	<u>40.00</u>	49.09	54.55	50.00	31.11	<u>80.00</u>
II	Set up of speciality task system (4-1, c)	<u>64.29</u>	60.00	40.00	50.00	45.45	35.56	<u>44.44</u>
	Reinforcement of project structures (4-1, d)	<u>83.93</u>	60.00	81.82	81.82	63.64	68.89	<u>51.11</u>
III	Abolition of section, sub-section (4-1, a)	41.07	33.33	49.09	50.00	54.55	42.22	<u>60.00</u>
	Strengthening of general staff (4-1, f)	53.57	33.33	58.18	36.36	31.82	57.78	<u>64.44</u>
IV	Computerization of cost accounting (4-2, i)	46.43	46.67	67.27	<u>72.73</u>	<u>36.36</u>	—	—
	Clear provision of sales information flow (4-2, j)	55.36	13.33	47.27	<u>63.64</u>	<u>50.00</u>	—	—
V	Real time system for credit accounts (4-2 h')	—	—	—	—	—	<u>37.78</u>	<u>60.00</u>
	Modeling for sales forecasts, etc. (4-2, f')	—	—	—	—	—	<u>4.44</u>	<u>15.56</u>
	Uniformity of papers (4-2, j')	—	—	—	—	—	<u>33.33</u>	<u>71.11</u>

In the table underlined figures are noteworthy values, e. g. the maximum; (and so forth).

Table 2. Changing of Task Structure (by scales)

	Under-800*		800-1,800		1,800-3,500		3,500 and overs	
		Bus. result		Bus. result		Bus. result		Bus. result
Rationalization (4-2)								
	0-2	36.07	2.81	8.57	4.55	5.17	0.00	—
	3-6	47.54	3.49	57.14	65.15	3.08	46.03	3.20
	7-10	16.39	2.62	34.29	30.30	3.02	53.97	3.30
Organization reforms (4-1)								
	0-3	54.10	3.27	52.86	40.91	3.40	33.33	3.53
	4-6	45.90	2.90	47.14	59.09	2.99	66.67	2.89

* number of employees

Table 3. Organization Reform (by growth patterns)

	Patt. 1		Patt. 2		Patt. 3		Patt. 4		Patt. 5	
		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result
Organization reforms (4-1)										
	0-3	34.31	3.87	71.43	50.00	2.56	48.21	2.91	47.50	2.55
	4-6	65.69	3.68	28.57	50.00	2.08	51.79	2.58	52.50	1.65

Next let's see how the grade of structure changes in accompany with business scale expansion. We assume that the more the number of answers "Yes" on the question about rationalization & labor-saving (4-2), the more routine work is increased and the higher is the structure. For its valuation we devised three levels—0-2, 3-6, and 7-10 pieces of Yes. Similarly a larger number of Yes to the question about organization reform (4-1) was assumed to represent more active reform and hence structural changing, and set two levels—0-3 and 4-6 Yes marks. It is seen by Table 2 that the bigger the scale, the more routine work increases and the higher is the structure. And with the scale expansion, reform is more frequently performed toward dynamic form. To view from the aspect of business result, however, lesser reform (0-3) is more preferable. The above fact tells that in bigger scales higher structure must be pursued for efficiency, yet on another hand reform to dynamic organization has to be advanced in order to prevent inefficiency due to an excessive grade. However, overmuch changing causes lessening of employee's mental stability and efficiency.

Since no clear features of rationalization by growth patterns were found, only the relation between growth pattern and organization reform was tableted as Table 3. As is seen, reforms are more numerous in the period of sustained high-rate growth (pattern-1) and least in the accelerating growth (pattern-2). This may be because in the high rate period reform to dynamic form becomes necessary due to scale expansion and stiffening, while in the accelerating-rate growth care for reform is difficult being pressed by busy production and selling. From the viewpoint of business result, however, a smaller extent of reform seems preferable. Especially in the low rate period overmuch reform may better be averted. Thus we have:

Hypothesis 2 In firms of today, in accompany with scale expansion routine work increases and the grade of task structure becomes higher, but in order to prevent its excessive advance organization reform toward dynamic form becomes more positive. By growth patterns, such reform is most often in the period of sustained high-rate growth. However, over-run of reform invites declines of business result for all scales and periods. In particular in the low growth period excessive reform is undesirable.

1-2. Span-of-control and task structure

Next we observe task structure from the aspect of span-of-control. It is considered that the smaller the span, the higher the structure. The value of span-of-control was measured by the number of employees per manager & section-chief. By Table 4 for the whole industry "15.5-25 persons" has the largest percentage, but the business result is best for firms of "25 persons and over." To look this dividing into mfg. and non-mfg., generally the former has larger values; that is, firms of "15.5-25 persons" are most in mfg. as against under 9.5 persons" in non-mfg. So it is considered that again viewed from span-of-control the grade of strutcure or bureaucraticism is more advanced in non-mfg. than in mfg.

Table 4. Span-of-Control (by industries)

Employees per Chief	Whole Ind.		Mfg.		Non-mfg.		Elect. Equip.		Machinery.		Chemicals		Food		Trade		Bank	
		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result
- 9.5	25.00	2.85	19.41	2.95	35.56	2.76	10.71	3.60	0.00	0.00	38.18	3.04	27.27	1.97	37.78	2.32	33.33	3.25
9.5-15.5	24.23	3.28	24.71	3.31	23.33	3.19	21.43	3.91	13.51	3.78	32.73	2.88	31.82	3.09	26.67	3.15	20.00	3.24
15.5-25	31.15	3.09	32.94	3.15	27.78	3.08	48.21	3.86	32.43	2.32	20.00	2.75	27.27	2.57	20.00	3.99	35.36	2.57
25 -	19.62	3.41	22.94	3.46	13.33	3.22	19.64	3.79	54.05	3.47	9.09	2.94	13.64	3.10	15.56	3.80	11.11	2.40

Table 5. Span-of-Control (by scales, by growth patterns)

Employees per Chief	Under 800		800-1,800		1,800-3,500		3,500 and over		Patt. 1		Patt. 2		Patt. 3		Patt. 4		Patt. 5	
		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result
- 9.5	47.54	2.92	24.29	3.11	18.18	3.07	11.11	2.37	26.47	3.61	14.29	4.38	35.29	2.02	23.21	2.55	22.50	1.44
9.5-15.5	22.95	3.22	22.86	3.32	33.33	3.23	17.46	3.10	18.63	4.14	32.14	4.09	20.59	2.14	33.93	3.08	22.50	1.90
15.5-25	21.31	3.28	32.86	2.99	31.82	3.00	38.10	3.15	30.39	3.82	28.57	4.59	26.47	2.44	32.14	2.29	37.50	2.44
25 -	8.20	3.34	20.00	3.73	16.67	3.40	33.33	3.30	24.51	3.48	25.00	4.56	17.65	2.93	10.71	3.40	17.50	2.41

However, such higher structure in non-mfg. cannot be considered to be always contributory to efficiency. In Table 4 business result is best for the 25 persons and over firms and worst for under 9.5 firms in both mfg. and non-mfg., excepting bank alone.

To divide into individual industries, no general features are found. Only one point noteworthy is that in machinery including transport equip. firms of "25 persons and over" account for more than a half of total. By our original data (see Table 9) the number of employees per chief is 19.39 persons for elect. equip., 30.12 for machinery, 15.71 for chemicals, 17.61 for food, 13.89 for trade and 16.85 for bank, obviously showing a very large span in the machinery industry.

Next, span-of-control by business scales. To mark the largest and next-largest figures of percentage in Table 5, it is seen that the bigger the scale, the larger the span. Again in this point its relation to business result is meagre; the best is for the span of 25 persons and over and the worst is for under 9.5 persons.

Next, span-of-control by growth patterns. In Table 5 patterns 1 to 5 are arranged in the order of growth rates, from higher to lower. To mark the largest business results for the patterns each, the figure firstly becomes smaller as the growth rate goes down, reaches the smallest at pattern-3, and again increases as the rate rises to 4 and 5. On the other hand to mark the largest figure in each pattern, firstly the span becomes larger as the rate moves down, largest at pattern-3, and then again smaller. Accordingly at pattern-3 the differential of span between the modal firms and the best business result firms is widest. This tells that at pattern-3, namely period of refracting growth, span-of-control should be enlarged in order to increase "flexibility" and efficiency, but in the actual many firms diminish it to the smallest. In other words, Japan's firms should take care so that "flexibility" may be increased at refracting periods generally. Thus:

Hypothesis 3 To observe span-of-control (employees per manager & section-chief) dividing mfg. and non-mfg., obviously the former has larger one; the average value is 19 persons for the whole industry, 20 for mfg. and 15 for non-mfg. Among mfg. industries machinery shows the largest (30 persons), followed by elect. equip. (19), food (18) and chemicals (16). Among non-mfg. finance has 17 persons and trade 14 persons. The span tends to become larger in bigger scales. As regards achievements, it is best in firms of 25 persons and over. And firms of fraction growth are inclined to smaller span, but it seems preferable to enlarge it inversely for the sake of flexibility.

1-3. Inter-task structure

When the grade of task structure is high, it is necessary to keep inter-task structure low for the sake of higher flexibility in the entire organization. In order to see the grade of inter-task structure we examined ways of communication between project team and line. We supposed that the structure is low in such a system as direct contact and talk between low-stratum members themselves, and high where talk is performed only by the medium of high-stratum leaders of both

project team and line.

Assuming that the four categories of answer to Question 5-3 about team-line communication—a) always direct contact between members, b) mostly between members, c) mostly through leaders and d) always through leaders—constitute a semantic differential measure representing the grade of inter-task structure, marks 4, 3, 2 and 1 were given respectively. Smaller values mean higher structure. To take the average value for each industry, it is 2.27 for elect. equip., 1.81 for machinery, 2.11 for chemicals, 1.91 for food, 1.89 for trade and 1.53 for bank (see Table 9); thus low in elect. equip. and chemicals and high in bank, alike with the case of task structure explained above. Thus in the fields with vigorous innovation and other environmental changes the grade is low both task structure and inter-task structure for the maintenance of flexibility, while in stable fields it is high to raise productivity of organization.

As to achievement, no significance differences are found between industries. In the whole industry (a) shows 33.46%, (b) 25.38%, (c) 13.08% and (d) 28.08%. Firms of answer (a) are best in business result.

Next by growth patterns (See Table 6). No significant points are seen as regards the most-numerous item. In relation to business result, in high growth rates (patterns-1 and -2) direct contact of members is favorable while in low rates (4 and 5) talk by leaders is better. This is because in high growth direct talk between members is desirable for quick adaptability to outside circumstances, while in low growth firms talk between leaders is more effective for rationalization or labour-saving. No significant features by scales are not seen. Thus:

Hypothesis 4 In industrial fields with rapid changes in products the grades of task and inter-task structure are low for the sake of "flexibility," while in fields of less changes they are high. Significant inclination is not found in relation to achievement. By growth patterns, lower inter-task structure is desirable for high-growth firms, and higher structure for low-growth firms.

1-4. The division system

The division system is a means of decentralization. When a business scale has grown beyond a certain extent, centralized organization based on functional system comes to expose a bad aspect of bureaucraticism and inefficiency. So decentrali-

Table 6. Grade of Inter-Task Structure (by growth patterns)

Inter-Organization communication (5-3)	Patt. 1		Patt. 2		Patt. 3		Patt. 4		Patt. 5	
		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result
a) Always direct contact between members	39.22	4.01	25.00	4.81	38.24	2.24	26.79	2.53	30.00	2.02
b) Mostly direct contact between members	21.57	4.00	17.86	3.96	38.24	2.50	25.00	2.60	30.00	1.42
c) Mostly through leaders	12.75	3.33	21.43	3.80	8.82	2.33	12.50	3.21	12.50	3.02
d) Always through leaders	26.47	3.33	35.71	4.66	14.71	2.04	35.71	2.82	27.50	2.47

zation is pushed in various ways, with the division system making its main idea. However, overrun of this system causes hardships in overall harmonization, and again centralization must be contemplated. The so-called "centralized-division system" is an example of such centralization. Table 7 tabulates the answers to three questions about this system: Q. 6-1, "Have you this system?;" Q. 6-2, "If any, please mark one of the following forms you think the nearest;" and Q. 6-3, "Under what type of responsibility does your system come?" First let's see with respect to the whole industry. Firms employing the division system make up 44% of total, slightly smaller than a half. No significant differences of business result are seen between firms having it and those not. Firms employing for all business lines are most numerous, but business results are better for firms employing only for some particular or production sectors are better, and worse for those employing for selling alone.

As to the types of responsibility, firms taking profit-responsibility hold the largest share. In the aspect of business result the cost-responsibility type is better and the independent-firm type is worse.

Breaking into mfg. and non-mfg., in the former employing division system are larger in numbers than non-employing, but in non-mfg. the share is reversed. And profit-responsibility is most numerous for mfg. and independent-firm type for non-mfg.

To observe in more details by industries, firms employing it hold a larger number in elect. equip. and chemicals with keen innovation, and non-employing firms count more in machinery and food with little innovation. As to the sector for this system, "all lines" is most numerous, excepting for chemicals. No noteworthy distinctions exist about its types, excepting that in mfg. profit-responsibility is most usual. If trans. equip. with little innovation is picked up, cost-responsibility is most numerous. In trade and bank there are many firms taking independent-firm type near to subsidiary.

Lastly to look by scales (Table 8), the bigger the scale, the more numerous are firms employing this system, say, decentralization. As to business result, however, the employing firms are worse as the scale becomes bigger. In the class of above-3,500 employees the non-employing firms show better results than the employing. These facts appear to tell that over-decentralization accompanying scale expansion produces minus effects on coordination. To observe the types, for below-1,800 firms the profit-responsibility type is better, and for firms beyond this line cost-responsibility is better. This also may suggest that the profit-responsibility and independent-firm types bring about hardships in coordination due to their nature of independency, and so cost-responsibility that may adjust over-centralization is desirable. Thus we have:

Hypothesis 5. In Japan firms carrying the division system are fewer than those doing not. However, its employment and non-employment have little relation to achievement. In those fields with rapid innovation employing firms hold a larger share and the type is mostly profit-responsibility. In the

Table 7. The Division System (by industries)

Form	Whole Ind.		Mfg.		Non-Mfg.		Elect. Equip.		Machinery		Chemicals		Food		Trade		Bank	
		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result
(6-1)																		
Yes	44.23	3.21	52.94	3.30	27.78	3.05	62.50	3.79	45.95	2.99	52.73	2.81	40.91	3.53	40.00	2.94	15.56	3.33
No	55.77	3.08	47.06	3.15	72.22	2.99	37.50	3.89	54.05	3.26	47.27	3.04	59.09	2.02	60.00	3.21	84.44	2.84
(6-2)																		
Particular sector only	8.85	3.58	11.76	3.54	3.33	3.83	5.36	4.60	10.81	4.37	18.18	2.98	13.64	3.23	4.44	2.90	2.22	5.70
Production only	5.77	3.46	8.82	3.46	0.00	0.00	21.43	3.72	5.41	1.40	1.82	4.50	0.00	0.00	0.00	0.00	0.00	0.00
Selling only	8.46	2.62	8.24	2.89	8.89	2.66	1.79	3.60	2.70	4.50	18.18	2.28	9.09	4.75	11.11	2.58	6.67	2.80
All lines	20.77	3.22	23.53	3.26	15.56	3.11	32.14	3.73	27.03	2.61	14.53	3.06	18.18	3.15	24.44	3.12	6.67	3.07
None	56.15	3.08	47.65	3.16	72.22	2.99	39.29	3.87	54.05	3.26	47.27	3.04	59.09	2.02	60.00	3.21	84.44	2.84
(6-3)																		
Independent-firm type	11.15	3.03	8.82	3.55	15.56	2.77	17.86	3.79	2.70	3.20	3.64	3.65	9.09	2.40	22.22	2.64	8.89	3.10
Profit-responsibility type	26.15	3.21	34.71	3.17	10.00	3.42	32.14	3.83	29.73	2.97	45.45	2.66	22.73	3.78	13.33	3.32	6.67	3.63
Cost-responsibility type	6.54	3.51	8.82	3.53	2.22	3.35	10.71	3.70	13.51	3.00	3.64	3.85	9.09	4.05	4.44	3.35	0.00	0.00
None	56.15	3.08	47.65	3.16	72.22	2.99	39.29	3.87	54.05	3.26	47.27	3.04	59.09	2.02	60.00	3.21	84.44	2.84

Table 8. The Division System (by scales)

Form	Under 800		800-1,800		1,800-3,500		3,500 and over	
		Bus. result		Bus. result		Bus. result		Bus. result
(6-1)								
Yes	32.79%	<u>3.40</u>	47.17	<u>3.35</u>	45.45	<u>3.17</u>	50.79	3.07
No	67.21	2.96	52.86	3.15	54.55	3.14	49.21	<u>3.14</u>
(6-2)								
Particular sector only	8.20	4.00	14.29	3.53	7.58	3.50	4.76	3.00
Production only	4.92	2.60	5.71	2.85	7.58	4.14	4.76	4.00
Selling only	3.28	3.20	10.00	3.03	13.64	2.72	6.35	2.42
All lines	14.75	3.36	17.14	3.55	16.67	2.95	34.92	3.08
None	68.85	2.97	52.86	3.15	54.55	3.14	49.21	3.14
(6-3)								
Independent-firm type	6.56	2.60	17.14	3.11	7.58	3.88	12.70	3.09
Profit-responsibility type	14.75	<u>3.78</u>	22.86	<u>3.56</u>	31.82	2.84	34.92	3.00
Cost-responsibility type	9.84	3.33	7.14	3.26	6.06	<u>4.05</u>	3.17	<u>3.90</u>
None	68.85	2.97	52.86	3.15	54.55	3.14	49.21	3.14

so-called service industries such as trade & estate and finance & insurance, non-employing firms are more numerous and the type is generally independent-account near to subsidiary.

Hypothesis 6 With the firm scale growing bigger, the rate of firms employing the system rises in order to alleviate centralization. That is, in a scale of above-3,500 employees with over-decentralization, inter-organization tends to be difficult, and non-employment becomes preferable. This trend is seen also with the type; the profit-responsibility directed to decentralization is better for below-1,800 firms, and the cost-responsibility type for above-1,800 firms.

2. *Some Hypotheses Drawn from Simple Computation of Quantitative Organization Factors*

In this section our observation is directed to *quantifiable* ones of organization factors alone. Quantification was performed by SD method, the method counting the number of answers, and others. The factors taken up here are those relevant to the structure and disposition of organizations (See Table 9).

2-1. Organization-structural factors such as span-of-control, project structure, and man-power development system (Cause Varis. II) (by industries)

First let's consider on factors related to structure. For the span-of-control we examine two variables—administrative cost per employee and number of employees per chief of division and section. The per-employee cost amounts to ¥2,710 thousand for the whole industry, ¥4,100 for non-mfg. and ¥1,790 for mfg., with non-mfg. being double mfg. Among mfg. sections it is smaller in machinery (1,070 thousand) and elect.equip. (1,260) and larger in food (3,310 thousand). The per-chief number of employees counts 18.6 persons for the whole industry; mfg. (20.3 persons) has a larger figure than non-mfg., contrary to the cost. And among mfg. machinery shows the largest (30.1) and chemicals the smallest (15.7). These two variables (cost and employees) exhibit inverse correlation (coefficient = -0.222) each other. Industries with a larger number of employees are those with numerous blue collar workers such as elect-equip. and machinery, and those with a smaller number are bank and trade with more white collars.

The average annual wages is ¥1,330 thousand for the whole industry; ¥1,290 thousand for mfg. and ¥1,400 thousand for non-mfg., the latter being a little higher. It is especially high for bank.

The authority of executive, division-chief and section-chief represent average figures of answers to Q.3-1, showing respectively 69.3%, 47.1% and 26.0% (assuming 100% for president) for the whole industry. Thus:

Hypothesis 7 Assuming the authority of president as 100%, that of execu-

Table. 9 Average Values of Quantitative Organization Factors (by industries, by scales)

	Q. No.	Whole Ind.	Mfg.	Non-Mfg.	Elect. Equip.	Machinery	Chemicals	Food	Trade Bank & Estate Insur.	Under 800	800-1,800	1,800-3,500	3,500 and over
(Cause Variables)													
Administrative cost per capita (mil. yen)	11	2.71	1.97	4.10	1.26	1.07	2.76	3.31	4.54	3.65	2.41	2.50	2.94
Employees per chief of dept. section (persons)	11	18.6	20.3	15.4	19.4	30.1	15.7	17.6	13.9	16.9	13.8	17.6	18.1
Average wages (mil. yen)	11	1.33	1.29	1.40	1.22	1.29	1.34	1.34	1.37	1.43	1.29	1.29	1.40
Authority of executive	3-1	69.3	68.9	69.9	72.5	68.4	66.2	67.7	70.0	69.9	69.2	69.3	70.3
Authority of manager	3-1	47.1	47.4	46.4	50.4	42.4	48.4	45.9	45.7	47.2	48.4	45.1	45.7
Authority of section-chief	3-1	26.0	26.8	24.4	27.2	23.9	29.1	25.2	26.0	22.8	27.4	26.1	24.1
Dynamic-form forward	4-1	3.65	3.70	3.56	3.88	3.54	3.76	3.36	3.58	3.53	3.28	3.40	3.80
Routine-work forward	4-2	5.52	5.54	5.49	5.38	6.14	5.91	4.04	4.62	6.36	3.69	5.59	5.80
Persons of project structure (persons)	5-2	41.8	42.2	41.0	73.5	34.3	27.2	13.0	65.2	16.9	10.0	24.4	31.1
Project structure persons/total employees	5-2	0.017	0.019	0.014	0.021	0.013	0.023	0.014	0.022	0.006	0.025	0.020	0.013
Number of project teams	5-2	4.21	4.32	3.99	7.32	3.43	3.00	1.50	6.38	1.60	1.56	2.76	3.39
Number of countries where a firm invests (developed)	7-4	1.15	0.82	1.77	1.25	1.05	0.45	0.23	2.42	1.11	0.15	0.55	1.52
Ditto (developing)	7-4	1.30	0.88	2.09	1.37	0.51	0.78	0.45	3.64	0.53	0.33	0.31	1.77
Equity capital ratio (%) (developed)	7-5	23.2	20.9	27.6	27.2	28.9	14.3	8.2	40.8	14.4	6.0	22.6	23.0
Ditto (developing)	7-5	16.0	17.6	13.5	23.1	14.9	15.7	12.7	17.6	8.6	10.0	11.3	15.7
Ratio of native executive (%) (developed)	7-6	5.6	5.4	6.0	7.1	5.9	4.1	3.6	8.4	3.7	2.8	2.6	8.1
Ditto (developing)	7-6	10.9	12.3	8.2	16.9	12.4	10.2	5.3	5.3	2.9	6.1	7.4	12.9
Ratio of native middle-men (%) (developed)	7-7	6.7	8.0	4.3	10.3	12.3	4.8	2.7	7.8	3.2	0.8	3.8	5.3
Ditto (developing)	7-7	12.9	16.8	5.6	20.0	14.7	18.1	7.3	7.8	3.4	3.9	9.0	15.4
Man-power development system	8-1	3.83	3.75	3.98	3.64	3.62	3.95	3.77	3.36	4.60	2.62	3.31	4.24
Loyalty-raising scheme	9-1	5.97	5.84	6.21	6.27	6.08	5.44	5.36	5.82	6.60	4.72	3.27	6.09

(Intervening Variables) Inter-organization communication Initiative of information Participation to norm setting Idea to motivate employee (motmation) Promotion of employee Reflection of operational-worker's opinion Opinion Coordination Resistance to organization reform Attitude to the superior Attitude to the equal	5-3	1.94	2.07	1.71	2.27	1.81	2.11	1.91	1.89	1.53	1.44	1.96	2.21	2.14
	8-2	3.27	3.21	3.40	3.29	3.22	3.31	3.18	3.38	3.42	3.03	3.27	3.24	3.54
	9-2	2.01	2.21	1.62	2.23	2.00	2.29	2.32	1.49	1.76	1.98	2.11	2.03	1.89
	9-3	3.25	3.21	3.33	3.32	3.00	3.18	3.32	3.22	3.44	3.21	3.07	3.32	3.41
	9-6	1.94	1.91	2.00	1.91	1.97	1.84	2.00	2.02	1.98	1.87	1.96	1.97	1.97
	8-3	2.88	2.95	2.76	3.11	2.84	2.89	2.86	2.82	2.69	2.89	2.83	2.92	2.98
	8-4	3.30	3.31	3.28	3.36	3.14	3.33	3.41	3.16	3.40	3.15	3.46	3.36	3.22
	8-5	3.19	3.15	3.28	3.20	3.11	3.09	3.23	3.27	3.29	3.05	3.19	3.23	3.30
	9-4	3.15	3.14	3.12	3.13	3.16	3.09	3.23	3.11	3.24	3.03	3.16	3.15	3.25
	9-5	3.12	3.14	3.09	3.16	3.08	3.13	3.23	3.09	3.09	3.13	3.11	3.05	3.21
(Result Variables I) Morale of college graduate Morale of lower-school graduate Productivity- I (quantity) Productivity- II (quality) Remaining rate (1—turnover rate of labour)	9-7	2.11	2.12	2.38	2.27	1.92	2.05	2.27	2.29	2.47	2.05	2.07	2.24	2.49
	9-8	2.28	2.19	2.46	2.21	2.97	2.25	2.36	2.40	2.51	2.23	2.20	2.27	2.44
	9-9	2.55	2.56	2.51	2.34	2.54	2.73	2.77	2.38	2.64	2.36	2.50	2.65	2.67
	9-10	2.78	2.91	2.56	2.88	3.10	2.83	2.81	2.64	2.47	2.69	2.73	2.74	2.98
	10	3.24	3.26	3.21	3.13	2.97	3.52	3.41	3.16	3.27	3.36	3.13	3.33	3.16
(Result Variables II) Sales per capita (mil. yen) Sales growth ratio (sales volume 1972/ sales vol. 1968, %) Profit ratio Business result	11	42.80	12.53	99.97	8.14	9.81	13.25	24.47	77.86	122.08	28.41	43.68	52.83	44.15
	11	254	222	316	258	201	216	182	274	357	243	273	256	242
	11	6.4	7.2	4.8	9.1	5.0	8.1	3.6	4.0	5.6	5.8	7.6	7.1	4.8
	11	3.15	3.23	3.01	3.83	3.14	2.92	2.64	3.11	2.91	3.10	3.24	3.16	3.10

tive, division-chief and section-chief is respectively about 70%, 50% and 25% on average.

As the measure of quantification of the degree of dynamic-form forward (that is, orientation to it), we used the number of organization changes in the answer to Q.4-1. For example, marks 6 was given to an answer comprising Yes's on all six categories and marks 2 to a two-Yes answer. The average value for the whole industry is 3.65 for mfg. 3.70 and 3.56 for non-mfg., with the former being more advanced in dynamic move. It is notable in elect.equip. (3.88) and chemicals (3.76), sections of active innovation. The routine-work forward was similarly quantified with the number of Yes-answers on Q.4-2 about rationalization and labor-saving. Average on the whole industry is 5.52; relatively large in bank (6.36) and machinery (6.14) with advanced work standardization, and small for food (4.04) with varietiful products.

To observe project structures, according to Q.5-2 regarding the number of persons engaged in such organizations, the average number per firm is 41.8 persons in the whole industry; largest in elect.equip. (73.5) and trade (65.2), and smallest in bank (16.9). To examine this trend as ratio of (project structure persons) / (total employees), it is 0.017 for the whole industry; largest for elect.equip. (0.021) and chemicals (0.022) with rapid innovation as well as trade with fluctuation of consumption pattern; smallest for bank (0.006) with little innovation. The number of project teams per firm shows 4.21 for the whole industry.

Overseas activities. The number of "investment-toward countries" per firm counts 1.15 for the whole industry in the developed area and 1.30 in the developing, with the latter being a little larger. By industries, trade has the largest figure, followed by elect.equip. The share of investment holds 23.2% for the whole industry in the developed area and 16.0% for the developing. This tendency is not changed if broken down into mfg. and non-mfg. The proportion of native executives to the total executives, for the whole industry, is 5.6% in the developed and 10.9% in the developing. This state applies also to native middle management; 6.7% in the developed and 12.9% in the developing. And this position is not different between individual industries. It may be seen that the rate of native people is a little larger for middles than for executives. Thus we have:

Hypothesis 8 As seen from the number of countries, where Japanese firms invest in developing countries count a little more than developed, but the share of investment is higher in the latter. The ratios of native executives and middle show 5-10%, especially higher in developing countries (more than 10%).

The scheme of man-power development for middle management²⁾ was quantified by the number of Yes's in an answer, similiarly to the above-explained case of dynamic-form forward. It is seen that speaking generally non-mfg., notably bank, is more active in man-power development than mfg. The same method

2) Q. 8-1.

was applied also to the scheme of raising loyalty of employees,³⁾ in which again non-mfg. is more positive than mfg. To observe these two schemes for development and loyalty, in elect.equip. and machinery the former is larger than the latter scheme, while in chemicals and food the latter is more numerous. It is considered that the schemes for loyalty—such as employee's stock ownership system, employee house ownership plan, employee deposit—are actively carried in elect.equip. and machinery because these industries involve labor-intensive assembly work. By contrast in chemicals and food man-power development for middle is emphasized because such work is few. Thus we have:

Hypothesis 9 In Japan's firms of today the schemes of man-power development for middles (seminar, abroad study) and the schemes for raising employee's loyalty, non-mfg. is more active than mfg. And in elect.equip. and machinery the latter is given weight because of labor-intensive work, while in chemicals and food, capital intensive industries, the latter.

2-2. Organization-functional factors such as confidence, support, communication etc.

To measure the grade of inter-task structure by applying SD method to inter-organization communication, a value 1.94 is obtained⁴⁾. On average the most numerous answer is "communication between project-team and line mostly via leaders of both, but sometimes directly between members themselves." Such lower structure is most seen for elect.equip. (2.27) and chemicals (2.11) with severe technical innovation, and high for bank (1.53). Hence it seems that in innovational fields more direct contact is performed between team and line members. From these fact and the above referred number of persons of project teams we have:

Hypothesis 10 In those fields with violent environmental changes due to innovation or changing pattern of consumption, dynamic form is advanced and the members of project-team increase, and direct team-line communication is more oftener, while in those like bank and insurance without such changes routine work is advanced, members of project-team are small, and communication with line is scarce.

As regards the post of initiative of information to lowers,⁵⁾ there exists little difference among industries, and since "mainly at middles" shows 3.27 for the whole industry this mode seems to form the general pattern. The degree of participation to norm-setting of operation and office work⁶⁾ has 2.21 for mfg. and 1.62 for non-mfg., being evidently more active in the former than in the latter. However, for the idea to motivate employee⁷⁾ more idea of self-actualization contemplated in non-mfg., being most strongly in finance and least

3) Q. 9-1.

4) Q. 5-3. about team-line communication.

5) Q. 8-2.

6) Q. 9-2.

7) Q. 9-3.

in machinery. As to the promotion of employee,⁸⁾ self-reporting is more emphasized in non-mfg. than in mfg. The reflection of opinion of operational worker⁹⁾ is seen more positively in mfg., especially elect.equip. and chemicals with strong innovation. The method of adjusting difference of opinion¹⁰⁾ among lines shows little differences by industries. The resistance to organization reform¹¹⁾ is almost the same for all industries, but slightly stronger in mfg. than in non-mfg. Thus we have:

Hypothesis 11 In Japan's firms of today, mfg. is more positive in the aspect of technique-oriented participation to management such as budgeting and non-setting, but non-mfg. is more active in humanity-oriented participation such as self-actualization for motivation of employees and self-reporting for promotion.

As to the attitude to the superior and the equal¹²⁾ no notable differences are seen among industries. One minor point is the better state in food. It is interesting that the attitude to the superior is slightly better than that to the equal in bank, contrary to other industries, which seems to tell stronger conservatism and vertical-society mentality remaining in this industry.

For the whole industry lower-school graduates show higher morale than college graduates;¹³⁾ excepting elect.equip. To divide mfg. and non-mfg., morale is obviously higher in the latter regarding both graduate groups.

2-3. Remaining rate, productivity and morale (Result Varis. I) (by industries)

To observe productivity-I (quantity of output) and productivity-II (quality)¹⁴⁾ for the whole industry, speaking generally the latter seems to be better fulfilled than the former. This state is particularly notable for elect.equip. and machinery, i.e., industries of assembly and machine work, and reverse in bank alone. This seems to have derived from the loose money market position at the time of this survey which drove banks to fear about their service competition compared with other firms.

The remaining rate is measured by the turn over rate of lower-school graduates,¹⁵⁾ which shows about 10% for the whole industry. (Figures in the table represent marks 1, 2, 3, and 4 given respectively to answers d+e, c, b, and a to Q.10). By industries, high remaining rate is seen for chemicals and food, and low in machinery and elect.equip. Thus we have:

Hypothesis 12 In Japan's firms of today morale is higher in non-mfg. than in mfg. This seems to depend on humanity-oriented managerial systems.

So long as viewed as business result composed of sales growth and profit

8) Q. 9-6.

9) Q. 8-3.

10) Q. 8-4.

11) Q. 8-5.

12) Q. 9-4, 9-5.

13) Q. 9-7, 9-8.

14) Q. 9-9, 9-10.

15) Q. 10.

rates, mfg. is superior to non-mfg., notably elect.equip. To observe the rate of sales growth per year dividing into mfg. and non-mfg., the latter is higher by about 40%. No great differences by scales exist, and the general view that smaller firms have higher rates is not recognized. The highest rate is with bank and the lowest with food. The profit rate for the whole industry on average is 6.4%; 7.2% for mfg. and 4.8% for non-mfg., with the former having better capital efficiency. The highest is 9.1% of elect.equip. and the lowest is 3.6% of food. As regards the sales per capita, since bank shows an extraordinarily high figure, figures for the whole industry, mfg. and non-mfg. are rather meaningless. By industries per-capita sales is lowest for elect.equip. and machinery, i.e., assembly and labor-intensive industries, showing one-third and one-half of food.

2-4. Simple computation of quantitative organization factors (by scales)

Next let's see the average values of quantitative factors by scales. As a general trend the administrative cost per capita increases as the scale expands, but by our survey it rises for firms of below-3,500 employees but slightly declines for those of above-3,500. The span-of-control, measured as employees per division-section-chief, clearly expands in bigger firms. The number of per-chief employees for above-3,500 firms is double that of below-800 firms. Average wages is generally higher in bigger firms, but in this survey 1,800-3,500 firms have larger figures than above-3,500.

The authority of executive, assuming 100 for president, shows small-step rises from 68.2 to 70.3 as the scale becomes bigger. This conforms with the fact that in bigger scales decision-making of president within top tends to be more grouped one. In the authority of division and section chiefs no distinctions by scales are seen. The preference of dynamic form and that of routine work are obviously intensified as the scale rises. Supposedly this is because in bigger firms standardized and routine work increases for higher efficiency, but on another hand dynamic form is fostered to prevent stiffening being born. Thus we have:

Hypothesis 13 In Japan's firms of today, as the business scale expands decision-making of top moves toward grouped one and the span-of-control of middles expands. And routine work is promoted to raise efficiency but at the same time dynamic form is pursued to prevent stiffening.

Project structure such as project-team or task force and their members naturally increase in bigger scales, but the ratio of these members to total employees declines (0.025→0.011); in other words, the weight of such organizations decreases. This conforms with their imperfect functioning, as will be mentioned later. The inter-organization communication, measured by the extent of communication between project-team member and line member, tends to rise with expanding scale, but such rises are limited only to firms up to 1,800-3,500 employees; it rather falls for above-3,500 firms. This means that up to

a certain scale direct communication by lower-rank members of team and line is actively advanced as a countermeasure against bureaucratic inefficiency of vertical organization, but beyond this scale such an effort becomes difficult and direct communication decreases. Thus we have:

Hypothesis 14 In Japan the ratio of members of project structure to total employees declines from 2.5% to 1.1% as the firm scale grows from below-800 persons to above-3,500 persons. And direct communication between team member and line member increases in firms up to a certain scale in order to overcome inefficiency accompanying bureaucratism of vertical organization, but in still-bigger firms it decreases due to high grade of bureaucratism.

The number of foreign countries where a firm invests in increases naturally with expanding scales. And increases are seen again in the equity capital ratio as well as the ratio of native executives and middles so long as the table shows. The equity capital ratio in the subsidiaries rises more appreciably for developed countries (6→41%) than for developing countries (10→27%) as the scale grows. This is because overseas subsidiaries in developed countries are mostly for selling, and firms holding them include many trading companies, financial organs and giant makers with plentiful money resources. The native executives and middles become numerous because more managers for native workers in bigger firms are required. It is noteworthy that Japan's big firms (above-3,500) are employing natives for 17% of the executive and 23% of the middles because they have many production subsidiaries in developing countries. Thus we have:

Hypothesis 15 In Japan's firms of today as the scale expands number of their overseas subsidiaries also grows, and the equity capital ratio for them rises. And native executive and middles increase their ratios, causing relative decline of managerial power of parents.

The number of man-power development systems for middle increases with expansion of scale. The number in big above-3,500 firms (5.14) is double that of below-800 firms (2.62). But the motivation systems are not so much proportional to scale; the difference is small between big firms (7.11) and small (4.72). This may be because in big firms such schemes have been born naturally through the process of growth, while small firms have actively fostered them to raise remaining rate of employees.

Among Intervening Variables, the initiative of information, promotion of employee, resistance to reform and attitude to the superior take a direction to value-increase, namely System 4 of Likert, with expansion of scale, but other variables do not. Nevertheless there is seen no opposite direction, Likert's System I. Possibly this is because bigger firms positively take behavior-scientific methods of management and these are functioning fruitfully. Thus we have:

Hypothesis 16 In Japan's firms, functions work toward Likert's System 4, that is, confidence and trust, communication and supportive behavior as the scale grows.

The morale of college graduates, among Result Varis. I, evidently rises with expanding scales. As for lower-school graduates there is no such clear proportionality. This may be because college graduates mostly presume lifetime employment in big and stable firms and hence show high morale, while lower-school graduates, with less consciousness of lifetime service, are liable to low morale even in big firms due to joy-less work or unpleasant relations with fellows. The productivity I (quantity) and II (quality) obviously have larger values in bigger firms. This reflect superiority of production techniques and of product control and quality maintenance. The remaining rate of lower-school graduates has little relation with scales. Small firms of below-800 employees show rather higher remaining rate than big above-3,500 firms, though only slightly.

Hypothesis 17 In Japan firms increase stability as scales become bigger, and accordingly the morale of college graduates, who presume lifetime employment, rises. This tendency is not general among lower-school graduates who do not. And as the scale grows bigger techniques of production and product control become more excellent and productivity rises. The remaining rate of lower-school graduates has no relation with scales.

3. *Some Hypotheses Drawn from Simple Correlation of Quantitative Organization Factors*

We took quantifiable items of inquiry as quantitative organization-variables and measured correlation among these factors or variables (See Table 10). Into this table we entered items concerning with top-management as part of organization structure side by side with variables of structure described in the preceding sections. As is shown in Figure 1, top-management factors represent more basic factors and affect other ones. Variables No. 1 to 31 are Cause Variables, of which No. 1 to 10 relate to top and No. 11 to 31 concern with organization structure. These Cause Variables refer to the structure or system of organizations. Variables No. 32 to 42 are Intervening Variables, to exhibit how organizations are actually functioning. Nos. 43 to 47 are Result Variables I which are more directly affected by organization factors. No. 48 to 51 represent Result Variables II which imply indicators relevant to performances of firm and indirectly affected by organization factors. Thus, for explanation, we divide variables into Cause, Intervening, Result I and II, but this distinction cannot be so definite as a matter of fact. For even if an organization is conceptually divisible into structure, function and result, essentially these constitute an entirety.

From this matrix of simple correlation let's find out the relations among variables. Since the samples count as many as 260 and refer to organization factors which are difficult to quantity,¹⁶⁾ naturally the coefficients are low. So

16) See the footnote of Table 10.

we shall advance our discussion placing weight on those with a coefficient "20% and over" and are not "superficial" correlation. Analysis shall reversely begin with variable No. 51, the last one.

3-1. Factors correlative to sales growth rate, profit rate and business result

Among Cause Varis. those correlate to (51) business result at "20% and over" are only (6) average age of executives (minus correlation) and (46) productivity II (quality) of Result Varis I. Business result here means a composite of the rate of sales growth and the rate of profit of capital (total liabilities and net worth). It is shown that young and able top is most important to firms in a wide scope. Varis. (30) man-power development system and (31) loyalty-raising scheme, which have hitherto been regarded as essential, have little correlation to business result. Other variables conceived important such as (17) dynamic-form forward, (18) routine-work forward, (20) ratio of project structure persons to total employees and (33) inter-organization communication are negatively correlative to business result. These results suggest that the factors in the so-called organization theory do not affect to business result directly or in the short-run.

No variables show "20% and over" correlation either to (49) sales growth ratio or to (50) profit ratio, excepting (11) administrative cost per employee which is correlative to sales growth ratio. This is because in rapid-growth firms there arise sharp increases in sales cost, especially cost for dealer helps, pre-minums, education and training expenses for salesmen, and advertisement expenses.

Almost all other variables correlate to sales growth ratio or profit ratio at under 10%. Among Cause Varis. and Intervening Varis. totaling 42, 26 varis. show negative correlation to sales growth ratio and 23 show negative to profit ratio. Since in the quantification of these Cause and Intervening Varis we gave larger marks to the Likert's System 4 (self-actualization, support, confidence and trust etc.) than to the System 1, such negative correlations of more than a half of them prove that the System 4 is not effective to raise sales growth and profit at least in the short-run.

Variables correlating to (48) per-capita sales at "20% and over" are (8) top's appraisal on research work and (11) per-capita administrative expense. The latter seems reasonable in respect of the fact that selling expenses move in proportion to sales. The former has a high rate of negative correlation, -0.467 . That top's appraisal on research work depends on relations to business result, not on research itself, reveals that in research field market-oriented idea is more dominant than technologie-oriented. So these two variables will highly correlate. Thus we have:

Hypothesis 18 In Japan's firms in an overall view, what contribute to business result are young ages of top and product quality. Other organization factors have little contribution. To look business result by sales growth rate,

the so-called Likert's System 4 direction is ineffective at least in the short-run.

3-2. Factors correlative to remaining rate, productivity and morale (Result Varis. I)

Variables correlating to (47) remaining rate at 20% and over are (12) average wages and (11) per-capita administrative expense. Remaining rate shows little correlation to morale. Also other organization variables are low. This tells that remaining rate relates with pecuniary matters such as wages and welfare, but does not with behavior-scientific organizational measures such as employee's self-actualization. This is proved also by the negative correlation between remaining rate and (36) idea to motivate employee which esteems direction to self-actualization. And this accords with our past several surveys on morale on some companies.

Variables (45) productivity I and (46) productivity II have high correlation to (43) morale of college graduates and (44) morale of lower-school graduates which belong to the same Result Varis. I. They show no high correlation, however, to Result Varis. II, except productivity II at 0.240. It is noteworthy that productivity I holds positive correlation to 29 among all 32 variables constituting Cause Varis. II and Intervening Varis., and similarly productivity II to all of these 32 variables. This means that measures for self-actualization contribute to improvement of productivity.

As to the morale of college and lower-school graduates, positive correlation lies with almost all of Cause Varis. II and Intervening Varis. So it is seen that these organizational measures are useful for raising of morale alike with productivity. No variables of top factors are correlative to morale of lower-school graduates at 20% and over, but among general structural factors (11) per-capita admini. expense and (32) development of man-power do correlate. Thus positive idea on welfare and development of man-power helps to promote morale of lower-school graduates. High correlation to college-graduate morale is found for (2) top's attitude to environmental changes¹⁷⁾ among top factors and for (11) per-capita cost, (18) routine work, (19) project structure persons, (30) development of man-power and (31) scheme for loyalty, among structural factors; (32) accuracy of information to top¹⁸⁾ and (41) attitude to the superior, among functional factors. Thus as regards morale of college graduates, top's attitude and measures for self-actualization work stronger effects, and hence Likert's organizational measures are suitable. However, morale has no high correlation to financial ones of Result Varis. II; rather negative to profit. Thus we have:

Hypothesis 19 In Japan's firms the remaining rate of lower-school graduates can be increased by economic measures such as wages and welfare, but are

17) Q. 1-6.

18) Q. 2-8.

not affected by measures for self-actualization. These measures, however, contribute to improvement of productivity and morale. Such effects are stronger on college graduates than on lower-school graduates. Top's attitude is also effective. Yet the level-up of moral in itself hardly relates to business result.

3-3. Factors correlative to organization-functional factors such as confidence, support and communication (Intervening Varis.)

Among Intervening Varis. (41) attitude to the superior and (42) attitude to the equal have no high correlation to other variables. Especially the latter, attitude to the equal, does not correlate to any other variables at 20% and over. It has only 10% correlation to remaining rate, and even negative to all Result Varis. II. Probably this tells that consciousness of severe competition, amounting even to rival sense to fellow men, is necessary for today's enterprises to raise good performances. Attitude to the superior correlates to (10) top's attitude to union¹⁹⁾ and (43) college-graduate morale at 20% and over. This suggests that where top places deep confidence on union, similarly employee's faith on the superior is maintained, and such faith allows smooth reform of organization by top.

Vari. (10) resistance to organization reform holds high correlation of 20% and over to (2) top's attitude to environmental changes (Cause Vari.), (34) initiative of information, (36) idea to motivate employee, (38) reflection of field's opinion, (39) opinion coordination and (41) attitude to the superior (Intervening Varis.). This tells that top must hold flexible attitudes to meet environmental changes, and keep strong faith of employees by satisfying their wish of self-actualization and actively hearing their opinions. And the high correlation between this variable and many other Intervening Varis. proves that "resistance to reform" provides a square measure of functioning of organization. This is testified by its higher correlation to business result (0.167) as compared with other Intervening Variables.

Variables (38) reflection of field's opinion and (39) opinion coordination correlate to (34) initiative of information, (35) participation to norm setting and (40) resistance to reform at 20% and over. Since these two variable (38) and (39) represent a function of employee's self-actualization, they naturally correlate to other variables with the same character.

Variable (37) problem of promotion of employee—whether weight on superior's judgement or on self-assessment—has no 20% and over correlation to any other variable. This is rather an unexpected result because generally promotion is supposed to relate largely to morale and remaining rate. This may be because one firm favors superior's judgment while another takes self-assessment more important for the promotion, according to different circumstances.

19) Q. 2-9.

Indeed to observe this problem by industries, for bank it correlates negatively to remaining rate at a high rate (-0.396) and little to morale of both college and lower-school graduates (0.020 and 0.097), while in food shows high value to correlation to remaining rate (0.323) and morale (0.219 and 0.175). Possibly these positive and negative positions offset each other, resulting in little correlation for the whole industry.

Variable (36) idea to motivate employee, which corresponds to Maslow's Five-stage wish theory and Herzberg's hygiene theory, correlates at 20% and over only to (31) loyalty raising and (40) resistance to reform, at a low rate to morale, and negatively to remaining rate, sales growth and profit. Accordingly we could say the idea to emphasize self-actualization wishes rather than economic ones does not contribute to business result although it may be helpful to smooth organization reform.

Variable (35) participation to norm setting is positively correlative to (8) appraisal on research, (38) reflection of field's opinion and (39) opinion co-ordination, and negatively to (11) admini. expense. per-capita and (48) per-capita sales. Since the idea of appraisal by self-assessment agrees broadly with the idea of employee's active participation, such positive correlation is natural. Variable (34) initiative of information relates positively to (30) development system of man-power, (38) reflection of field's opinion, (40) resistance to reform and (43) college-graduate morale, which may be for the same reason with the case of employee's participation.

Variable (32) accuracy of information to top correlates at 20% and over to (2) attitude to environmental changes, (10) attitude to union, (12) employees per chief, (18) routine-work forward²⁰⁾ and (43) college-graduate morale. This reveals that information to top is accurate and decision-making is speedy where top has deep confidence on employees, span-of-control is wide, and hence morale is high. Thus:

Hypothesis 20 In Japan today evaluation of flexibility of firms should be made mainly referring to the degree of resistance to organization reform by top. Such resistance is diminished by the idea to satisfy employee's wish for self-actualization; more concretely fostering of development system of man-power and positive hearing of lower's opinions in budgeting or norm setting, in short, positiveness of management.

Hypothesis 21 For the aim of accurate transmission of information to top, it is necessary that top holds faithful relation to employees, to enlarge span-of-control and lessen strata, and further more to promote routine work.

20) This was quantified by Q. 4-2.

3-4. Factors correlative to organization-structural factors such as span-of-control, project structure, development system of man-power, etc. (Cause Varis. II)

Variables (30) development system of man-power and (31) loyalty-raising scheme correlate at 20% and over to such Cause Varis. as (17) dynamic form (18) routine work, (19) project structure persons and (21) number of project structure. This is supposedly because these schemes increase as the scale becomes bigger. That is to say, these are carried to prevent growth of bureaucratism, alienation and lowering of efficiency accompanying scale expansion. Their contribution, however, is confined to Result Varis. I, not financial items of Result Varis. II. That is, the development system of man-power is correlative to morale at 20% and over and to productivity at more than 15%, but only at under 15% to sales growth, profit and business result. Similarly the loyalty-raising scheme has 20% and over correlation to college-graduate morale and at 15% and over to productivity; no high correlation to other Result Varis., and negative to remaining rate and profit.

Variables (22) number of "invested" countries, (developed), (23) ditto (developing), (24) equity capital ratio (developed) (25) ditto (developing), (26) ratio of native executives (developed), (27) ditto (developing), (28) ratio of native middles (developed) and (29) ditto (developing) are variables concerning with organization of overseas subsidiaries, and mutually correlate among themselves. This tells that firms carrying active business in foreign countries are endeavoring to increase equity capital ratio and introduce native executives and middles. These variables about overseas subsidiaries show no 20% and over correlation to other variables, except to average wages. And the high correlation to business result is because firms with better business result can increase overseas investment with rich resources.

Variables (19) number of project structure persons, (21) number of project teams and (33) inter-organization communication are Cause or Intervening Variables concerning with project team, and hence naturally correlate among themselves. Since persons of project structure and number of project teams relate to firm scale, they correlate to the numbers of development schemes of man-power and motivation schemes relating to scale. These Cause and Intervening Variables relating to project team, however, show little correlation to Result Varis. I and fourteen of sixteen such variables are negative to Result Varis. II. This suggests that in Japan project teams are not functioning well generally.

Since variables (17) dynamic-form forward and (18) routine-work forward represent two directions toward better efficiency in expanding scales, these naturally correlate to development scheme and loyalty-raising scheme. For the same reason they hold high correlation to Cause Variables relevant to project team and overseas subsidiary. However, none of Intervening Variables, excepting inter-organization communication, have 20% and over cor-

relation. And they correlate to morale among Result Varis. I appreciably, but do little to Result Varis. II, or even negatively. This may suggest that for big firms efforts of organization reform do not immediately contribute to achievement.

Variables (14) authority of executive, (15) that of division-chief and (16) that of section-chief hold high correlation mutually. This shows that authority delegation to middles is advanced where delegation to executives from chief executive is large. This authority delegation shows 20% and over correlation to none of other variables. To observe its relation to morale, it affects more strongly on college graduates than lower-school graduates. It correlates positively to profit but negatively to sales growth. It is seen that for the growth of firms it is better to limit authority delegation and to maintain centralization, while for the profitability authority delegation and decentralization are preferable.

Variable (13) average wages has 20% and over correlation to (6) average age of executives, (11) admini. expense per-capita, (22) number of "invested" foreign countries (developed), (23) ditto (developing) and (47) remaining rate. Firms of high average age of executive are generally of long history, and hence employees have higher ages and wages. It is interesting to note that average wages is negatively correlative to the self-actualization functions such as delegation of authority, initiative of information, participation to norm setting, reflection of field's opinion and resistance to reform. This may derive from the fact that generally firms placing weight on wages in labor management ignore self-actualization wishes, and vice versa.

Variable (12) per-chief employees, to measure span-of-control, has 20% and over correlation to (32) accurate information to top, (31) loyalty scheme and (32) sales growth. This may be because, with larger span, there will be so much less strata for firms of the same scale, and accordingly each person will become more responsible for transfer and accuracy of information. And again in bigger-span firms measures for loyalty are employed as an indirect method of labor management. There is positive correlation between span-of-control and college graduate morale, and negative one between span and lower-school-graduate morale. Thus larger span, and hence a wider scope of decision-making by employee, affects favorably to college graduates but unfavorably to lower-school graduates.

Variables correlative to (11) admini. expense per-capita at 20% and over are merely morale and remaining rate described above.

Hypothesis 22 In Japan's firms active enforcement of measures to promote dynamic system for flexibility, measures to raise efficiency by routine work, development schemes for middles or devices to raise loyalty tend to improve morale and productivity. However, the effects of perfection of these organizations do not extend into financial performances such as the rates of sales growth and profit.

Hypothesis 23 It seems that high-wage firms are not active in labor management based on employee's self-actualization. Contrastively firms earnest in such system tend to show lower wage rates.

Hypothesis 24 As a general trend larger span-of-control lessens strata within firm, makes information to top more accurate, and raises morale because it gives some freedom to decision-making of lowers.

3-5. Factors correlative to top-management factors (Cause Varis. I)

Among the variables relating to top management (Cause Varis. I) (1) group decision-making in top magt. has no 20% and over correlation to any other variables, and even negatively correlates to sales growth, profit and business result (Result Varis. II), productivity II, and remaining rate (Result Varis. I). This suggests that top's collective-administrative attitude does not contribute to firm's performances. This tells that in modern business it is a fruitless idea to make executives participate in decision-making and make them responsible in later stages. This conforms with the result of our former survey on presidents.²¹⁾ On the other hand (2) promptitude to deal with environmental changes holds 20% and over correlation to (7) top's appraisal on division performance,²²⁾ (32) accurate information to top, (40) resistance to reform, (43) college-graduate morale and (46) productivity II (quality). And it is positive to all Result Varis. I, sales growth, profit and business result (Result Varis. II). Thus speediness of top's decision is contributory to performance. Thus we have:

Hypothesis 25 In Japan's firms, as regards top's decision-making on environmental changes, a mode of strong push of president's view and speedy action is more favorable than that of cautious decision referring the views of many executives, in respect of employee's morale and financial performances as well.

Variables (3) ratio of hired executives, (4) ratio of new executives, and average age of executives are useful to examine the effects the physical constitution of executives exerts on other organization variables. And interesting fact is that ratio of hired executives and that of new executives negatively correlate to morale, productivity, remaining rate (all of Result Varis. I.), coordination of opinion, resistance to reform, attitude to the superior (Intervening Varis.) and furthermore to profit rate, but positively to final business result. This may show that, as Penrose has said, new executives are slow in becoming accustomed to existing ways of firm, give feelings of discrepancy to other people and work to decrease efficiency, but, to view from a wider scope, bring about fresh force and contribute to growth. Executive's service length and age tend to positively correlate to morale, but the latter, age, is negative to business result at 20% and over. Thus aged executives and their long service

21) M. Wadaki, R. Shimizu & the others; "Decision-Making by Top-Management and Business Performance in Firms of Japan", in Keio Business Review, No. 11 1972.

22) Q. 2-5.

produce friendship, stability and higher efficiency, but if too aged, stiffening and worse business result will be born. Thus we have:

Hypothesis 26 In Japan's firms an increase of new executives among top causes decline in morale or attitude to the superior due to bewilderment among employees, but does not affect so much on final performances. On the other hand where the number of new executives are small and executive's service length is long, morale and attitude to the superior are better, but if most of the executives are old final achievement tends to fall.

Variables (7) top's appraisal on division performance, (7) top's appraisal on research work and (9) top's appraisal on project team²³⁾ represent variables to consider the effects of top's attitude on other organization variables. Among these, appraisal on division is positively correlative to all Result Varis. I and most of Intervening Varis. This tells that appraisal on division performance is better performed from a long-run viewpoint, taking account of harmonization with other divisions than from a viewpoint taking account of short-term financial result. Appraisal on research work has 20% and over correlation to (20) project structure persons/total employees. Appraisal on project team has high correlation of 30% and over to (17) dynamic-form forward and (20) ratio of project team persons, and at a rate as high as 70% and over to (33) inter-organization communication. These results tell that, with top's appraisal on project-team members rising higher, project structure increases to bring about dynamic form as a whole, members strengthen their controlling authority, and direct communication with line members is advanced. These factors correlate positively to Result Varis. I but do not contribute to achievement. Thus we have:

Hypothesis 27 In Japan's firms, if expansion of project structure such as project team and their efficient functioning are wanted, it may do well for top to give higher appraisal on team members than on line members, and appreciate research work as the merits in the research area itself. But this is not always contributory to performances of firm.

Lastly variable (10) top's attitude to labor union is correlative at 20% and over to (32) man-power development system, (31) loyalty-raising scheme and (41) employee's attitude to the superior. This shows that in bigger firms development system for middles is more advanced and confidence between union and top is deepened by such means as system of employee's stock-ownership or owner housing backed up by the firm. In fact the value of varis. (10) by scales show: 2.85 for under-800 employee firms, 2.99 for 800-1,800, 3.24 for 1,800-3,500 and 3.40 for 3,500 and over. Evidently confidence and trust becomes higher as the scale grows. Thus we have:

Hypothesis 28 In Japan's firms bigger scales tend to increase confidence between labor and management.

23) Q. 2-7.

3-6. Hypotheses drawn from simple correlation (by scales)

It has been seen from the above analysis that most organization factors exert various effects on variables up to Result Varis. I (morale, productivity, remaining rate) but do not so much on Result Varis. II (sales growth, profit, business result). So here we shall examine the effects of top-management, structural and functional variables on Result Varis. I by the simple correlation matrix regarding two firm groups, under-800 and, 3,500 and over employees. Table 11 presents the coefficients.

First to observe top-management factors. Top's group decision-making, which shows the degree of collective decision-making, correlates negatively to all items of morale and productivity in bigger firms, but positively to these in smaller firms. This tells that in the bigger group collective decision on executives' opinions is not so favorable but that by president's strong will is preferable, while in the smaller group collective decision is desirable. It is conceivable that in smaller firms, with less bureaucraticism of organization, president's attitude of respecting the other executives' views is reflected in the attitude of employees bearing higher morale and productivity, but in bigger firms such reflection is not effected, and strong leadership alone drives organization resulting in higher morale and productivity.

Ratio of new executives and age of executives show no distinctions by scales regarding these result variables. Top's attitude to union affects morale, productivity and remaining rate more greatly in smaller firms (all 20% and over) than in bigger.

Span-of-control correlates negatively almost all of morale, productivity and remaining rate, notably to morale of lower-school graduates (-0.283), productivity I (-0.336) and remaining rate (-0.260) in smaller firms, and it is negative to morale of college graduates (-0.046) but positive to other result variables in bigger firms. This shows that expansion of span affects favorably in bigger firms but unfavorably in smaller firms.

Average wages has positive correlation to all items of Result Varis. I in smaller firms. In bigger firms it is negative to two of the five items of Result Varis. I. This is supposedly because the effects of wages on morale, etc. are stronger in smaller firms.

Dynamic-form forward positively correlates to all of Result Varis. I in smaller firms, but negatively to two items in the bigger scale. Reversely routine-work forward positively correlates to all Result Varis. I in bigger firms, and that at appreciably high values, but negatively to four items in smaller. Thus it is seen that in big firms computerization, clear budgeting process or publication of of norm-setting can bring about rises in morale, productivity and remaining rate, but abolition of division-section or reinforcement of project structure decrease these variables, and vice versa in smaller firms. This conforms with the effective functioning of project structure in small firms, but rather ineffective in big firms, as will be observed later. This seems further

Table 11. Simple Correlation Coefficients (by Scales)

	Big Firms (3, 500 and over)			Small Firms (Under 800)		
	Morale of Col. Graduate	Morale of Lower Graduate	Product-Product-Remaining ivity I ivity II Rate	Morale of Col. Graduate	Morale of Lower Graduate	Product-Product-Remaining ivity I ivity II Rate
Top's group decision-making	-0.179	-0.065	-0.180	-0.073	0.009	0.009
Ratio of new executives	-0.158	0.039	0.021	-0.121	-0.243	-0.243
Executives' average age	0.060	-0.242	-0.144	0.017	0.224	0.224
Top's attitude to union	0.152	0.099	-0.060	0.086	-0.212	-0.212
Per-chief employees	-0.046	0.056	0.125	0.030	0.058	0.058
Average wages	0.027	-0.117	0.063	-0.106	0.200	0.200
Dynamic-form toward	0.220	0.052	-0.151	0.025	-0.130	-0.130
Routine-work forward	0.358	0.177	0.210	0.180	0.150	0.150
Development system of man-power	0.124	0.073	0.064	-0.104	0.220	0.220
Loyalty-raising scheme	0.022	-0.061	0.201	0.153	0.012	0.012
Idea to motivate employee	0.084	0.176	0.196	-0.018	-0.005	-0.005
Promotion of employee	0.064	0.064	0.069	0.052	0.165	0.165
Reflection of fields opinion	0.043	0.034	0.126	0.142	0.088	0.088
Opinion coordination	0.227	0.092	0.165	0.006	0.299	0.299
Resistance to reform	0.234	0.203	0.521	0.123	0.302	0.302
Attitude to the superior	0.060	0.049	0.161	0.184	0.023	0.023
Attitude to the equal	-0.021	-0.205	0.111	-0.034	0.097	0.097

Table 12. Effects of Organization Factors on Morale, Productivity and Fixity

	Big Firms	Small Firms
Top's group decision-making	⊖	⊕
Top's strong confidence to union		⊕
Making project structure complete	⊖	⊕
Average wages up		⊕
Expansion of span-of-control	⊕	⊖
Expansion of routine work	⊕	⊖

to prove that in big firms management is centered on stable products and hence "productivity" is emphasized, while in small firms new products bring about weight on "flexibility" and "adaptability."

The effects of development of man-power and motivation systems on morale, etc. show no remarkable differences by scales. Thus we have:

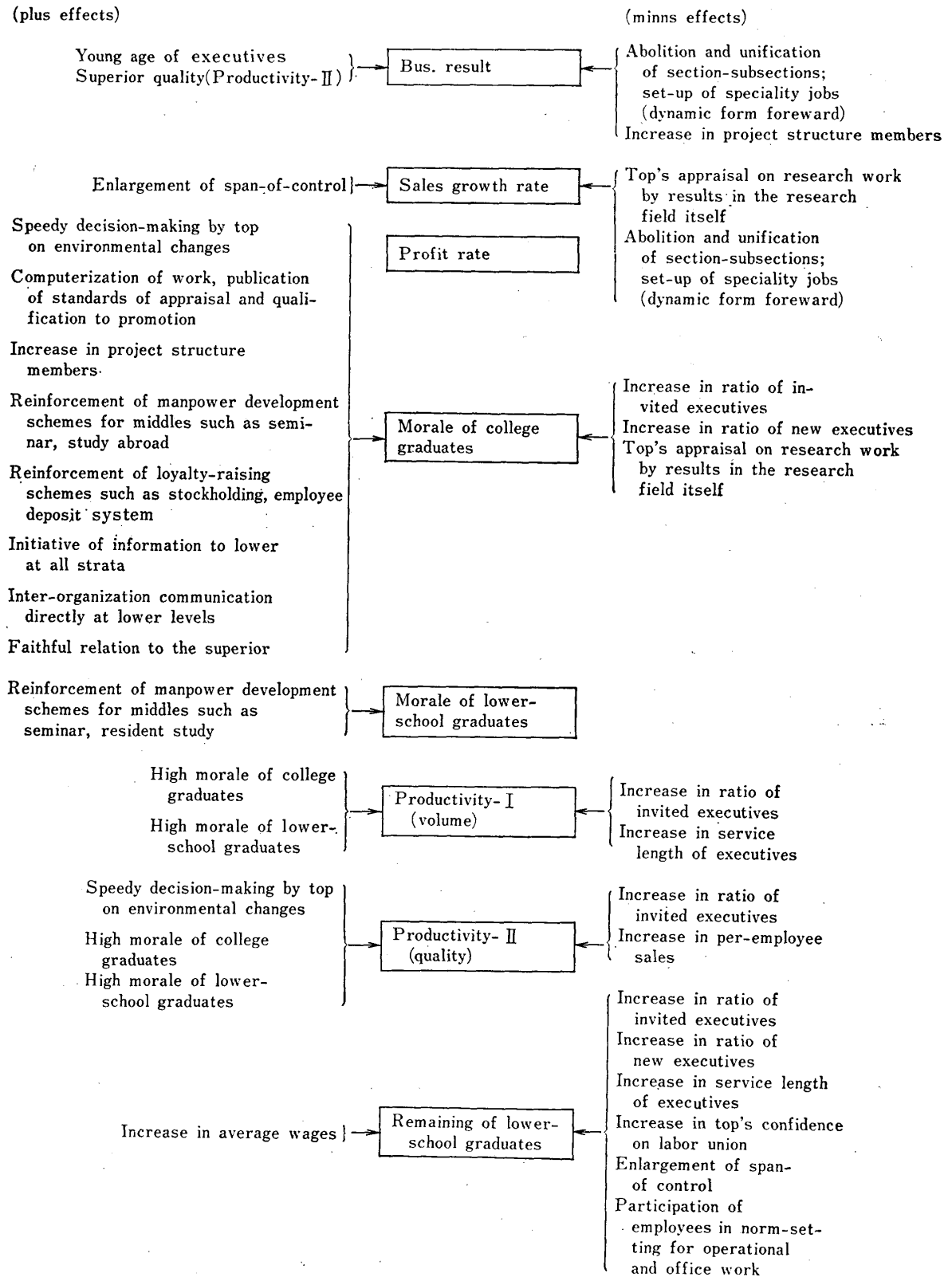
Hypothesis 29 In Japan, comparing bigger and smaller firms, in the latter top's group decision-making, confidence to union, dynamic-form forward and average wages rise contribute much to morale, productivity and remaining rate, but expansion of span-of-control, and promotion of routine work invite lowering of these results. Reversely in bigger firms these measures work to raise morale, etc., but top's group decision-making and dynamic-form lower them. Deep confidence to union and average wages product less effects in bigger firms than in smaller firms.

Table 12 briefly exhibits these hypothesis. And these hypothesis broadly conform with Motto's theory.²⁴⁾ That is, where task structure is of low grade (small firms) humanity of leader contributes to raise "productivity" but clear definition of budgeting process and the like do not. Reversely in high structure humanity is ineffective but clearer budgeting process is effective.

Next let's consider on the functional variables. No significant differences by scales are recognized about the relations of idea to motivate employee and promotion of employee to morale, productivity and remaining rate. But reflection of opinion on budgeting and opinion cordination—whether top-down or bottom-up—positively correlate to these three variables in bigger firms, but negatively to two of five Result Varis. Is in smaller firms. Resistance to reform, also, positively correlates to these three variables in bigger firms, but negatively to four of five Result Varis. Is in smaller. This exhibits that in bigger firms, where field's opinions are well reflected and resistance to reform is reduced, morale and etc. are high, while in smaller firms reflection of field's opinions is effectless.

The effects of attitude to the superior as well as to the equal on morale and etc. are indifferent to scales; the former is positive to all the items while the latter is negative to some of them. This tells that good attitudes to the superior produce favorable results but those to the equal do not.

24) Paul E. Motto; "The Characteristics of Effective Organizations", Harper & Row, New York, 1972.

Figure 2. Effects of Organization Factors on Result Variables

3-7. Summary of the effects of organization factors on result variables

Among the various results drawn from the simple correlation matrix of all samples considered in this Section 3 can be summarized as Figure 2. the plus-effect factors picked up here refer to what have 20% and over correlation to Result Varis. I and II and are not "superficial," and the minus-effect factors are what correlate negatively at 10% and over to both Result Varis. and are not "superficial."

A glance at this figure teaches us that the factors exerting plus effects on financial results (sales growth, profit and composite business result) comprise only three—executives' young average age, superior quality of product and wider span-of-control. The effects of other factors relate only to non-financial results—morale, productivity and remaining rate. That is to say, as to sales growth ratio there are only two minus-effect and one plus-effect factors. And as to profit ratio organization factors hardly have either plus or minus effects.

Dynamic-form forward, supportive relation, self-actualization and communication, representing the so-called System 4 of Likert, have plus effects on college-graduate morale, testifying traditional theories. But those factors don't have such effects on lower-graduate morale and the traditional theories can not be testified. Morale raising affects productivity as has been supposed. On remaining rate, only average wages show plus effects. And, what is rather astonishing, confidence, supportive relation and self-actualization have minus effects on morale.

4. *Top-Management Factors*

The major function of top-management lies in non-recurrent strategic decision-making. Therefore as to the organizational efficiency of top-management usual concept of productivity is unapplicable. It is to be measured on the bases of proper grasp of problems, speedy decision-making and active leadership which should provide axes in the process of decision. However, in the supreme organ to make decisions there are influences of more basic factors such as the personal character of president, his past career or relations with the other executives, side by side with firm's managerial goals or policies. So the efficiency in decision-making by top-management shall be studied in the below.

4-1. Career and speciality field of president

It has been seen by our former research that the career or the original status of president affects his democratic thinking in decision-making very much. That is to say, founder-presidents are most democratic (at least in appearance) in the relation with executives, and successor-presidents are of most one-man mode. So origins seem to relate to leadership within group decision-making, and speciality fields of president exhibit particularities in the grasp and treatment

of issues. So let's observe these two points.

The origins and speciality fields of presidents are shown in Table 13 by industries. An interesting fact is that, either as the whole industry or dividing into mfg. and non-mfg. and into six sections, firms of founder-president show the best bus. result. This is the same for observation by scales. It is generally said that founders are full of entrepreneur spirit, and it is seen how such spirit is essential for enterprises of this rapidly changing age. Actually, however, most numerous are presidents born from managers of firms for the whole industry, mfg. and non-mfg. as well as individual sections excepting elect. equip. Notably in non-mfg. (here trade & real estate and bank & insurance) there are many manager-born presidents (more than 50%), and the bus. result is lowest in firms with the manager-born presidents. It is however interesting to find that morale is the lowest in firms with founder-president and highest in those of manager born president.

To observe speciality fields of presidents by Table 13, for the whole industry those specialized in selling are most numerous; for mfg., engineering; for non-mfg. selling. To look the bus. results, as the whole industry engineering-specialized presidents show the best. By industries, no clear distinctions are seen. It is of interest that in non-mfg., firms with engineer president are best. It is also noteworthy that in elect. equip. food and trade the best bus. result is with firms of miscellaneous-field president.

Next let's see the career of presidents by scales. Table 14 firstly shows that the larger the scale, the more the manager-born presidents count. The bus. results are best in firms of founder-president, as mentioned above, regardless of scale. No distinctions are seen by growth patterns, but in the low-growth period (pattern-5) founder-presidents are overwhelmingly superior to others (more than double).

No significant features are observable in speciality fields by scales and by growth patterns. Thus we have:

Hypothesis 30 In Japan's firms, to observe dividing presidents into four types (founder, successor, manager-born and come from above), firms with founder-president, full of entrepreneur spirit, show the best achievement, especially in the low-growth period. Actually manager-born presidents are most numerous in all industries excepting elect.equip. They account for 40% in the whole industry and 70% in bank & insurance. And they tend to increase as the scale becomes bigger.

As regards speciality fields, for the whole industry selling-specialized presidents are most numerous, in mfg. engineering, and in non-mfg. selling. The performances are best in engineer-president firms for the whole industry as well as for mfg. and non-mfg. This makes us infer that Japan's firms of today have achieved growth majorly by technical innovation.

Table 13. Careers and Speciality Fields of Presidents (by industries)

Career	Whole Ind.		Mfg.		Non-Mfg.		Elect. Equip.		Machinery		Chemicals		Food		Trade		Bank	
	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%
a. Founder	16.54	4.16	17.06	4.37	15.56	4.02	30.36	4.35	13.51	4.82	3.64	4.30	22.73	4.00	26.67	3.88	4.44	4.85
b. Successor	19.62	3.24	20.59	3.29	17.78	3.17	14.29	3.87	27.03	2.94	21.82	3.59	22.73	2.32	31.11	3.16	4.44	3.20
c. Manager-born	42.31	2.88	36.47	3.01	55.33	2.69	28.57	3.72	29.73	2.83	52.73	2.70	27.27	2.95	35.56	2.84	71.11	2.80
d. Come from above	21.54	2.78	25.88	2.75	13.33	2.89	26.79	3.32	29.73	2.87	21.82	2.55	27.27	1.47	6.67	3.07	20.00	2.83
Speciality																		
Engineering	17.69	3.35	26.47	3.34	1.11	3.60	35.71	3.98	32.43	3.26	16.36	2.19	18.18	3.00	2.22	3.60	0.00	0.00
Production control	6.92	2.85	8.82	3.06	3.33	1.80	12.50	3.41	10.81	2.60	7.27	2.90	0.00	0.00	0.00	0.00	6.67	1.80
Selling	24.62	3.28	17.06	3.28	38.89	3.40	12.50	4.16	10.81	2.72	27.27	3.17	13.64	2.53	51.11	3.12	26.67	3.93
Financial affairs	20.00	3.14	21.76	3.27	16.67	2.77	16.07	3.92	29.73	3.55	25.45	2.87	13.64	2.17	13.33	2.80	20.00	2.76
Personnel affairs	10.38	2.67	9.41	3.01	12.22	2.24	7.14	3.32	2.70	4.50	9.09	2.64	27.27	2.85	4.44	2.80	20.00	2.11
Planning & research	7.31	3.04	5.88	3.38	10.00	2.67	8.93	2.58	2.70	3.60	7.27	4.32	0.00	0.00	13.33	2.77	6.67	2.47
Miscel.	13.08	3.16	10.59	3.03	17.78	3.30	7.14	5.02	10.81	2.15	7.27	2.75	27.27	2.48	15.56	3.64	20.00	3.03

Table 14. Careers of Presidents (by scales, by growth patterns)

Employees Career	Under 800		800-1,800		1,800-3,500		3,500 and over		Patt. 1		Patt. 2		Patt. 3		Patt. 4		Patt. 5	
	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%
a. Founder	21.31	3.75	22.86	4.51	10.61	4.53	11.11	4.34	25.49	4.45	28.57	4.85	5.88	2.75	8.93	2.84	5.00	4.30
b. Successor	29.51	2.76	22.86	3.39	18.18	3.62	7.94	3.66	14.71	4.11	17.86	4.86	23.53	2.31	25.00	3.14	22.50	1.93
c. Manager-born	24.59	3.03	34.29	2.60	56.06	2.92	53.97	2.94	41.18	3.22	35.71	3.71	41.18	2.41	48.21	2.76	42.50	2.08
d. Come from above	24.59	3.02	20.00	2.74	15.15	2.50	26.98	2.76	18.63	3.62	17.86	4.54	29.41	2.10	17.86	2.08	30.00	1.85

4-2. Top's grasp of environmental changes and countermeasures

Next we shall observe top's way of grasping changes in environments and countermeasures to meet them. Originally this survey comprised 14 categories of such changes (Q.1-4, a to n) and 25 categories of countermeasures (Q.1-5, a to y). But for this report we have consolidated them into 9 categories of changes and 8 categories of countermeasures because the largest-weight categories in the answers were very partial—none or only a few in some categories (See Tables 15 and 16). To show the categories on the Tables and the original categories in the inquiry (in brackets): manpower problems (c-deepening manpower shortage, b-labor union activities), public hazard and other community problems (d-relation with regional community, k-antipathy in counterpart countries against export and investment), increasing government's intervention (a-intensified government's intervention, e-reorganization of industry, monopolization, n-stability of conservative government), fluctuation of international money system (f-do), change of consumption structure (g-do), financial-structure (h-do), rapid technical innovation (i-do), sharpening product-development competition (j-do), moves of rival firms at home and abroad (m-do), active new-product development (a-investment in research, b-new-product development, c-abandonment of unprofitable products), development of man-power (f-intensification of merit system, g-development of man-power, i-labor-management conciliation), rationalization and labor-saving (k-do) reinforcement of owned capital (m-do), organizational strengthening (j-information control system, l-promotion of authority delegation, q-simplification of administrative system, r-set-up of project structure, s-reduction of employees, t-reexamination of top's function), positive market exploitation (d-export expansion, e-advertisement of firm, u-consolidation of domestic sales channel, v-consolidation of overseas sales channel, w-set-up of overseas production foothold), cooperation and merger to other firms (n-cooperation with other firms, p-appeal to government, x-merger to other firm), diversification of business (y-do).

Now to see the table for the whole industry, most numerous are firms attaching importance to public hazard and other community problems, being followed by those placing weight on moves of rival firms and sharpening product-development competition. To view from the aspect of bus. results, however, firms taking fluctuation of money system and sharpening product-development competition are better, and those taking community problems and financial structure are worse. Thus at the present stage consideration on communities has regrettably few effects on bus. result in terms of sales growth rate and profit rate. Of interest, firms placing emphasis on financial structure count as small as 2.7% of total, which agrees with our experience in a former interview survey that no presidents took up problems of funds.

As regards countermeasures, new-product development (36.92%) is overwhelmingly large, followed by rationalization (14.62%), organizational

strengthening (12.96%) and development of man-power (11.15%). Viewed from bus. result, new-product development shows the best (3.46), market exploitation the next better (3.27), and rationalization is not so good (2.73). This suggests that in the present business outer-oriented strategies such as new product and market exploitation are fruitful, while inner-oriented rationalization, which many firms are thinking of, is not so much.

In mfg. as a whole, firms attaching importance to product-development competition among environmental changes are most numerous (21.18%), and those taking active product development among countermeasures are the largest (52.49%). And firms taking these behavior have the best achievements (3.79 and 3.53). Thus presently in the grasp of and countermeasures to environments most mfg. firms are showing the same pattern of action focusing new products, and this is deriving reasonable results.

In non-mfg. firms placing weight on community problems are most numerous (27.78%) but they do not always show good performances. Organizational strengthening is most respected as a countermeasure, but its results are not always good. Firms with better achievement are those carrying active market exploitation. Thus for non-mfg. it is not conceivable that all the firms are talking effective behavior in the grasp of and countermeasures to environments.

By industries, for elect.equip. machinery and chemicals no single category of change gathers more than 33% of firms, but as regards countermeasures more than 50% center on new-product development. It is shown that in these industries the problems have many aspects, but new-product development is unescapable in order to meet the fluidity. To pick up elect.equip. and machinery alone, more than 70% of firms are gathering on new-product development and rationalization, and the former is larger in elect.equip. with vigorous innovation and the latter in machinery with less innovation. In food diversification of business is mentioned by very many firms (22.73%), which supposedly is due to the recent stagnation in this industry. That this stagnant industry is more active in diversification was shown also by a study of the Japan Productivity Center, in which the textile industry was most positive.

In non-mfg., more than 40% of firms find the problem in change in consumption structure in trade, and more than 40% in community problems in finance. But as regards countermeasures no single category gathers more than 30%. This shows that in these industries the same grasp of problem does not lead to a uniform strategy.

Lastly, community problems, especially public hazard now under severe discussion, is not regarded as most important even in chemicals and trade, the most-accused, but ranked as the second. In these industries moves of rival firms and consumption change are attached with the utmost importance. Community problems are not looked so grave in elect.equip., machinery and food—lower than 10% of firms. They are most respected in finance—more than 40%.

Table 15. Grasp of Environmental Changes and Countermeasures (by industries)

	Whole Ind.		Mfg.		Non-Mfg.		Elect. Equip.		Machinery		Chemicals		Food		Trade		Bank	
	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result
Manpower problems	10.00	3.23	10.59	3.06	8.89	3.62	10.71	3.12	10.81	2.85	10.91	2.98	9.09	3.50	11.11	3.66	6.67	3.57
Community problems	17.69	2.67	12.35	2.55	27.78	2.91	8.93	4.30	8.11	2.33	20.00	2.15	9.09	0.70	13.33	3.50	42.22	2.72
Government's intervention	7.31	2.95	9.41	2.93	3.33	3.23	5.36	4.03	8.11	2.90	5.45	2.97	31.82	2.46	4.44	2.60	2.22	4.50
International money system	10.38	3.84	10.00	3.48	11.11	1.74	12.50	4.14	16.22	2.95	7.27	3.13	0.00	—	13.33	1.57	8.89	2.00
Consumption structure	12.31	3.58	6.47	3.40	23.33	3.70	5.36	4.37	0.00	—	5.45	4.50	22.73	2.16	40.00	3.60	6.67	4.30
Financial structure	2.69	2.11	1.76	2.57	4.44	1.65	0.00	—	2.70	1.00	1.82	2.20	4.55	4.50	4.44	1.10	4.44	2.20
Rapid innovation	9.23	3.40	12.94	3.54	2.22	1.80	19.64	3.92	13.51	3.48	10.91	2.90	0.00	—	4.44	1.80	0.00	—
Product-development competition	13.85	3.79	21.18	3.79	0.00	—	30.36	4.18	16.22	3.98	14.55	3.05	22.73	3.44	0.00	—	0.00	—
Moves of rival firms	16.54	3.00	15.29	2.88	18.89	3.17	7.14	1.45	24.32	3.23	23.64	3.08	0.00	—	8.89	3.82	28.89	2.99
Active new-product development	36.92	3.46	52.94	3.53	6.67	2.33	62.50	3.92	54.05	3.81	52.73	2.94	27.72	3.10	11.11	2.00	2.22	4.00
Development of man-power	11.15	3.23	6.47	3.32	20.00	3.18	7.14	3.52	0.00	—	10.91	2.90	4.55	5.00	17.78	3.62	22.22	2.82
Rationalization and labor-saving	14.62	2.73	13.53	2.46	16.67	3.15	12.50	2.84	21.62	2.29	10.91	2.83	9.09	0.70	6.67	3.77	26.67	3.00
Reinforcement of owned capital	4.23	2.63	4.71	2.60	3.33	2.53	1.79	5.70	2.70	1.40	7.27	2.30	9.09	5.25	0.00	—	6.67	2.53
Organizational strengthening	12.69	2.76	7.65	2.82	22.22	2.92	3.57	5.00	5.41	1.20	14.55	2.79	4.55	2.00	22.22	3.34	22.22	2.50
Positive market exploitation	8.46	3.27	6.41	3.33	12.22	3.31	8.93	4.00	5.41	2.10	0.00	—	18.18	3.10	13.33	2.88	11.11	3.82
Cooperation with and merger of other firms	3.46	2.64	1.76	2.83	6.76	2.55	0.00	—	5.41	3.25	0.00	—	4.55	2.00	8.89	2.23	4.44	3.10
Diversification of business	8.46	3.22	6.47	3.28	12.22	3.15	3.57	3.65	5.41	3.55	3.64	4.75	22.73	2.44	20.00	3.30	4.44	2.50

Table 16. Grasp of Environmental Changes and Countermeasures (by scales, by growth patterns)

	Under 800		800-1,800		1,800-3,500		3,500 and over		Patt. 1		Patt. 2		Patt. 3		Patt. 4		Patt. 5	
	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%
Manpower problems	3.20	18.03	3.60	10.00	4.55	7.94	3.63	7.94	3.73	10.78	3.53	10.71	3.53	14.71	2.54	8.93	5.00	2.50
Community problems	2.80	9.84	2.69	18.57	25.76	15.87	2.83	15.87	3.34	23.53	3.37	14.29	3.37	11.76	1.85	17.86	10.00	0.85
Government's intervention	2.22	9.84	3.52	7.14	6.06	6.35	3.50	6.35	4.87	5.88	3.60	7.14	3.60	8.82	1.93	5.36	12.50	1.64
International money system	3.52	6.56	8.57	8.57	2.73	15.87	3.19	15.87	3.10	6.86	4.50	17.86	4.50	11.76	2.00	10.71	12.50	2.40
Consumption structure	3.58	8.20	15.71	3.14	10.61	14.29	3.94	14.29	4.19	10.78	5.23	10.71	5.23	5.88	3.15	16.07	17.50	2.51
Financial structure	1.10	3.28	1.43	2.20	4.55	1.59	2.57	1.59	2.20	1.96	3.57	3.57	4.50	0.00	—	3.57	5.00	0.50
Rapid innovation	3.06	8.03	7.14	3.44	4.55	7.94	3.80	7.94	4.06	10.78	3.57	3.57	5.00	20.59	2.14	5.36	5.00	3.00
Product-development competition	3.70	13.11	18.57	4.21	10.61	12.70	3.51	12.70	4.09	14.71	5.17	14.29	5.17	5.88	3.15	17.86	12.50	3.28
Moves of rival firms	3.30	13.11	12.86	2.69	22.73	17.46	2.78	17.46	3.52	14.71	4.64	17.86	4.64	20.59	2.47	14.29	2.00	1.75
Active new-product development	3.50	39.34	45.71	3.52	25.76	36.51	3.16	36.51	4.18	37.25	4.53	32.14	4.53	32.35	2.45	32.14	50.00	2.29
Development of man-power	3.90	11.48	7.14	2.78	16.67	9.52	3.14	9.52	3.42	12.75	4.50	10.71	4.50	17.65	2.88	12.50	0.00	—
Rationalization and labor-saving	2.56	19.67	7.14	2.64	16.67	15.87	3.14	15.87	3.20	11.76	4.60	10.71	4.60	14.71	2.36	19.64	17.50	2.03
Reinforcement of owned capital	2.83	4.92	2.86	2.20	7.58	1.59	2.82	1.59	2.53	2.94	5.10	7.14	5.10	5.88	2.20	5.36	2.50	0.00
Organizational strengthening	2.08	8.20	18.57	3.02	10.61	12.70	3.13	12.70	3.23	14.71	5.00	10.71	5.00	23.53	1.86	10.71	2.50	1.00
Positive market exploitation	2.64	8.20	10.00	3.97	6.06	9.52	2.50	9.52	4.40	8.82	5.73	10.71	5.73	2.94	1.40	8.93	10.00	1.45
Cooperation with and merger of other firms	4.50	1.64	2.86	3.05	4.55	4.76	2.67	4.76	3.54	3.92	2.50	7.14	2.50	2.94	2.00	1.79	2.50	2.00
Diversification of business	2.67	6.56	5.71	3.45	12.12	9.52	3.95	9.52	3.76	7.84	4.47	10.71	4.47	00.0	—	8.92	15.00	2.45

To examine by scales (Table 16). Small firms of under 800 workers attach importance to manpower problems (18.03), medium 800-3,500 firms to new-product development, moves of rival firms and more generally community problems (25.76%), and big 3,500-and-over firms to community problems, international money system and especially moves of rival firms (17.46%). But as for the goal, firms of all scales put emphasis on new-product development.

By growth patterns, grasp of problems is manifold, but the countermeasures are centered on new-product development for all growth patterns, especially for the low-growth pattern, more than 50%. As to bus. results no clear distinctions are found by scales as well as by growth patterns.

Community problems are esteemed by steadily growing firms, i.e., sustained high-rate and stable growth, but hardly by refracting-growth firms. This suggests that grasp of problems from a long-run viewpoint is difficult unless growth is stable. This explains the great weight placed on this matter by financial firms, that is, stable and high-rate growth firms. Thus we have:

Hypothesis 31 In Japan most firms mention public hazard and other community problems, moves of rival firms and sharpening product-development competition, and only small firms financial structure. As for countermeasures new-product development is respected by overwhelmingly numerous firms, followed by rationalization and organizational strengthening. Better achievement is seen for firms taking new-product development for countermeasure, and worse for firms of rationalization and organizational strengthening. Breaking into mfg., and non-mfg., for the former a similar pattern is seen for both problem-grasp and countermeasure centering on new-product development, while for the latter such similarity is not found. Community problems are respected in stable-growth industries, but not in firms or industries of refracting growth period.

4-3. Business objective and top's behavior in decision-making

Let's observe the business objectives, ways of setting sales target and behavior in group decision-making of top-management using Qs. 1-1, 1-2, 1-3 and 1-6. As for Q.1-1 we used only 1st-rank categorie in answers. Categories in Q.1-2 were reformed as three levels in order to adjust their form. Also as to Q.1-3 three levels were applied combining a and b, and to Q.1-6 two levels by combining a, b and c into one. Tables 17 and 18 summarize these results. First we shall see Table 17.

For the whole industry bus. result are best for those active firms placing weight on new-product development as business objective and setting high rates of sales growth (20% and over up), and worse in firms with weight on profit and sales goal not so high (under 10% up). As regards the behavior in decision-making, firms taking "speedy decision principally by president" have better bus. results, while those tending to "cautious decision in respect of the other executives' views" show worse. However, in Japan actually more than

Table 17. Business Objective, Sales Goal, Group Decision, and Attitude to Decision-Making (by industries)

	Whole Ind.		Mfg.		Non-Mfg.		Elect. Equip.		Machinery		Chemicals		Food		Trade		Bank	
	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%
Sales growth	3.30	35.38	27.06	3.54	51.11	3.06	32.14	3.88	27.03	3.66	20.00	3.36	31.82	2.79	37.78	3.03	64.44	3.08
Profit	2.88	51.15	52.94	2.89	47.78	2.94	42.86	3.74	59.46	2.82	58.18	2.57	54.55	2.21	60.00	3.14	35.56	2.61
New-product	3.70	13.46	20.00	3.70	1.11	3.60	25.00	3.91	13.51	3.52	21.82	3.45	13.64	4.03	2.22	3.60	0.00	—
Sales goal under 10% up	2.70	16.15	20.59	2.51	7.78	3.66	7.14	30.00	24.32	2.67	27.27	2.39	31.82	2.26	8.89	3.73	6.67	3.57
10-20% up	3.11	52.31	55.29	3.23	46.67	2.78	58.93	3.77	40.54	2.90	60.00	3.03	59.09	2.87	44.44	2.79	48.89	2.76
and 20%-and-over up	3.42	31.54	24.12	3.81	45.56	3.14	33.93	4.10	35.14	3.75	12.73	3.51	9.09	2.50	46.67	3.29	44.44	2.98
Decision mainly by president	3.50	17.31	18.24	3.60	15.56	3.26	12.50	4.31	18.92	3.79	27.27	3.25	9.09	3.15	28.89	3.17	2.22	4.50
Equal-footing decision	3.03	53.85	52.94	3.16	55.56	2.80	50.50	3.82	56.76	2.99	50.91	2.95	59.09	2.46	40.00	2.70	71.11	2.85
by president and executive	3.12	28.85	28.82	3.12	28.89	3.24	37.50	3.67	24.32	2.99	21.82	2.43	31.82	2.83	31.11	3.57	26.67	2.95
Cautious decision	2.99	53.08	56.47	3.07	46.67	2.83	50.00	3.51	56.76	3.11	65.45	2.95	50.00	2.23	40.00	2.96	53.33	2.74
Speedy decision	3.30	46.92	43.53	3.44	53.33	3.16	50.00	4.14	43.24	3.18	34.55	2.86	50.00	3.05	60.00	3.20	46.67	3.11

Table 18. Business Objective, Sales Goal, Group Decision, and Attitude to Decision-Making (by scales, by growth patterns)

	Under 800	800-1,800	1,800-3,500	3,500 and over	Patt. 1		Patt. 2		Patt. 3		Patt. 4		Patt. 5					
	Bus. result	Bus. result	Bus. result	Bus. result	Bus. result	Bus. result	Bus. result	Bus. result	Bus. result	Bus. result	Bus. result	Bus. result	Bus. result	Bus. result				
Sales growth	21.31	3.22	44.29	3.52	34.85	3.29	39.68	3.09	47.06	3.70	32.14	4.71	26.47	2.69	25.00	2.52	30.00	2.02
Profit	55.74	3.06	45.71	2.73	54.55	2.91	49.21	2.92	38.24	3.53	60.71	4.29	55.88	2.08	58.93	2.62	62.50	2.00
New-product	22.95	3.10	10.00	4.36	10.61	2.91	11.11	3.96	14.71	4.40	7.14	3.80	17.65	2.50	16.07	3.50	7.50	3.10
Sales goal under 10% up	19.67	2.64	17.14	2.45	12.12	2.92	15.87	2.88	13.73	3.56	10.71	4.53	20.59	2.11	17.86	1.73	20.00	2.19
10-20% up	47.54	3.16	47.14	3.09	54.55	3.19	60.32	2.99	44.12	3.82	46.43	4.12	61.76	2.47	58.93	3.01	60.00	1.90
and 20%-and-over up	32.79	3.30	35.71	3.81	33.33	3.19	23.81	3.53	42.16	3.72	42.86	4.64	17.65	2.02	23.21	2.79	20.00	2.61
Decision mainly by president	22.95	3.24	15.71	3.51	9.09	3.68	22.22	3.67	17.65	4.14	10.71	4.63	20.59	2.19	17.86	3.89	17.50	2.04
Equal-footing decision	44.26	2.94	55.71	2.90	62.12	3.23	52.38	2.99	53.92	3.50	60.71	4.09	55.88	2.24	46.43	2.57	57.50	2.31
by president and executive	32.79	3.19	28.57	3.76	28.79	2.83	25.40	2.85	28.43	3.93	28.57	4.92	23.53	2.61	36.71	2.39	25.00	1.62
Cautious decision	55.64	2.97	50.00	3.09	59.09	3.02	47.62	2.90	51.96	3.49	35.71	4.27	55.88	2.54	57.14	2.70	60.00	2.14
Speedy decision	44.36	3.27	50.00	3.40	40.91	3.36	52.38	3.29	48.04	4.10	64.29	4.46	44.12	2.03	42.86	2.79	40.00	2.02

a half of firms put emphasis on profits and set sales growth goal at 10-20% up, and decisions are cautiously made through equal-footing discussion by president and executives. In other words, it is shown that firms taking average-pattern behavior have not always good achievements.

Let's see again the column of whole industry in the table in order to find which factor of the way of goal setting and the behavior of decision-making works larger effects on bus. result. The difference of bus. result between firms taking growth-oriented new-product-development (3.70) and stability-oriented profit (2.88) is 0.72. On the other hand there is a difference of achievement of 0.38 between firms by president's decision (3.50) and those by equal-footing decision (3.12). As for the behavior of decision-making, the difference is 0.31. Since this latter factor (decision-making behavior) contains two levels only, comparison with the former (way of goal setting) is difficult, but even if this figure were multiplied by 3/2 the difference would be only 0.46. Accordingly it is seen that the former (positive goal or objective) is more important by about 1.5-fold. Thus for Japan's firms of today positive goal-setting is more essential than reasonable way of decision making.

Next by industries. In mfg. the same patterns of behavior and achievement are seen with the whole industry. But non-mfg. shows some difference from mfg. and the whole industry. That is, in non-mfg. firms taking sales growth as the most important objective are more numerous than those taking profit, different from mfg. This may be because for non-mfg. the rate of sales growth is particularly essential in respect of its demonstration-effect. And speedy decision-making is more esteemed than cautious action, supposedly because in non-mfg. speedy decision-making is easy to conduct.

The elect.-equip. industry takes the same pattern with the whole industry and the whole mfg. In machinery achievements are better in firms placing the objective on sales growth rather than new-product development. This is because in this industry innovation is not so acute as in elect.equip. Other patterns are similar to the whole mfg. Chemicals shows almost the same behavior and achievement patterns, excepting that firms esteeming cautious decision-making are more numerous than those of speediness. Thus it is seen that the behavioral and achievement patterns are kindred among innovational fields. Food also has a similar picture, except that firms taking moderate sales target of 10-20% up present the best achievement. In trade most firms set growth at higher rates (20% and over), but achievements are best for firms of lower targets (under-10%). It is of interest that firms of "mainly by executive" decision have better achievements than "mainly by president." Again in bank achievements are better for firms with low targets (under 10%). It is noteworthy, however, that firms of "mainly by president" decision hold very good achievements, contrastive to trade.

Next the four matters relevant to top-management by scales and by growth patterns. Table 18 presents the following features. Among small firms

of under-800 employees emphasis on new-product development has a larger share (more than 20%) than in other firm scales. However, bus. result are better for firms taking sales growth as the most important objective than those taking new-products. On another hand among medium and firms those respecting new products hold a smaller share (about 10%), but these firms show better bus. result than those with weight on sales growth. This conforms with the fact that in Japan big firm can raise profits by stable products with long life cycle, while small firms have grown by means of products with short cycle and unstable technique. And even among big firms with stable products those intending active development of new products, instead of living on routine business, have better achievements.

To observe by growth patterns, among accelerating-growth firms (pattern-2), very many are of speedy-decision pattern. And among low-growth firms (pattern-5) firms of equal-footing decision by president and executives are better in bus. result than those of decision mainly by president and mainly by executives, and cautious firms are better than speedy firms. This tells that among low-growth firms business result are superior for those firms where all executives participate to decision-making on equal-footing and take full responsibility for execution in later stages.

In addition to the above facts, to observe the average values of bus. result in this table, some interesting points are found as follows. Among the medium 800-1,800 employee firms, between those with new-product development for objective and those with profit, there is a difference of business result of 1.63 ($= 4.36-2.73$) and in the same class the difference is 1.36 ($= 3.81-2.45$) between firms of 20%-and-over goal and those of under-10%; two- or three-fold of the values in other scales. This shows for the medium scale firms bus. results change greatly according to objectives and goals.; in other words these firms lie in a turning period of growth and hence are affected by goal. This applies also with firms of stable-growth period (pattern-4). In these firms there is a difference of bus. result of 1.50 ($= 3.89-2.39$) between president's decision and executives' decision firms, more than double than values in other periods. This shows that in stable-growth firms achievements are greatly affected by the way of group decision-making. Where a president is inclined to stable products and becomes reluctant to participate to important decisions, bus. result go to decline. It is seen that today group decisions are more essential in stable-growth firms than to any other firms. Thus we have:

Hypothesis 32 In Japan's firms achievements are best for those firms respecting new-product development for objective and setting higher goals of sales growth (20%-and-over up), and not so good for firms with profit for objective and lower goals (under-10% up). And as regards the way of decision-making, speedy decision mainly by president brings about better results and cautious decision by executives opinion do not so well. As a general trend in Japan, however, more than a half of firms respect profit,

take goals of 10-20% up, make decisions on equal-footing discussion by president and executives and take cautious attitude.

Hypothesis 33 Top's objective setting makes larger contribution to achievement than the behavior of group decision. Especially for firms in refracting-growth periods active and high goals are necessary. President's active leadership is required particularly in stable growth periods when presidents are liable to depend on stable products.

4-4. Information to top, top's attitude of appraisal and top's attitude to labor union

Here we consider transmission of information to top and top's attitude in strategic matters.

As to Q.2-8, answers taking category a (all sorts of information are apt to be inaccurate) and b (information top pay attention is almost accurate but other sorts are apt to be inaccurate) were small in numbers, and so these two were grouped as "tendency to inaccuracy." Category c "information top may pay attention is accurate but other sorts are inaccurate in many cases was expressed as "some tendency to inaccuracy," and d (all information coming to top is always accurate) as "accurate."

In Q.2-5, top's appraisal on division performance, category a (appraisal mainly respecting to firm's short-run bus. result" was changed to "firm's short-run bus. result," category b (appraisal respecting efficient management of division and it's contribution to firm's business result) as "efficient management within division," c (coordination with other divisions and so forth) as "coordination with other division," and d (from a long-run viewpoint respecting efficiency and coordination) as "efficient management and coordination."

In Q.2-6, appraisal on research work result, category a (in relation with firm's bus. result only) was exhibited as "only referring to firm's bus. result," and b (mainly by relation to firm's business result but taking account of merits in the research field) as "mainly referring to firm's bus. result." Category c (mainly by merits in the research field) and d (mainly by researcher's self-appreciation from a long-run view) were combined as "appraisal on research itself" since these were small.

In Q.2-7, top's appraisal on project team members, category a (not so high) and b (equal) were summarized as "equal or lower" and c (slightly higher) and d (higher than any other line members) as "high" because answers gathered to middle points.

In Q.2-9, top's attitude to union in managerial trouble, category a (antagonistic relation and hence forcible push of executive's will escaping from union's eyes) and b (bargaining only on agreeable points evading essential oppositions) were combined as "escape and concealment," category c (mutual confidence to some extent and hence attemptation is made to wash opposite points and find solution through collective bargaining) was shown as "collective bar-

Table 19. Information to Top, Top's Attitude of Appraisal and Top's a Attitude to Labor Union (by industries)

	Whole Ind.		Mfg.		Non-Mfg.		Elect. Equip.		Machinery		Chemicals		Food		Trade		Bank	
		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result		Bus. result
Tendency to inaccuracy Some tendency to inaccuracy Accurate	%	2.71	15.29	2.63	8.89	3.00	7.14	3.15	13.51	2.74	16.36	2.29	36.36	2.67	15.56	3.11	2.22	2.20
		3.16	62.35	3.25	61.11	3.05	66.07	3.81	54.05	3.21	70.91	2.93	45.45	2.50	62.22	3.07	60.00	3.10
		3.32	22.35	3.59	30.00	2.94	26.79	4.05	32.43	3.19	12.73	3.66	18.18	2.92	22.22	3.19	37.73	2.79
Firm's short-run bus. result Efficient management within division Coordination with other divisions Efficient management and coordination		2.81	9.41	2.79	13.33	2.78	5.36	2.77	8.11	2.70	10.91	2.80	18.18	2.85	13.33	3.03	13.33	2.53
		3.12	42.94	3.29	41.11	2.89	50.00	3.67	40.54	3.07	41.82	3.15	31.82	2.71	46.67	2.50	35.56	3.41
		3.25	25.29	3.32	23.33	3.10	23.21	4.27	23.03	3.43	25.45	2.66	27.27	2.62	22.22	3.75	24.44	2.52
		3.21	22.35	3.19	22.22	3.27	21.43	3.97	24.52	3.08	21.82	2.84	22.73	2.40	17.78	3.96	26.67	2.81
Merely ref. to firm's bus. result Mainly ref. to firm's bus. result Research itself (No research division)		3.66	11.18	3.68	14.44	3.62	8.93	4.54	10.81	3.45	10.91	3.35	18.18	3.35	17.78	3.56	11.11	3.70
		3.04	70.00	3.12	50.00	2.92	71.43	3.76	72.97	2.90	67.27	2.84	68.18	2.50	57.78	2.87	42.22	2.98
		3.29	18.82	3.37	21.11	3.16	19.64	3.75	16.22	4.07	21.82	2.95	13.64	2.40	8.89	4.25	33.33	2.87
		2.51	0.00	—	14.44	2.51	0.00	—	0.00	—	0.00	—	0.00	—	15.56	2.83	13.33	2.13
Equal or lower High (No project team)		3.19	52.94	3.29	46.67	3.07	57.14	3.97	51.35	3.28	54.55	2.81	40.91	2.48	55.56	3.00	37.78	3.16
		3.13	29.41	3.25	17.78	2.76	28.57	4.01	29.73	2.75	34.55	2.93	18.18	2.35	15.56	2.84	20.00	2.69
		3.03	17.65	3.02	35.56	3.06	14.29	2.89	18.92	3.37	10.91	3.66	40.91	2.93	28.89	3.45	42.22	2.80
Escape or concealment Collective bargaining Talking (No union)		2.95	11.18	2.95	2.22	3.00	10.71	3.03	8.11	4.47	14.55	2.80	9.09	1.00	4.44	3.00	0.00	—
		3.14	61.18	3.19	50.00	3.00	60.71	3.86	48.65	3.32	63.64	2.74	77.27	2.63	51.11	3.13	48.89	2.87
		3.20	26.47	3.34	41.11	3.05	25.00	3.81	43.24	2.69	21.82	3.53	13.64	3.80	33.33	3.14	48.89	3.00
		3.00	1.18	5.70	6.67	2.78	3.57	5.70	0.00	—	0.00	—	0.00	—	11.11	2.94	2.22	2.00

Table 20. Information to Top, Top's Attitude of Appraisal and Top's Attitude to Labor Union (by scales, by growth patterns)

	Under 800		800-1,800		1,800-3,500		3,500 and over		Patt. 1		Patt. 2		Patt. 3		Patt. 4		Patt. 5	
	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%	Bus. result	%
Tendency to inaccuracy	21.31	2.89	15.71	2.27	12.12	3.09	3.17	2.50	5.88	4.03	10.71	4.37	20.59	1.97	17.86	2.61	20.00	1.89
Some tendency to inaccuracy	60.66	3.04	62.86	3.45	66.67	3.02	57.14	3.18	63.73	3.79	50.00	4.71	64.71	2.32	66.07	2.72	57.50	2.09
Accurate	18.03	3.55	21.43	3.34	21.21	3.61	39.68	3.04	30.39	3.58	39.29	3.98	14.71	2.78	16.07	2.94	22.50	2.28
Firm's short-run bus. result	9.84	3.12	11.43	2.52	12.12	2.61	9.52	3.03	12.75	3.09	3.57	5.00	8.82	2.13	14.29	2.55	7.50	2.00
Efficient management within division	54.10	2.95	35.71	3.36	40.91	3.40	39.68	2.97	36.27	4.04	32.14	4.30	50.00	2.45	44.64	2.72	55.00	2.25
Coordination with other divisions	19.67	3.45	27.14	3.39	22.73	3.03	28.57	3.14	28.43	3.64	39.29	4.34	23.53	2.32	12.50	2.57	22.50	2.02
Efficient management and coordination	16.39	3.17	25.71	3.24	24.24	2.14	22.22	3.33	22.55	3.75	25.00	4.50	17.65	2.02	28.57	2.94	15.00	1.67
Merely ref. to firm's bus. result	16.39	3.27	10.00	3.71	9.09	3.57	14.29	4.10	18.63	3.93	7.14	3.50	8.82	2.67	10.71	3.37	5.00	3.60
Mainly ref. to firm's bus. result	60.66	2.98	72.86	3.17	60.61	2.20	57.14	2.84	54.90	3.83	67.86	4.41	58.82	2.17	69.64	2.63	75.00	1.94
Research itself	18.03	3.40	12.86	3.37	27.27	3.02	20.63	3.54	19.61	3.63	25.00	4.00	26.47	2.79	12.50	2.83	20.00	2.29
(No research division)	4.92	3.00	4.29	2.93	3.03	2.20	7.94	2.08	6.86	2.80	0.00	—	5.88	1.10	7.14	2.70	0.00	—
Equal or lower	37.70	3.01	48.57	3.31	63.64	3.20	52.38	3.30	48.04	4.01	50.00	4.40	58.82	2.52	48.21	2.69	55.00	1.98
High	26.23	3.22	30.00	3.34	16.67	3.23	28.57	2.74	29.41	3.65	17.86	4.08	29.41	2.13	23.21	2.98	20.00	2.11
(No project team)	36.07	3.11	21.43	2.95	19.70	2.95	19.05	3.12	22.55	3.28	32.14	4.54	11.76	1.75	28.57	2.62	25.00	2.32
Escape or concealment	13.11	2.42	10.00	3.49	6.06	3.40	3.17	2.30	3.92	4.20	3.57	3.60	14.71	2.94	40.71	2.73	12.50	2.10
Collective bargaining	59.02	3.26	61.43	3.01	56.06	2.99	52.38	3.32	52.94	3.76	57.14	4.64	52.94	1.94	58.93	2.87	70.00	2.11
Talking	21.31	2.95	24.29	3.62	36.36	3.42	44.44	0.91	39.22	3.67	32.14	3.74	29.41	2.84	30.36	2.49	15.00	2.00
(No union)	6.56	3.57	4.29	3.93	1.52	2.00	0.00	—	3.92	3.68	7.14	5.70	2.94	0.00	0.00	—	2.50	2.00

gaining" and d (deep confidence and hence complete talking with union prior to action) as "talking."

As the whole industry, firms of "some tendency to inaccuracy" of information account for more than 70%, but bus. results are best for firms of "accurate." As for division appraisal most firms take "efficient management," but bus. results are best for those of "coordination with other divisions." As to appraisal on research, firms taking "mainly referring to bus. result" are most numerous (more than 60%) but firms of "only referring to bus. result" show the best performance. And as to appraisal on project team members, "equal or lower appraisal" make up more than 50% and firms of this group, to our astonishment, have better bus. results than firm of "high" appraisal, though slightly. This shows that in Japan the merits of project team are not yet recognized and hence it is not fully functioning. In attitude to union, firms of "collecting bargaining" are most numerous, but bus. result are best for firms of "talking."

For mfg. the accuracy of information and attitude of appraisal are almost the same with the whole industry. A noteworthy point is that firms giving no answer, i.e., having no union, have remarkably good performances. This suggests that such deep faith as makes union needless is most favorable. Accuracy of information to top affects more strongly in mfg. than in non-mfg. The difference of bus. result between accurate and inaccurate firms shows 0.96 ($= 3.59-2.63$) for mfg., and 0.11 ($3.09-2.94$) for non-mfg.

Next by industries. In elect.equip. and chemicals with severe innovation the degree of information accuracy is important to bus. result (elect.equip. $0.90 = 4.05-3.15$, chemicals $1.37 = 3.66-2.29$), but not so much in less-innovational food and machinery (food $0.42 = 2.92-2.50$, machinery $0.45 = 3.19-2.74$). In elect.equip. and chemicals, bus. results are better for firms of high appraisal on project team than firms of lower appraisal, different from the case of the whole industry. This may tell that in elect.equip. project teams have entered a stage of practice, but not yet are functioning in food. It is a point of our worry that in machinery firms of "escape and conceal" attitude to union show better results, which supposedly derives from top's unconfidence on the "upper" organizations of firm's union (for example, General Council of Japanese Trade Union). In food attitude to union greatly affects achievements. That's is, while in the whole industry the difference of bus. result between "escape" firms and "talking" firms is 0.25 ($= 3.20-2.95$), in food it shows 2.80 ($3.80-1.00$). In bank information is accurate compared with other industries, and firms of "tendency to inaccuracy" are only about 2%.

To observe accuracy of information by scales, the bigger the scale, the more accurate the information becomes (see Table 20). In under-800 firms "tendency to inaccuracy" accounts 21%, but it declines to 3% in 3,500-and-over firms. On the other hand firms of "accurate" increase from 18% to 40% as the scale grows. As to appraisal on division no significant trends are seen. As

to appraisal on research work, firms of "mainly referring to firm's bus. result" are most numerous for all scales, but among small firms those of "appraisal on research itself" have the best result, while among big firms those of "only referring to firm's bus. result" are better. This shows that in bigger scales researchers tend to perform research for its own sake foreign to market or profit, and so "bus. result only" is rather better. As to appraisal on project team, "equal or lower" is more numerous than "higher" regardless of scales, and this direction is more obvious for bigger scales. Viewed from achievement, in medium and small (below 1,800 employees) the bus. results of "high appraisal" firms are better than "equal or lower," but in big firms the latter is better. This is because in big firms reinforcement of lines is necessary for oligopolistic and stable products while project teams are not so much required. As regards attitude to union, "bargaining" type firms are most numerous for all scales. To view from achievement, for small firms (under 1,800) it is good in "no union" firms, for medium firms (1,800-3,500) in "talking" firms, and for big firms (3,500 and over) in "collective bargaining" firms. This may be because in smaller scales faithful relations are maintained through plentiful communication between top and field and hence formal or informal talking can solve problems, but in bigger scales such communication is scarce and hence influential contact through collective bargaining is more effective.

Accuracy of information and top's appraisal show few distinctions by growth patterns. Thus we have:

Hypothesis 34 In Japan's firms information transmitted to top is relatively accurate as for strategic one, but not so much for other sorts. Accuracy increases as the scale is bigger. The grade of accuracy is greater in bank & insurance than in other industries. In the aspect of business result, as a whole, the greater the accuracy, the better the achievement. It is all the more important for industrial fields with violent innovation.

Hypothesis 35 As for appraisal on division performances, firms considering mainly efficient management of division and contribution to firm's achievement are most numerous, but the best bus. result is seen for firms taking efficient management, contribution and additionally coordination with other divisions. As to appraisal on research work results, most firms consider it mainly referring to firm's achievement and taking account of merits in the research field, but bus. result of firms making appraisal only referring to firm's achievement are best. By scales, among smaller firms, those making appraisal referring to research work itself have better bus. result, and among bigger firms those considering its relation to bus. result alone are the best. This is because in big firms researchers have an inclination to conduct research for its own sake, and hence relations to bus. result must be respected.

Hypothesis 36 In Japan project teams are not yet fully functioning. This is shown by the fact that, for the whole industry, firms giving equal or lower appraisal to project team members than to line members count more

than a half, and these firms show better bus. results than other firms. Some degree of functioning of project team is seen in elect.equip. and other innovational fields, but little in less-innovational food. In bigger scales, project teams decrease function. This is because in these firms emphasis is placed on obligopolistic and stable products and hence line members are more respected.

Hypothesis 37 As to attitude to union, as the whole industry firms intending to find solution through collective bargaining are most numerous, but those taking complete talking on the base of confidence between top and union are best in bus. result. This inclination is most remarkable in food. By scales, in small firms those depending on talking have better bus. result, and in big firms those taking collective bargaining.

5. Organization Factors Greatly Contributory to Bus. Result

5-1. Analysis of contributory factors by industries

By arranging Items according to the value of D obtained by the QAQF steps,²⁵⁾ it is known what kinds of factors make greater contribution to firm's

25) The said D -value analysis represents an important device in QAQF (Quantitative analysis for qualitative factors), which we have developed anew.

It is a method of measuring to what extent a qualitative factor (Item) contributes to an explained variable. We shall explain this by an example. Let's suppose a case of the extent of contribution of "career of president" to "business result," and assume that the following data have been obtained through research.

President	Ratio	Business Result
Founder	25%	4.56
Successor	30%	3.48
Manager born	20%	3.30
Come from above	25%	3.28

On these data, observing the largest and smallest values of business result, a value of D is calculated from the difference between these two values. In this example, $D=4.56-3.28=1.28$. If a D value is near to 0, it shows that president's career is indifferent to results. In reverse, if D is large, it relates, or contributes, greatly to results.

Actually, however, this calculation is not so simple. For example, if come-from-above presidents make up only 5%, calculation of D on such a base is meaningless because peculiarity of only a few number of firms exerts effects on the entire result of analysis. In this case adjustment is made so that each category of president has a ratio of at least 10%. That is to say, the categories of manager-born president and come-from-above president are added together to form a new category of, say, non-owner president, and on this base D is calculated.

And, even if all the categories are above 10%, in such a case as the left-hand picture in the next page, D is again meaningless. Where the shaded portion is large as in this picture, distinction of firms by president is meaningless because, although founder-president firms generally have better results than come-from-above-president firms, actually many firms of the former type show results worse than those of the latter type.

So, prior to actual calculation of D , two arbitrary categories in an Item are picked up and F -test is operated on whether division into two categories

achievement.

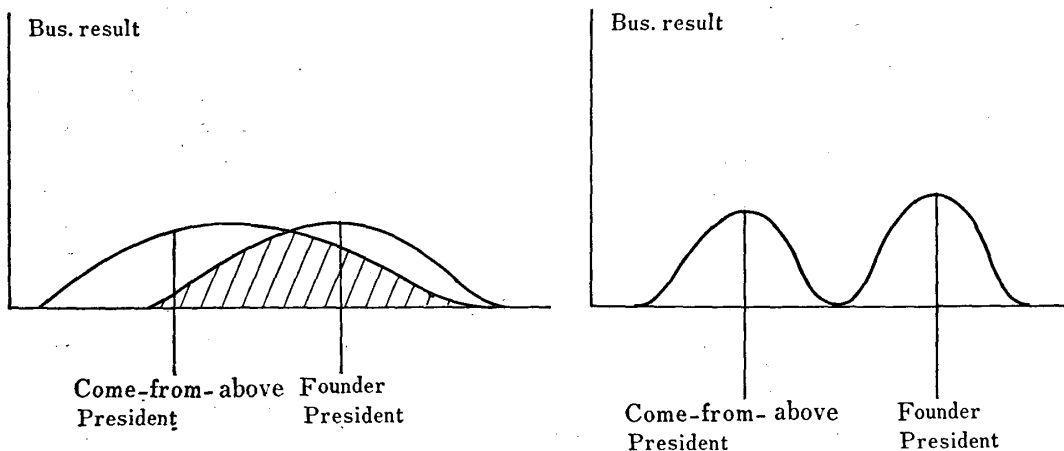
Table 21 lists upper-rank 30 contributory Items. Our study prepared 107 Items as the whole, including 21 for top-management factors (Cause Varis. I), 71 for organization-structural factors (Cause Varis. II), 10 for organization-functional factors (Intervening Varis.) and 5 for "resultant factors" (Result Varis. I). Yes, the Items on this table are 11 for top factors, 10 for structural factors, 5 for functional factors, and 3 for "resultant" factors. Thus as to the "resultant," top and functional factors one half of Items for each are listed up as contributory factors, while for structural factors only 15% of Items. This means that the former three sorts of factors are contributory while structural factors are not so much by themselves. "Resultant" and functional factors directly link with bus. result, and top factors affect more strongly than structural factors, though not so directly link with bus. result.

On the other hand, however, these "resultant" and functional factors are not under firm's direct control, and most top factors are not easy to control.

is statistically significant. That is:

$$F = \frac{\sum_{i=1}^2 n_i (Y_i - \bar{Y})^2 / (2-1)}{\sum_{i=1}^2 \sum_{j=1}^{n_i} (Y_{ij} - Y_i)^2 / (n-2)}$$

where Y_{ij} represents the business result of j th firm in i th category, Y_i is the average value of results of all firms in i th category, and n_i is the number of firms in i th category. Here F -test is conducted ($\frac{1}{2}$) = 6 times in this example. And noting only "statistically significant" pairs, the largest value of difference is selected in those pairs and the difference is divided by number of the categories, which makes the D of the Item, president's career. Accordingly a D value shown in QAQF exhibits the largest difference of result between two categories for which division is statistically significant.



Therefore, from the standpoint of organizational efficiency stress should be placed on the more controllable structural and top factors.

Next let's see particularities of these factors. To name, for top factors, the Items and the most contributory Categories for each of them (Category in brackets): career of president (founder), business objective (new-product development), sales goal (above-20% up over the last year), average age of executive (below-55 years), top's appraisal on research results (only referring to firm's bus. result), ratio of invited executive ($0.125 < \cdot < 0.240$), average service length of executive (more than 11 years), grasp of environmental changes (sharpening product-development competition), top's attitude to environmental changes (speedy action), top's behavior in group decision-making (principally by president) and top's attitude to union (taking). Thus we have:

Hypothesis 38 In Japan's firms it is desirable for achievement to have such top-management as has active and powerful leadership, keeping product-development competition to grasp environmental changes, making speedy decisions principally by president against any changes, setting high goal of sales, promoting new-product development, and consider research results only in connection with firm's achievement. For this sake founder-presidents, longer service and younger age of executives, and a ratio of 25-13% of invited executives are preferable. At the same time such top-management must hold a elastic attitude to union—faithful relation and through going talk, not bargaining on force.

Next as to organization-structural factors, the Items and Categories most contributory are as follows: abolition of section-subsection (No), employee's stock-ownership plan (Yes), overseas sales subsidiary (Yes), dynamic-form forward (system reform 0 to 3), span-of-control (above 25 persons), per-capita admini. expense (more than 3.56 million yen in 1972), loyalty-raising system (seven schemes or more), promotion system reflecting result and ability (No), man-power development system (six schemes or more) per-capita admini. expense for middles ($17.1 < \cdot < 28.0$ mil.yen). Thus we have:

Hypothesis 39 In Japan's firms it is better for bus. result not to conduct system changes such as abolition of section-subsection, that is, not to advance to dynamic form, and not to set up promotion system reflecting result and ability. But such organization as has large span-of-control and positively fosters development systems to help employee's creativity in thinking is desirable. And it is preferable to carry various motivation systems such as stockholding by employees.

As for functional or "resultant" factors the Items and Categories are: productivity-II (very superior to other firms), resistance to reform (no resistance), opinion coordination in budgeting (leadership of influential divisions), information to top (accurate), idea to motivate employee (self-actualization), morale of college graduates (slightly higher), morale of lower-school graduates

Table 21. Upper-Rank 30 Items Contributory to Achievement

(whole industry, 260 firms)

Item	Q. No.	Category	Bus. result	D*
1. President's career	2-1	Founder	4.16	0.37
		Successor	3.24	
		Manager born	2.88	
		Come from above	2.78	
2. Productivity-II	9-10	Equal or slightly inferior	2.66	0.31
		slightly superior	3.36	
		very superior	3.64	
3. Resistance to reform	8-5	strong resistance	2.61	0.31
		some resistance	3.02	
		no resistance	3.51	
4. Opinion coordination	8-4	One-side leadership by influential division	3.92	0.30
		Coordination to some extent	3.00	
		Smooth coordination firm's stand point	3.17	
5. Abolition of section-subsection	4-1 a	yes	2.86	0.28
		no	3.42	
6. Employee stock ownership plan	9-1 b	yes	3.31	0.28
		no	2.75	
7. business objective	1-1	sales growth	3.30	0.26
		profit	2.88	
		New-product development	3.70	
8. Sales goal	1-2	Under 10% up	2.70	0.26
		10-20% up	3.11	
		20% and over up	3.42	
9. executive's average age	2-4	• <55	3.57	0.24
		55 ≤ • <58	3.22	
		58 ≤ • <61	2.68	
		61 ≤ •	3.12	
10. Overseas sales subsidiary	7-2	yes	3.43	0.23
		no	3.02	
11. Dynamic-form forward	4-1	0-3 (changes)	3.38	0.23
		4-6	2.94	
12. Top's appraisal on research	2-6	Merely relation to bus. result	3.66	0.21
		Mainly relation to bus. result	3.04	
		Research itself	3.29	
		(None)	(2.51)**	
13. Information to top	2-8	Tendency to inaccuracy	2.71	0.20
		Some tendency to inaccuracy	3.16	
		Accurate	3.32	
14. Invited executives	2-4	0	3.12	0.20
		0 < • ≤ 0.125	2.75	
		0.125 < • ≤ 0.240	3.51	
		0.240 < •	3.15	

Item	O. No.	Category	Bus. result	D
15. executive's length of service	2-4	• ≤ 5 (years)	2.75	0.19
		$5 < \bullet \leq 8$	3.00	
		$8 < \bullet \leq 11$	3.52	
		$11 < \bullet$	3.37	
16. Environmental changes	1-4	Manpower problem	3.23	0.19
		Community problem	2.67	
		Goverments intervention	2.95	
		International money system	2.84	
		Consumption structure	3.58	
		Financial structure	2.11	
		Rapid innovation	3.40	
		Product-development competition	3.79	
		Moves of rival firms	3.00	
17. Per-capita administ. expense for employee (1972)	11	• < 1.22 (million yen)	3.31	0.19
		$1.22 \leq \bullet < 2.30$	3.11	
		$2.30 \leq \bullet < 3.56$	2.65	
		$3.56 \leq \bullet$	3.48	
18. motivation	9-3	Economic wish	2.79	0.18
		Economic wish and self- actualization	3.06	
		Self-actualization	3.35	
19. Morale of college graduates	9-7	Slightly lower	3.19	0.17
		Almost equal	2.97	
		Slightly higher	3.57	
		Very high	3.26	
20. Industrial section	—	Elect. equip.	3.83	0.17
		Machinery	3.55	
		Chemicals	2.92	
		Transport equip.	2.86	
		Food	2.64	
		Trade & real estate	3.02	
		Banke & insurance	2.91	
21. Top's attitude to evrironmental changes	1-6	Cautions action	2.99	0.17
		Speedy action	3.30	
22. Loyalty-raising scheme	9-1	0-4 (chemes)	3.08	0.16
		5-6	2.94	
		7-	3.34	
23. Top's behavior in group decision-making	1-3	Decision principally by president	3.50	0.16
		Decision by equal-footing discussion	3.03	
		Principally by executives	3.12	
24. Span of control (number of employee/number manager & section chief)	11	• < 9.5 (Rerson)	2.85	0.14
		$9.5 \leq \bullet < 15.5$	3.28	
		$15.5 \leq \bullet < 25.0$	3.09	
		$25.0 \leq \bullet$	3.41	
25. Morale of lower-school	9-8	Slightly lower	3.51	0.14

Item	Q. No.	Category	Bus. result	D
graduates		Almost equal	2.98	
		Slightly higher	3.45	
		Very high	3.35	
26. Par-increase system reflecting performance and ability	8-1 e	yes	3.04	0.13
		no	3.29	
27. Promotion of employees	9-6	Superior's one-side appraisal	3.41	0.13
		Mainly superior	2.99	
		Self-appraisal	3.32	
28. Man-power development system	8-1	0-2 (schemes)	3.27	0.13
		3-5	2.93	
		6-	3.38	
29. Per-capita administ. expense for middles	11	• <17.1 (mil. yen)	2.91	0.13
		17.1 ≤ • <28.0	3.44	
		28.0 ≤ • <51.0	3.09	
		51.0 ≤ •	3.11	
30. Top's attitude to labor union	2-9	Escape and concealment	2.95	0.12
		Collective bargaining	3.14	
		Talking	3.20	
		No union	(3.00)***	

* Because of rounding in computerization, the values of D below may differ from the values hand-calculation from bus. result.

** Since firms with no research organs make up only 5 % of firms, this category was neglected for D.

*** Since firms with no union make up only 3 %, and this category is neither of highest or lowest value, this category is alien to D.

(slightly lower) and appraisal on employees for promotion (simply by the superior). Thus we have:

Hypothesis 40 In Japan's firms it is desirable to contemplate self-actualization, to hold accurate information to top and to maintain a situation that may decrease resistance of middles and lowers to reform when intended. Overmuch stress of firm's performance, however, results in lower morale, especially of lower-school graduates, although productivity increases.

5-2. Synthetic analysis of top and structural factors contributory to bus. result.

We have similarly made 2 models concerning "Upper-Rank 20 Items Contributory to Bus. Result" by mfg. and non-mfg., and 10 models concerning "Upper-Rank 15 Items Contributory to Bus. Result" by industries and scales. We have arranged these Items to Table 22. In this Table contributory factors are grouped as top, structural, functional and "resultant" ones. We intended to count the numbers of Items ranked in the upper parts of models by industries and scales, and to find the degrees of contribution by seeking the values of *D* of these Items. However, since the Items of models are different

Table 22. Degrees of Contribution to bus. result of Organization Factors (by industries, scales)

[illegible]

in numbers—30, 20 and 15, and the total 107 Items consist of 21 top, 71 structural, 10 functional and 5 resultant factors, simple comparison of the numbers of Items is meaningless. So we calculated percentage ratio of Items included in the model to the Items of each factor.

As the whole industry what have the most direct effect on bus. result are functional factors ($D = 0.2216$), followed by top factors ($D = 0.2133$), and the smallest are general structural factors (0.1900). And to look the numbers of Items included in the models, top factors count 12, followed by structural factors 10, but to compare these to the total numbers of each, it is seen that top factors more strongly contribute to bus. result than structural factors, with the former showing 57.14% and the latter 14.08%. This fact has been testified by our former studies.

To compare mfg. and non-mfg., in mfg. top factors have larger values of D and a larger number of included Items than structural factors, while in non-mfg. D is almost identical for top and structural and the number of Items is larger for structural than for top. This becomes more clear by analysis by industries to be described later. The ratio of included Items of top is bigger in mfg. than in non-mfg. (38.10% and 28.57%), while the ratio of included Items of structural is bigger in non-mfg. than in mfg. (15.49% and 9.86%). Thus we can say in mfg. top factors are more contributory and in non-mfg. structural factors are so. Thus we have:

Hypothesis 41 In Japan's firms as the whole industry top-management factors (top's abilities, composition, etc.) are more contributory to performance than organization-structural factors (to maintain a firm). This tendency, however, applies only to mfg.; in non-mfg. reversely structural factors contribute more greatly.

Next, by industries. Comparing by D , top factors are larger than structural in machinery, food and bank, and comparing by the ratio of included Items the same relation lies in elect. equip., machinery and chemicals. So in aggregate the emphasis on top factors is strongest in machinery, and that on structural factors is strongest in trade. Reasons are not clear for this.

To observe the value of D by industries, it is largest in food for every factor, next in machinery, and smallest in bank. This is due to the smaller number of samples in food and machinery (22 and 37 firms) and seems to have no significance as business administration. To mention a point, the smallest value in bank may be because its products—services—are very stable, and among the three measures of efficiency—"productivity," adaptability" and "flexibility"—the latter two are unnecessary, only "productivity" being relevant to performance. Thus we have:

Hypothesis 42 In Japan's firms, looking by industries, in the machinery industry top factors are more contributory than structural factors, but in the trade & real estate industry reversely the latter are so.

Lastly by scales. As the Table shows, looking by the number of Items

the contribution of top factors becomes greater as the scale is larger, but that of structural factors becomes smaller. This is the same with the value of D for top factors. This may be because in big firms bureaucratic organization is already completed and for its efficient operation it is necessary to fill the gaps between top and organization by top's active and powerful influence, while in small firms top's will is permeated informally into the whole organization, there are no gaps, and hence the structural quality of organization works effects on efficiency. Thus we have:

Hypothesis 43 In Japan's firms, as the scale expands top's factors become more important. In smaller scales structural factors to raise the efficiency of organization itself are essential.

6. *Organization Factors Greatly Contributory to Morale and Remaining Rate*

6-1. Comparison of factors contributory of Morale to college and lower-school graduates

In this section again D -value Analysis is used to consider the contribution of various factors to improve morale and remaining rate.

Upper-rank 30 Items contributory to the morale of college graduates and lower-school graduates are shown respectively in Tables 24 and 23. To compare the two Tables, the Items of lower-school graduates showing values of D above or equal to 0.10, corresponding to the lowest figure in college graduates, are ranked only to 21. This tells that factors contributory to lower-school graduates are not so numerous as those to college graduates. And to classify the 30 Items into top, structural, functional and resultant factors, the numbers are 6, 18, 5 and 2 in lower-school graduates and 5, 17, 6 and 2 in college graduates, with the proportion being almost the same. However, to compare this classification with upper-rank 30 factors contributory to bus. result (12, 10, 5 and 3) (Table 21), there is a great difference. That is, as to achievement top factors show greater contribution, but as to higher morale of employees structural factors do more. Thus we have:

Hypothesis 44 In Japan's firms, top factors contribute much to raise performance, but as to employee's morale structural factors for administration do more.

Next let's see Items common to both Tables. These are top's attitude to union, productivity I and II, research report connected with personal appraisal, idea to motivate employee, information to top, development system of man-power, resistance to reform, regular seminar for college graduates, coordination of opinion, system of magt. by objective, top's attitude to environments, top's appraisal on division performance, man-power development research center, per-capita admini. expense (1972), routine-work forward, attitude to the superior, loyalty-raising scheme, overseas sales sub-

sidiary and boarding seminar of division-section-chiefs. And by observing the Categories of these Items we can see it is contributory to morale to place weight on self-actualization for labor-will, to solve troubles by talk with union on deep trust, and to set up systems of magt. by objective, man-power development research center, research report connected to personal appraisal, and seminar for college graduates and division-section-chiefs. In short, top's behavior-scientific and humanity-centered idea and schemes to implement it are working well. Similarly it is useful for morale to take speedy actions to environmental changes, to perform smooth coordination for budgeting from a broad angle of company and to make appraisal on divisions taking account of efficient management, coordination with other divisions and contribution to firm's achievement at the same time. Thus we have:

Hypothesis 45 In Japan today, top's humanity-centered idea putting weight to employee's wish of self-actualization, various man-power development schemes to support it and loyalty-raising devices raise morale of employees. And also top's speedy decision-making to environmental changes as well as total-system idea for company-wide adjustment or budgeting are contributory.

Next let's consider factors contributory to lower-school graduates but not to college graduates about morale. All upper-rank 15 Items of Table 23 are included in Table 24. Items not included in the latter table are per-capita adminis. expense (1963, 68), abroad study system, ratio of new executives, span-of-control, computerization of customer information, strengthening of general staff, president's behavior in group decision-making, unification or simplification of division and section, and promotion system reflecting performance and ability. From this it is firstly known that the three Items of per-capita admini. expense (1963, 68 and 72) all are contributory to lower-school graduate morale. And to see the Categories, the higher the expense, the better is the morale. This is contrastive to the fact that a higher cost is not always contributory to bus. result (see Table 21). Firms with a large amount of this expense are numerous among non-mfg. and big firms. And that already in 1963 a high expense was contributory suggests that stable firms, not rapidly growing, had better morale already at that time. And to view from span-of-control, lower-school graduates favor those firms that have a large number of per-chief employees, say non-bureaucratic, or, if bureaucratic, its softening is intended by unification or simplification of section-subsection system.

An interesting fact is seen with two Items contributory to lower-school graduates, that is, opinion coordination and president's behavior in group decision-making. Opinion adjustment on whole-company standpoint and president's democratic or more collective attitude work to raise morale. These two dispositions decrease bus. result reversely (Table 21). These factors affect in opposite direction to morale and bus. result. Thus we have:

Hypothesis 46 In Japan's firms, top's democratic and collective behavior in decision-making does not contribute to performance but is effective for raising of morale. And a higher per-capita administrative expense does not always contribute to performance but has a large effect on morale of lower-school graduate. Organization with smaller managers relative to employees, that is, larger span-of-control, raises their morale, and non-mfg. with more stability affects better.

Next let's observe factors contributory to morale of college graduate but not to that of lower-school graduate. In Table 24, counselor system, initiative of information, computerization of pay calculation, computer-file system of personnel information, scale of firm, overseas branch, right of personnel management (college graduate), aid to outer lecture, publication of eligibility to promotion system, and positive goal are Items contributory to college graduates. In short, top's positive goal and set-up of overseas branch or subsidiary for its realization make contribution. And such behavior-scientific humanity-centered way of thinking as information initiative at every stratum, opinion adjustment from whole-company standpoint, utilization of self-actualization and magt. by objective serve to raise morale of college graduates. These features of positiveness, fulfilled man-power development and promotion of routine work are more possible in big firms, and hence bigger firms show higher morale of college graduates. Thus we have:

Hypothesis 47 In Japan's firms top's positivism, fulfilment of man-power development systems such as man-power development research center, counselor system, and seminar, fostering of routine work including computerization, schemes to satisfy self-actualization wish, and expansion of scale to make these measures possible raise morale of college graduates.

6-2. Organization factors contributory to remaining rate

In this section the values of *D* were sought to find upper-rank 30 Items contributory to remaining rate (see Table 25). The 30 Items comprise 7 top, 17 structural, 5 functional and 1 resultant factors. Structural factors are 2.5-fold of top. By this survey, however, top Items count 21 and structural ones 71, and so the former are more contributory.

Let's observe the Categories. To our astonishment, the Categories of most factors (or Items) are quite different from the case of morale and bus. result. In the below Items and Categories are shown.

The Categories of, examination for promotion to manager & section-chief (No), computerization of pay calculation (No), information initiative (at top), scale of firm (below-800), idea to motivate employee (economic wish and self-actualization motive) are quites opposite to the Categories contributory to morale. Again opposite to the Categories contributory to bus. result are dynamic-form forward (4 to 6 reforms), president's career (manager-born), length of service of executives (below-5 years), average age of executives (above-61

Table 23. Upper-Rank 30 Items Contributory to Morale of Lower-School Graduates
(whole industry, 260 firms)

Item	Q. No.	Category	Morale	D
1. Top's attitude to union	2-9	Escape or concealment	1.81	0.19
		Collective bargaining	2.27	
		Talking	2.37	
		(No union)	(2.25)*	
2. Productivity II (quantity)	9-10	Slightly inferior	2.04	0.18
		Slightly superior	2.32	
		Very superior	2.57	
3. Productivity I (quantity)	9-9	Target is often unfilled	1.89	0.17
		Target sometimes unfilled	2.20	
		Target almost filled	2.39	
		Target perfectly filled	2.55	
4. Research report connected with personal appraisal	8-1 h	yes	2.54	0.16
		no	2.22	
5. motivation	9-3	Economic wish	1.88	0.16
		Economic wish and self-actualization	2.27	
		Self-actualization	2.34	
6. Information to top	2-8	Tendency to inaccuracy	1.92	0.15
		Some tendency to inaccuracy	2.27	
		Accurate	2.40	
7. Man-power development system	8-1	0-2 (schemes carried)	2.05	0.14
		3-5	2.29	
		6-	2.48	
8. Resistance to reform	8-5	Strong resistance	2.00	0.14
		Some resistance	2.22	
		no resistance	2.41	
9. Regular training system for college graduates	8-1 f	yes	2.49	0.14
		no	2.22	
10. Opinion coordination in budgeting	8-4	One-side leadership by influential division	1.94	0.13
		Coordination to some extent	2.25	
		Smooth coordination from firms standpoint	2.32	
11. Target control by self-reporting	8-1 i	yes	2.41	0.13
		no	2.15	
12. Top's decision making for environmental changes	1-6	Cautious action	2.14	0.12
		Speedy action	2.39	
13. Top's appraisal on division performance	2-5	Short-run firm's bus. result	2.25	0.11
		Efficient management	2.22	
		Coordination with other division	2.43	
		Efficient management and coordination	2.15	
14. Man-power development research center	8-1 d	yes	2.43	0.11
		no	2.22	
15. Per-capita admini. expense for employees (1972)	11	• <1.22 (mil. yen)	2.02	0.11
		1.22 ≤ • <2.30	2.23	

Item	Q. No.	Category	Morale	D
16. Per-capita admini. expense for employees (1967)	11	$2.30 \leq \cdot < 3.56$	2.35	0.10
		$3.56 \leq \cdot$	2.45	
		$\cdot < 0.62$ (mil. yen)	2.09	
		$0.62 \leq \cdot < 1.36$	2.19	
		$1.36 \leq \cdot < 2.05$	2.27	
17. Study abroad system	8-1 c	$2.05 \leq \cdot$	2.49	0.10
		yes	2.38	
18. Ratio of new executives	2-3	no	2.19	0.10
		0	2.23	
		$0 < \cdot \leq 0.2$	2.28	
		$0.2 < \cdot \leq 0.35$	2.49	
19. Routine-work forward	4-2	$0.35 < \cdot$	2.10	0.10
		0-2 (schemes carried)	2.13	
		3-6	2.19	
		7-10	2.42	
20. Span of control (number of employee/number of manager & section chief)	11	$\cdot < 9.5$ (persons)	2.12	0.10
		$9.5 \leq \cdot < 15.5$	2.08	
		$15.5 \leq \cdot < 25.0$	2.38	
		$25.0 \leq \cdot$	2.46	
21. Attitude to the superior	9-4	sneak	(2.00)**	0.10
		moderate good will	2.23	
		Much good will, cooperative	2.43	
22. Computerization of customer information	4-2 d	yes	2.36	0.09
		no	2.17	
23. General-staff strengthening	4-1 f	yes	2.35	0.09
		no	2.16	
24. Top's behavior in decision- making	1-3	Principally by president	2.13	9.09
		Equal-footing discussion	2.22	
		Principally by executives	2.41	
25. Simplification of division- section-subsection	4-1 b	yes	2.31	0.09
		no	2.12	
26. Loyalty-raising scheme	9-1	0-4 (schemes carried)	2.12	0.09
		5-6	2.20	
		7-	2.39	
27. Overseas sales subsidiary	7-2	yes	2.39	0.09
		no	2.21	
28. Pay increase reflecting performance and ability	8-1 e	yes	2.34	0.09
		no	2.17	
29. Per-capita admini. expense for employees (1963)	—	$\cdot < 0.35$ (mil. yen)	2.11	0.08
		$0.35 \leq \cdot < 0.69$	2.20	
		$0.69 \leq \cdot < 1.14$	2.29	
		$1.14 \leq \cdot$	2.45	
30. Boarding seminar for manger & section-chiefs	8-1 a	yes	2.34	0.08
		no	2.18	

* See footnote *** in Table 21.

** This was ignored for calculation of D because of smallness.

Table 24. Upper-Rank 30 Items Contributory to Morale of College Graduates
(whole industry, 260 firms)

Item	Q. No.	Category	Morale	D
1. Attitude to the superior	9-4	Sneak	2.00*	0.22
		Moderate goodwill	2.15	
		Much goodwill, cooperative	2.59	
2. Productivity (quality)	9-10	Slightly inferior	1.93	0.21
		Slightly superior	2.32	
		Very superior	2.57	
3. Opinion coordination in budgeting	8-4	One-side leadership by influential division	1.76	0.20
		Coordination to some extent	2.15	
		Smooth coordination from firm's standpoint	2.37	
4. Information to top	2-8	Tendency to inaccuracy	1.88	0.20
		Some tendency to inaccuracy	2.19	
		Accurate	2.48	
5. Top's attitude to union	2-9	Escape and concealment	1.81	0.19
		Collective bargaining	2.61	
		Talking	2.44	
		(No union)	(2.12)**	
6. Man-power development system	8-1	0-2 (schemes carried)	1.97	0.18
		3-5	2.23	
		6-	2.51	
7. Counselor system	9-1 g	yes	2.49	0.18
		no	2.14	
8. Initiative of information to lower	8-2	at top	1.88	0.17
		Mainly at middle	2.13	
		at all strata	2.40	
9. Resistance to reform	8-5	Strong reform	1.93	0.17
		Some resistance	2.15	
		no resistance	2.44	
10. Routine-work forward	4-2	0-2 (schemes carried)	1.94	0.17
		3-6	2.15	
		7-10	2.43	
11. Man-power development research center	8-1 d	yes	2.47	0.17
		no	2.15	
12. Motivation	9-3	Economic wish	1.83	0.16
		Economic wish and self-actualization	2.23	
		Self-actualization	2.30	
13. Productivity (quantity)	9-9	Target is often unfilled	1.89	0.15
		Target sometimes unfilled	2.19	
		Target almost filled	2.32	
		Target perfectly filled	2.48	
14. Top's decision-making for environmental changes	1-6	Cautions action	2.08	0.15
		Speedy action	2.38	

Item	Q. No.	Category	Morale	D
15. Target control by self-reporting	8-1 i	yes no	2.39 2.09	0.15
16. Computerization of pay calculation	4-2 a	yes no	2.25 1.97	0.14
17. Per-capita admini. expense for employees (1972)	11	• < 1.22 (mil. yen) 1.22 ≤ • < 2.30 2.30 ≤ • < 3.56 3.56 ≤ •	1.98 2.09 2.28 2.52	0.13
18. Loyalty raising scheme	9-1	0-4 (schemes carried) 5-6 7-	2.02 2.13 2.14	0.13
19. Overseas sales subsidiary	7-2	yes no	2.40 2.15	0.13
20. Computer-file system for personnel information	4-2 c	yes no	2.37 2.12	0.12
21. Regular training system for college graduates	8-1 f	yes no	2.42 2.18	0.12
22. Scale of firm	11	• < 800 (employees) 800 ≤ • < 1800 1800 ≤ • < 3500 3500 ≤ •	2.05 2.10 2.21 2.52	0.12
23. Overseas branch-office	7-1	yes no	2.37 2.14	0.11
24. The right of personnel managt. (college graduate)	3-2	Top Management Manager, factory manager	2.25 2.03	0.11
25. Boarding seminar for manager & section-chiefs	8-1 a	yes no	2.33 2.11	0.11
26. Aid to outer lecture	8-1 b	yes no	2.26 2.04	0.11
27. Publication of eligibility for promotion	4-2 g	yes no	2.33 2.11	0.11
28. Research report connected with personnel appraisal	8-1 h	yes no	2.40 2.19	0.10
29. Top's appraisal on division performance	2-5	Short-run firms achievement Efficient management Coordination with other divisions Efficient management and coordination	2.93 2.16 2.33 2.34	0.10
30. Sales goal	1-2	Under 10% up 10-20% up 20% and over up	2.00 2.24 2.30	0.10

* See footnote ** in Tabs 23.

** See footnote *** in Table 21.

Table 25. Upper-Rank 30 Items Contributory to Remaining Rate
(whole industry, 260 firms)

Item	Q. No.	Category	Remaining rate	D
1. Examination for promotion to manager, section chief	8-1 g	yes	2.00	0.14
		no	2.28	
2. Regular training system for college graduates	8-1 f	yes	2.47	0.13
		no	2.20	
3. Resistance to reform	8-5	Strong resistance	2.00	0.13
		Some resistance	2.21	
		No resistance	2.38	
4. Computerization of pay calculation	4-2 a	yes	2.21	0.13
		no	2.47	
5. Span of control (number of employee/number of manager & section chief)	11	$\bullet < 9.5$ (persons)	2.57	0.12
		$9.5 \leq \bullet < 15.5$	2.25	
		$15.5 \leq \bullet < 25.0$	2.07	
		$25.0 \leq \bullet$	2.10	
6. Abroad study system	8-1 c	yes	2.38	0.11
		no	2.16	
7. Dynamic-form forward	4-1	0-3 (changes)	2.13	0.11
		4-6	2.35	
8. Per-capita admini expense for employees (1968)	11	$\bullet < 0.62$ (mil. yen)	2.05	0.11
		$0.62 \leq \bullet < 1.36$	2.19	
		$1.36 \leq \bullet < 2.05$	2.27	
		$2.05 \leq \bullet$	2.48	
9. Simplification of dept., section, subsection	4-1 b	yes	2.30	0.10
		no	2.09	
10. President's career	2-1	Founder	1.95	0.10
		Successor	2.24	
		Manager-born	2.35	
		Come from above	2.27	
11. Per-capita admini. expense for employees (1972)	11	$\bullet < 1.22$ (mil. yen)	2.03	0.10
		$1.22 \leq \bullet < 2.30$	2.30	
		$2.30 \leq \bullet < 3.56$	2.23	
		$3.56 \leq \bullet$	2.43	
12. Executives' average length of service	2-4	$\bullet \leq 5$ (years)	2.41	0.09
		$5 < \bullet \leq 8$	2.32	
		$8 < \bullet \leq 11$	2.19	
		$11 < \bullet$	2.03	
13. Information to top	2-8	Tendency to inaccuracy	2.06	0.09
		Some tendency to inaccuracy	2.25	
		Accurate	2.34	
14. Average wages	11	$\bullet < 1150$ (thou. yen)	2.07	0.09
		$1150 \leq \bullet < 1300$	2.09	
		$1300 \leq \bullet < 1450$	2.39	
		$1450 \leq \bullet$	2.41	

Item	Q. No.	Category	Remaining rate	D
15. Executives' average age	2-4	• <55	2.08	0.09
		55 ≤ • <58	2.14	
		58 ≤ • <61	2.39	
		61 ≤ •	2.42	
16. Lower-school graduate morale	9-8	Slightly lower	2.50	0.09
		Equal	2.15	
		Slightly higher	2.39	
		Very high	2.49	
17. Industrial section	—	Elect. equip.	2.07	0.08
		Machinery	2.13	
		Chemicals	2.53	
		Transport equip.	1.95	
		Food	2.45	
		Trade & real estate	2.16	
		Bank & insurance	2.29	
18. Per-capita admini. expense for employees (1963)	11	• <0.35 (mil. yen)	2.03	0.08
		0.35 ≤ • <0.69	2.25	
		0.69 ≤ • <1.14	2.35	
		1.14 ≤ •	2.35	
19. Employee-stock-ownership plan	9-1 b	yes	2.20	0.08
		no	2.36	
20. Attitude to the equal	9-5	Rival sense but goodwill	2.23	0.07
		Much goodwill, cooperative	2.37	
21. general staff strengthening	4-1 f	yes	2.31	0.07
		no	2.17	
22. Initiative of Information to lower	8-2	at top	2.42	0.07
		Mainly at middle	2.21	
		at all strata	2.23	
23. Scale of firm	11	• < 800 (employees)	2.39	0.07
		800 ≤ • <1800	2.11	
		1800 ≤ • <3500	2.33	
		3500 ≤ •	2.16	
24. Environmental changes	1-4	Manpower problems	1.96	0.07
		Community problems	2.26	
		government's intervention	2.58	
		International money system	2.30	
		Consumption structure	2.19	
		Financial structure	2.14	
		Rapid Innovation	2.33	
		Product-development competition	2.11	
		Moves of rival firms	2.35	
25. right of personnel management (lower-school graduates)	3-2	Top management	2.33	0.07
		Manager, factory manager, branch-chief	2.19	
26. Motivation	9-3	Economic wish	2.12	0.07
		Economic wish and	2.33	

Item	Q. No.	Category	Remaining rate	D
27. President's speciality	2-2	self-actualization		
		Self-actualization	2. 15	
		Engineering	2. 07	0. 07
		Production control	2. 39	
		Selling	2. 20	
		Finance	2. 38	
		Personnel affairs	2. 33	
		Planning & Research	2. 53	
		Miscel.	2. 06	
28. Overseas sales subsidiary	7-2	yes	2. 33	0. 07
		no	2. 20	
29. Abolition of section-subsection	4-1 a	yes	2. 31	0. 07
		no	2. 18	
30. Magt. by objective for norm setting	9-1 i	yes	2. 18	0. 07
		no	2. 31	

Table 26. Upper-Rank 30 Items Contributory to Business Result Including Morale
(Bus.Result II) (whole industry, 260 firms)

Item	Q. No.	Category	Business result II	D
1. Attitude to the superior	9-4	Sneak	4. 45*	0. 37
		Moderate goodwill	3. 87	
		Much goodwill, cooperative	4. 50	
2. Productivity (quality)	9-10	Slightly inferior	3. 48	0. 37
		Slightly superior	4. 19	
		Very superior	4. 57	
3. Resistance to reform	8-5	Strong resistance	3. 40	0. 35
		Some resistance	3. 84	
		No resistance	4. 46	
4. President's career	2-1	Founder	4. 89	0. 32
		Successor	4. 01	
		Manager-born	3. 81	
		Come from above	3. 36	
5. Employee-stock-ownership plan	9-1 b	yes	4. 14	0. 27
		no	3. 60	
6. Information to top	2-8	Tendency to inaccuracy	3. 44	0. 26
		Some tendency to inaccuracy	4. 01	
		Accurate	4. 22	
7. Sales goal	1-2	Under 10% up	3. 53	0. 26
		10-20% up	3. 94	
		20% and over up	4. 30	
8. Overseas sales subsidiary	7-2	yes	4. 34	0. 25
		no	3. 85	
9. Top's decision-making for environmental changes	1-6	Cautious action	3. 77	0. 23
		Speedy action	4. 24	

Item	Q. No.	Category	Business result II	D
10. Motivation	9-3	Economic wish	3.51	0.23
		Economic wish and self-actualization	3.94	
		Self-actualization	4.19	
11. Business objective	1-1	Sales growth	4.09	0.21
		Profit	3.80	
		New-product development	4.42	
12. Executives' average age	2-4	• <55	4.42	0.20
		55 ≤ • <58	3.99	
		58 ≤ • <61	3.62	
		61 ≤ •	3.96	
13. Opinion coordination in budgeting	8-4	One-side leadership by influential division	4.42	0.19
		Coordination to some extent	3.84	
		Smooth coordination from firm's stand point	3.40	
14. Top's attitude to union	2-9	Escape and concealment	3.58	0.18
		Collective bargaining	3.95	
		Talking	4.13	
		(No union)	(4.36)**	
15. Abolition of section-subsection	4-1 a	yes	3.80	0.18
		no	4.16	
16. Counselor system	9-1 g	yes	4.26	0.18
		no	3.91	
17. Environmental changes	1-4	Manpower problems	3.92	0.17
		Community problems	3.78	
		Government's intervention	4.02	
		International money system	3.27	
		Consumption structure	4.29	
		Financial structure	2.94	
		Rapid innovation	4.11	
		Product-development competition	4.51	
		Moves of rival firms	3.84	
18. Per-capita admini. expense for employees (1972)	11	• <1.22 (mil. yen)	4.01	0.17
		1.22 ≤ • <2.30	3.92	
		2.30 ≤ • <3.56	3.67	
		3.56 ≤ •	4.35	
19. Top's appraisal on division performance	2-5	Short-run firm's achievement	3.50	0.16
		Efficient management	3.96	
		Coordination with other divisions	4.14	
		Efficient management and coordination	4.11	

Item	Q. No.	Category	Business result II	D
20. Loyalty-raising scheme	9-1	0-4 (schemes carried)	3.84	0.16
		5-6	3.78	
		7-	4.25	
21. Executives' average length of service	2-4	• ≤ 5 (years)	3.73	0.15
		5 < • ≤ 8	3.81	
		8 < • ≤ 11	4.32	
		11 < •	4.20	
22. Top's appraisal on research	2-6	Merely relation to bus. result	4.33	0.14
		Mainly relation to bus. result	3.90	
		Research itself	4.19	
		(None)	(3.48)***	
23. Productivity I (quantity)	9-9	Target is often unfilled	3.63	0.14
		Target sometimes unfilled	3.93	
		Target almost filled	4.12	
		Target perfectly filled	4.20	
24. Man-power development system	8-1	0-2 (schemes carried)	3.94	0.14
		3-5	3.87	
		6-	4.28	
25. Per-capita admini. expense for employees (1968)	11	• < 0.62 (mil. yen)	4.11	0.14
		0.62 ≤ • < 1.36	3.89	
		1.36 ≤ • < 2.05	3.70	
		2.05 ≤ •	4.24	
26. Man-power development research center	8-1 d	yes	4.20	0.13
		no	3.93	
27. Regular training system for college graduates	8-1 f	yes	4.21	0.13
		no	3.94	
28. Per-capita admini. expense for employees (1963)	11	• < 0.35 (mil. yen)	4.17	0.13
		0.35 ≤ • < 0.69	3.87	
		0.69 ≤ • < 1.14	3.69	
		1.14 ≤ •	4.21	
29. Span of control (number of employee/number of manager & section chief)	11	• < 9.5 (persons)	3.66	0.13
		9.5 ≤ • < 15.5	4.15	
		15.5 ≤ • < 25.0	4.01	
		25.0 ≤ •	4.18	
30. Per-capita admini. expense for middles	11	• < 17.1 (mil. yen)	3.67	0.13
		17.1 ≤ • < 28.0	4.18	
		28.0 ≤ • < 51.0	3.95	
		51.0 ≤ •	4.16	

* See footnote ** in Table 23.

** See footnote *** in Table 21.

*** See footnote ** in Table 21.

years), industry (chemicals), employee's stockholding plan (No), grasp of environmental changes (government's intervention) and abolition of section-subsection system (Yes).

Thus, top-down type of organization—initiative of information at top, small span-of-control or abolition of promotion examination to middle management—raise remaining rate of lower-school graduates, contrary to morale. Also business scale contribute reversely to morale. This is because for remaining rate so-called bureaucratization of control system is important, while systems for self-fulfilment are not contributory, contrastive to morale.

On the other hand remaining rate is high for those firms with manager-born president, short service of executives (below 5 years), high age of executive (above-61), concern on bigger economic problems among environmental changes (such as government's intervention, competition with rivals or international money system rather than direct and managerial matters including man-power and new-product development), and promoting dynamic systems. But for these firms achievement is worse. This may exhibit that in small firms, with founder-president earnest in performance and young and long-service officers, pressure to employees are intense which makes lower-school graduates impossible to remain. Thus we have:

Hypothesis 48 In Japan's firms most organization factors to raise remaining rate of lower-school graduates are contradictory to morale of employees and performance. That is to say, systems to satisfy self-actualization wishes for raising morale result in lower remaining rate, and also top's positive attitude to improve achievement affects similarly.

Let's next examine those factors that are contributory to remaining rate and at the same time to morale and achievement by Tables 25 and 21. These are regular seminar for college graduates (Yes), resistance to reform (no resistance), abroad study (Yes), per-capita admini. exp. (largest in all 1963, 68, 72), information to top (accurate), average wages (above 1,450 thousand yen), attitude to the equal (very good), strengthening of general staff (Yes) and overseas sales subsidiary (Yes). These can be listed up as favorable factors. So we have:

Hypothesis 49 In Japan's firms such factors as are contributory *commonly* to remaining rate, morale and achievement are relatively small. Intensification of man-power development, including regular seminar for college graduates and abroad study, positivism on organization such as strengthening of general staff and set-up of overseas sales subsidiary, largest expense possible for these aims, wages-up, resultant better attitude to the equal and small resistance to reform will be fruitful for the three aspects.

7. Organization Factors Contributory to Bus. Result Including Morale (Business Result II)

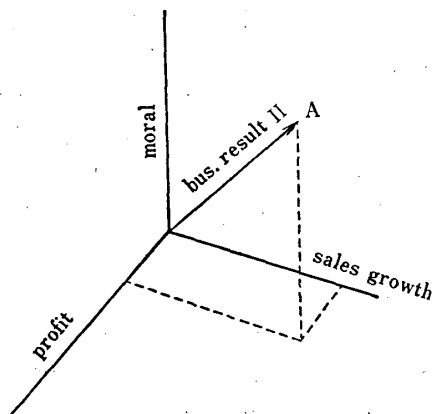
Since formerly firms were conceived only as "place of production," evaluation of firm's performances was based simply on economic or financial indicators such as the rate of profit of capital and the rate of sales growth, and hence morale of employees was regarded merely as a means to level up these indicators. However, in modern times as humanity-centered thinking has become a commonsense in the economic society, and firms have come to be recognized as "place of living" along with "place of production," raising of morale itself is taken as a business objective of firm.

So in this Section we use an indicator consisting of three axes—profit and sales growth (composed as bus. result in our foregoing discussion) plus morale of employees. We name this indicator bus. result II.

$$\text{Thus bus. result II} = \sqrt{(\text{marks of sales growth rate 1972})^2 + (\text{Marks of marks on profit rate 1972})^2 + (\text{average value of morale})^2}$$

where average value of morale = (college-graduate morale + lower-school-graduate morale) / 2.

Figure 3. Exposition of Achievement Including Morale



In this expression the mark of sales growth rate for 1972 takes values from 0 to 4, the mark of profit rate 1972 the same, and the average value of morale from 1 to 4. Accordingly the value of bus. result II takes values from 1 to 6.93. This is shown as Figure 3. That is, to take these three values of Firm A on three orthogonal axes, the distance between original point and point A exhibits A's bus. result II.

On this bus. result II, to seek the values of *D* Table 26 is obtained. To compare the upper-rank 30 contributory Items in this Table with those in Table 21, top factors are slightly decreased and

structural factors increased. Among top factors the decrease pertains to ratio of invited executives, top's behavior in group decision-making and industrial section; the increase to top's appraisal on division performance. Among structural factors, counselor system, per-capita admini. exp. (1962 and 1968), manpower development research center and regular seminar for college graduates are entered, and dynamic-form forward and promotion reflecting ability have disappeared. As for functional factors attitude to the superior is entered and

appraisal for promotion has disappeared. Morale of college graduates and that of lower-school graduates as resultant factor are omitted beforehand since these are dependent variables, and productivity I (quantity) is added in place of these.

Besides these differences of Items, some cases of difference of Categories are seen. For example, as for average length of service of executives a longer period (above 11 years) is better to bus. result, but a period 8 to 10 years is better to bus. result II. By examining other Items in the Table, we have:

Hypothesis 50 In Japan's firms, to consider firm's performance including morale, besides sales growth and profit, structural factors increase importance compared with top factors. That is, top's active leadership and faithful relation to union are necessary, but it is more important, as structural factors, to devise schemes to raise loyalty, to promote man-power development by employees themselves by setting up suitable facilities, and to increase per-capita administrative expense over the long-run.

8. *Analysis of Contribution by a Set of Organization Factors* (some quantification theory I Models)

So far we have analyzed the degrees of contribution of *individual* Items to dependent variables and preferable Categories of each factor, using the values of D in QAQF. In this Section we consider what degree of contribution is made by a set of factors, not individual. This is the 2nd step of QAQF. That is, first we sought high-correlative Categories and Items and eliminated them from the model. This is because such Categories and Items make the cause of multi-colinearity to make the model unstable, and in addition they are of identical social-scientific significance in many cases and hence are duplicate in explanatory power.

First we calculated the coefficient $S^{(26)}$ for each set of two Categories of 107 Items and sought high-correlative Items, especially referring to those with a high value of D entered in the models of Sections 5, 6 and 7. And when correlation is high mutually between these Items, we eliminated them from the Quantification Theory I Model in the below, using together with two principles, that is, ① Item with a small value D and ② of little significance of business economics. By our past experiences on the QTI Model, parameters become unstable if the number of Categories exceeds one-third of number of samples, and so we limited the ceiling the number of Categories woven to one-third of samples. By these principles many Items were excluded from the D -Value Models (for example Table 21).

Next we formed several QTI Models taking Items thus selected, and appreciated their fitness by multi-correlation coefficient and the degree of

26) We have invented a new statistic coefficients to measure the correlation between arbitrary two categories of qualitative items.

Table 27. Quantification Theory I Measure Contribution of a Set of Organization Factors

Model No.	Dependent Variable	Number of Items	Number of Categories	Number of Samples	Multi-correlation coefficient	Unstability
1	Bus. result	26	87	260	0.712	0.483
2	Bus. result	16	56	260	0.625	0.268
3	Bus. result	12 (top)	50	260	0.601	0.400
4	Bus. result	12 (structural)	32	260	0.444	0.124
5	Bus. result	19 (mfg.)	57	170	0.743	0.263
6	Bus. result	10 (non-mfg.)	30	90	0.649	0.133
7	College graduate morale	28	77	260	0.638	0.260
8	College graduate morale	12 (structural)	32	260	0.450	0.250
9	Lower-school graduate morale	29	84	260	0.614	0.429
10	Lower-school graduate morale	12 (structural)	32	260	0.376	0.250
11	Remaining Rate	27	86	260	0.666	0.372
12	Remaining Rate	12 (structural)	32	260	0.401	0.125
13	Bus. result II	27	84	260	0.725	0.369
14	Bus. result II	12 (structural)	32	260	0.467	0.188

unstablens. The unstablens was measured as the ratio between the number of Categories whose ranks in the Item are different from their respective ranks in the same Items of the D-value Model and the number of Categories taken into the QTI Model. (In Table 28, 29, and 30, categories whose ranks are different are dotted in front of their names).

Here we selected Items corresponding to 87 Categories (one-third of 260) from the D-value table (Table 21), as Model 1. In this Model I the multi-correlation coefficient is appreciably high (0.712) but the degree of unstability is also high (0.483) (Table 27). This tells that the selected 87 Items—with relatively high degree of contribution—can explain about 50% (square of 0.712), but about a half of individual parameters are very unstable to become different from primary significance of D-value Table. Therefore this Model is unsuitable to appreciate and forecast individual business performances.

So we reduced Categories further to 56 and constructed Model 2 with 16 Items. Then we had $R = 0.625$ and unstability = 0.268. Since explanation of performances merely by organizations factors could in face be about 40% at the highest, this degree of contribution 38% (square of 0.625) is plausible, and the degree of unstability decreased to a half of the former Model. So this is considered to be usable for appreciation and forecast.

Thus forecast of achievement is performed by conceiving an estimation equation:

$$\hat{Y} = \hat{\beta}_{11}X_{11} + \hat{\beta}_{12}X_{12} + \cdots + \hat{\beta}_{rp}X_{rp}$$

in which mark 1 is given to suitable X (Category of the firm to be measured) and mark 0 to unsuitable X , to find Y , the value of bus.result. The estimated regression coefficients are tabulated as Table 28. In the column of Categories marked dots have a rank different from that in Table 21 each. Here their number is 15, by which the degree of unstability is calculated as $0.268 = 15/56$.

Next, dividing into mfg. and non-mfg. QTI Model was constructed (Models 5 and 6), similarly taking bus.result for dependent variable. Then we had $R = 0.743$ and unstability $= 0.263$ for mfg., and $R = 0.649$ and unstability $= 0.133$ for non-mfg. So it is seen that the Models 5 and 6 (mfg. and non-mfg.) are superior to the Models 1 and 2 (whole industry) as regards both R and unstability. This may be because the contribution of the set of factors is greatly different between the two fields. And since the number of Categories is one-third of that of samples for the both Models, insofar as the multicorrelation coefficient, namely explanatory power, is concerned, organization factors are more effective in mfg. than in non-mfg. However, since the unstability 0.263 of Model 5 is nearly double that of non-mfg. (0.133, Model 6), the former may be somewhat inferior to the latter as a model for appreciation. These are shown in Tables 29 and 30. Thus we have:

Hypothesis 51 In Japan's firms organization factors contribute to achievement in different forms between mfg. and non-mfg.; more strongly in the former seen.

Next let's consider which factors, top or structural, are more contributory by Models 3 and 4 in Table 27. The Items count 12 alike for the two Models. The Categories are different, 50 and 32, and hence the degree of unstability is obviously greater for the Model 3, 0.400 than for the Model 4, 0.124. Yet the multicorrelation coefficient is obviously larger for the former, and the ratio of contribution is about 36:20 ($= 0.601^2 : 0.444^2$). This is shown already by the Hypothesis 41. By this field survey, however, top factors explain about 36% ($= 0.601^2$ of achievement, and structural factors may be 20% ($= 0.444^2$). Thus we have:

Hypothesis 52 In Japan's firms of today the contribution of top-management factors is about 36% on average, and that of organization structural factors about 20%.

In order to compare college graduates and lower-school graduates for morale, let's observe Models 7, 8, 9, and 10. For Models 7 (college) and 9 (lower-school) the numbers of Items are almost equal—28 vs. 29—but the former has higher R than the latter—0.638 vs. 0.614—and smaller unstability—0.260 vs. 0.429. This tells that generally organization factors contribute more greatly to college graduate morale than to lower-school graduate morale. This becomes more evident by comparing Models 8 and 10 which contain quite the same structural factors. For while the unstability is alike 0.250 for both, the value of R is 0.450 for the former and 0.376 for the latter.

Table 28. Quantification Theory I Model Taking Business Result for Dependent Variable
(whole industry, 260 firms, 56 categories)

Item	Category	β
1. Business objective	• Sales growth	3.455
	Profit	3.093
	• New-product development	3.431
2. Sales goal	Under 10% up	0.000
	10-20% up	0.448
	20% and over up	0.694
3. Top's behavior of group decision-making	Principally by president	0.000
	Equal-foot discussion	-0.299
	Principally by executives	-0.341
4. Environmental changes	• Manpower problems	0.000
	Community problems	-0.258
	• Government's intervention	0.173
	International money system	-0.069
	• Consumption structure	0.714
	Financial structure	-0.831
	• Rapid innovation	0.126
	• Product-development competition	0.281
	Moves of rival firms	0.106
5. Top's decision-making	• Cautions action	0.000
	• Speedy action	-0.045
6. President's career	Founder	0.000
	Successor	-0.724
	Manager-born	-0.757
	Come from above	-1.022
7. Information to Top	Tendency to inaccuracy	0.000
	Some tendency to inaccuracy	0.497
	Accurate	0.872
8. Top's attitude to union	Escape and concealment	0.000
	Collective bargaining	0.233
	• Talking	0.024
	• (No union)	0.405
9. Opinion coordination in budgeting	One-side leadership by influential division	0.000
	• Coordination to some-extent	-0.457
	• Smooth coordination from firm's stand point	-0.507
10. Motivation	Economic wish	0.000
	Economic wish and self-actualization	-0.028
	Self-actualization	-0.208
11. Per-capita admini. expense for employees (1972)	• <1.22 (mil. yen)	0.000
	1.22 ≤ • <2.30	0.189
	2.30 ≤ • <3.56	-0.403
	3.56 ≤ •	0.222

Item	Category	$\hat{\beta}$
12. Executives' average length of service	• ≤ 5 (years)	0.000
	5 < • ≤ 8	0.116
	8 < • ≤ 11	0.372
	11 < •	0.324
13. Executives' average age	• < 55	0.000
	55 \leq • < 58	-0.044
	58 \leq • < 61	-0.543
	61 \leq •	-0.071
14. Loyalty raising scheme	0-4 (schemes carried)	0.000
	5-6	-0.306
	7-	0.035
15. Abolition of section-subsection	Yes	0.000
	No	0.410
16. Employee's stock-ownership plan	Yes	0.000
	No	-0.420

R=0.628 Unstability=15/56=0.268

Table 29. Quantification Theory I Model Taking Business Result for Dependent Variable
(mfg. 170 firms, 57 categories)

Item	Category	$\hat{\beta}$
1. Scale of firms	• Under 800 (persons)	3.469
	• 800-1,800	3.392
	1,800-3,500	3.449
	• 3,500 and over	3.139
2. Business objective	Sales growth	0.000
	Profit	-0.400
	New-product development	0.109
3. Sales goal	Under 10% up	0.000
	10-20% up	0.525
	20% and over up	0.956
4. Top's decision-making	• Cautious action	0.000
	• Speedy action	-0.055
5. President's career	Founder	0.000
	Successor	-0.275
	Manager-born	-0.456
	Come from above	-1.037
6. Information to top	Tendency to inaccuracy	0.000
	Some tendency to inaccuracy	0.599
	Accurate	0.854
7. Overseas sales subsidiary	Yes	0.000
	No	-0.418
8. Overseas production subsidiary	Yes	0.000
	No	-0.312

Item	Category	$\hat{\beta}$
9. Opinion coordination in budgeting	One-side leadership by influential division	0.000
	Coordination to some extent	-0.583
	Smooth coordination from firm's stand point	-0.542
10. Resistance to reform	• Strong resistance	0.000
	• Some resistance	-0.358
	No resistance	0.157
11. Motivation	Economic wish	0.000
	Economic wish and self-actualization	0.072
	Self-actualization	0.467
12. Productivity (quantity)	Slightly inferior	0.000
	• Slightly superior	0.720
	• Very superior	0.440
13. Per-capita admini. expense for middles	• <17.1 (mil. yen)	0.000
	17.1 ≤ • <28.0	0.913
	• 28.0 ≤ • <51.0	0.493
	• 51.0 ≤ •	0.259
14. Ratio of invited executives	• 0	0.000
	0 < • ≤ 0.125	-0.416
	0.125 < • ≤ 0.240	0.345
	• 0.240 < •	0.277
15. Executives' average length of service	• • ≤ 5 (years)	0.000
	• 5 < • ≤ 8	-0.260
	8 < • ≤ 11	0.034
	11 < •	0.020
16. Executives' average age	• <55	0.000
	55 ≤ • <58	0.101
	58 ≤ • <61	-0.502
	61 ≤ •	-0.027
17. Abolition of section-subsection	Yes	0.000
	No	0.508
18. Suggestion system	Yes	0.000
	No	0.651
19. Counselor system	Yes	0.000
	No	-0.602

R=0.743 Unstability=15/57=0.263

Table 30. Quantification Theory I Model Taking Business Result for Dependent Variable (non- mfg. 30 categories)

Item	Category	$\hat{\beta}$
1. Sales	Under 10% up	3.838
	10-20% up	3.457
	20% and over up	0.485
2. President's career	Founder	0.000

Item	Category	$\hat{\beta}$
3. Motivation	• Successor	-0.772
	Manager-born	-0.665
	• Come from above	-0.488
	Economic wish	0.000
	Economic wish and self-actualization	0.614
4. Productivity II (quality)	Self-actualization	0.183
	Slightly inferior	0.000
	Slightly superior	0.691
	Very superior	0.745
5. Remaining rate	10% and over	0.000
	5-10%	-0.630
	Under 5%	-0.326
6. Executives' average length of service	• ≤ 5 (years)	0.000
	$5 < \bullet \leq 8$	0.054
	$8 < \bullet \leq 11$	0.258
	$11 < \bullet$	0.600
7. Executives' average age	• < 55 (years)	0.000
	• $55 \leq \bullet < 58$	-0.613
	$58 \leq \bullet < 61$	-0.450
	$61 \leq \bullet$	-0.198
8. Abolition of section-subsection	Yes	0.000
	No	0.317
9. Computerization of customer information	Yes	0.000
	No	-0.453
10. Employee's stock-ownership plan	Yes	0.000
	No	-0.342

$R=0.649$ Unstability= $4/30=0.133$

The ratio of contribution, so long as structural factors are concerned, is 1.43-fold ($= 0.450^2 / 0.376^2$). Thus we have:

Hypothesis 53 In Japan's firms organization factors are more contributory to college graduates than to lower-school graduates as regards morale, with the ratio being 1.3- to 1.4-fold.

Next, remaining rate. To compare Models 11 and 12 remaining rate with Models 1 and 4 (bus. result), the value of R is greater in the latter two than in the former two. This shows that organization factors contribute more greatly to bus. result than to remaining rate of lower-school graduates. This accords with the fact that average wages to satisfy economic wish is more contributory to remaining rate than organization factors for self-actualization, as observed in Sections 2 and 3.

Lastly let's see bus. result II (including morale). To compare Models 13 and 14 for bus. result II with Models 1 and 4, the numbers of Items, Categories and samples are almost the same, yet R is larger for the former two than the latter two. It is seen that organization factors are more con-

tributory to bus. result including morale than to that comprising only financial indicators. And, if morale makes an indispensable for long-run sustenance and development of firm, organization factors contribute more greatly for the long-run than short run. Thus we have:

Hypothesis 54 If firms are looked as a place for life as well as for production, and raising of morale as a condition for long-run growth of firm, organization factors are more contributory for long-run growth than short-run.

9. Bus. Result Forecast Model by Means of a Set of Organization Factors

The Model to measure contribution of a set of factors studied in the preceding Section is usually called multi-correlation equation by dummy variable and used for forecasting of performance and other aims. That is, it makes a multi-correlation equation, taking bus. result for explained variable and Categories of factors for explanatory variable. Applying Table 28 to:

$$\hat{Y} = 3.455X_1 + 3.093X_2 + 3.431X_3 + 0.000X_4 + \dots - 0.420X_{56}$$

we made forecasts of bus. result for all the surveyed 260 firms, of which upper-rank 20 firms are shown in Table 31. It is noteworthy that big firms are few, while those firms that achieved rapid growth in the 1960s are numerous, including Casio, Hokuriku Electric, Omron Tateishi, Nihon Kodan Kogyo, Kyowa Electric, Japan Servo, Teac, and Ikegami Tsushinki.

This theoretical value means a value a firm will take on average, provided it holds its present organization. If an actual value is smaller than theoretical one, it will tell worse effects of factors other than organization or top, mainly product strategy, and reversely if larger, their better effects. In Figures 4 and 5, the horizontal axis represents theoretical values and the vertical axis actual respectively for the electric equipment and food

Figure 4. Theoretical and Actual values
of Organizational Efficiency
(elect. equip.)

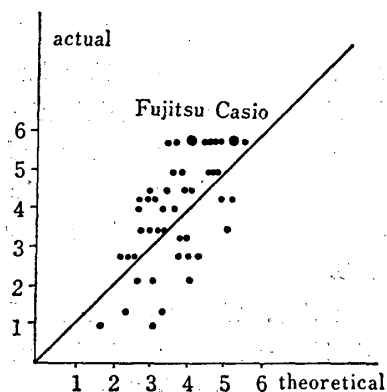
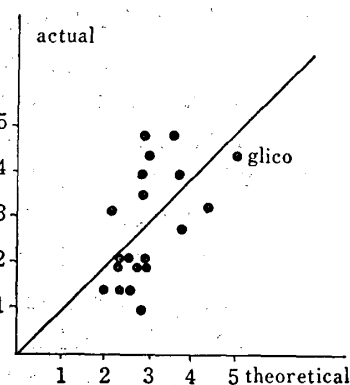


Figure 5. Theoretical and Actual values
of Organizational Efficiency
(food)



industries. It is obvious that in elect.-equip. many firms have an actual value above theoretical (above the 45-degree line), while in food many firms have

Table 31. Ranking of Best 20 Firms by Bus. Result (theoretical value)

-
1. Ito-Yokado Co., Ltd. (trade)
 2. Nippon Shimpah Co., Ltd. (finance)
 3. Casio Computer Co., Ltd. (elect.)
 4. Hokuriku Electric Industry Co., Ltd. (elect.)
 5. Omron Tateisi Electric Co. (elect.)
 6. Ezaki Glico Co., Ltd. (food)
 7. Nihon Kodan Kogyo Co., Ltd. (elect.)
 8. Mitsukoshi Ltd. (trade)
 9. Mitsubishi Electric Corp. (elect.)
 10. Kyowa Electronic Instruments Co., Ltd. (elect.)
 11. The Nagoya Sogo Bank, Ltd. (Bank)
 12. Teac Corporation (elect.)
 13. Ikegami Tsushinki Co., Ltd. (elect.)
 14. Japan Servo Co., Ltd. (elect.)
 15. Koito Manufacturing Co., Ltd. (trans. equip)
 16. Nichiei Co., Ltd. (trade)
 17. Showa Musen Kogyo Co., Ltd. (elect.)
 18. Jidosha Denki Kogyo Co., Ltd. (elect.)
 19. Ataka & Co., Ltd. (trade)
 20. International Rectifier Corp. Japan Ltd. (trade)
-

Table 32. Ranking of Best 20 Firms by Bus. Result II (including morale) (theoretical value)

-
1. Casio Computer Co., Ltd. (elect.)
 2. Showa Musen Kogyo Co., Ltd. (elect.)
 3. Koito Manufacturing Co., Ltd. (trans. equip)
 4. Omron Tateisi Electric Co. (elect.)
 5. Ezaki Glico Co., Ltd. (food)
 6. Ito-Yokado Co., Ltd. (trade)
 7. TDK Electronics Co., Ltd. (elect.)
 8. Nakakita Seisakusho Co., Ltd. (machinery)
 9. The Lion Fat & Oil Co., Ltd. (chemicals)
 10. Sankyo Electric Co., Ltd. (elect.)
 11. Imura Confectionery Co., Ltd. (food)
 12. Kyushu Matsushita Electric Co., Ltd. (elect.)
 13. Nissan Motor Co., Ltd. (trans. equip)
 14. Hitachi, Ltd. (elect.)
 15. Nissho-Iwai Co., Ltd. (trade)
 16. Ikegami Tsushinki Co., Ltd. (elect.)
 17. The Nishi-Nippon Sogo Bank, Ltd. (Bank)
 18. Tokyu Land Corp. (real estate)
 19. Kitanihon Shokuhinkogyo Co., Ltd. (food)
 20. Japan Pulp & Paper Co., Ltd. (trade)
-

a lower value. This suggests that in the former industry factors other than organization, mainly those about product, are superior as a whole and in the latter inferior.

In this Figure, Fujitsu Ltd., for example, has a rather small theoretical value (4.1) and a very high actual (5.7). This difference derives mainly from its product strategy (computer and other communication equip.), and so improvement of organization will bring about still better achievement. For the method of such improvement the above-shown Table 28 can be used, that is, to improve upper-rank Items for which the value of Category is low. For example, if there is no employee's stockholding plan, it should be introduced, and then achievement would rise by 0.42. To speak generally, firms sitting above the 45-degree line should make efforts to improve organization, and those sitting below should reform other factors such as product strategy. Therefore, as the Figures show, in elect.equip. there are many firms in elect.equip. that should improve organization, and in food product strategy. The we have:

Hypothesis 55 In Japan's firms, comparing elect.equip. with violent technical innovation and food, it may be said that in the former there are many firms that should improve organization, and in the latter that should reform product strategy.

Lastly by using the multi-correlation equation with bus. result II, upper-rank 20 firms are as listed in Table 32. In this Table appear such big firms as Hitachi, Nissan Motor, Kyushu Matsushita Elect., Nissho-Iwai and Lion Fat which are not found in Table 31 (simple bus. result), and some firms of rapid growth disappear. Thus we have:

Hypothesis 56 In Japan's firms, as regards financial performance firms of rapid growth take upper ranks, but as for performance including morale big firms do.

10. Appendix—Items of Questionnaire

1. Orientation of Management

1-1. Business objective. Please select and give ranks to three objectives most important to your firm from among the below.

- a) sales growth, b) market share, c) export expansion, d) profit amount, e) capital structure, f) new-product development, g) dividend rate, h) overseas investment (incl. advancement), i) consolidation of domestic sales channel (rank-1, -2, -3).

1-2. Goal of sales. What is the level of sales goal for the current term as compared with the last term (one year ago)? Mark one position in the below.

- a) under-5% up, b) 5-10% up, c) 10-20%, up, d) 20-40% up, e) 40% and over up.

1-3. Who is charged with the decision of sales goal? Mark one position.

- a) principally by president, b) by president taking account of executives' view, c) by equal-footing discussion of members of board of director but finally by president's conclusion, d) through discussion by many executives and finally president's leadership.

1-4. Environmental changes

Among the environmental changes below, place ⊙ on one topic you regard as most important and ○ on two next important.

- a) increasing government's intervention (incl. anti-monopoly, revision of commercial law), c) deepening manpower shortage, d) relation with regional community, d) reorganization of industry, e) monopolization, f) fluctuation of international money system, g) change in consumption structure, h) financial structure, i) rapid technical innovation, j) sharpening product-development competition, k) antipathy in counterpart countries against export and investment, l) labor problem in overseas branches, etc., m) moves of rival firms home and abroad, n) stability of conservative government.

1-5. Countermeasures to changes. Among the countermeasures shown below to meet environmental changes, please attach ⊙ to one item you think most important and ○ to three next important.

- a) investment in research, b) new-product development, c) abandonment of unprofitable products, d) export expansion, e) advertisement of firm, f) magt. on the principle of ability, g) development of man-power, h) fulfilment of welfare provisions, i) labor-management conciliation, j) establishment of information control system, k) rationalization and labor-saving, l) promotion of authority delegation, m) reinforcement of owned capital, n) cooperation with other firms, o) control on subcontractor firms, p) appeal to government, q) simplification of managerial system, r) set-up of project structure (such as project team), s) reduction of employees, t) reexamination of top-management functions, u) consolidation of domestic sales channel, v) consolidation of overseas sales channel, w) set-up of overseas production footholds, x) merger with other firms (of the same industry), y) diversification of business.

1-6. Top's attitude to environmental changes. Please mark one position among the attitudes below to great changes in outside conditions.

- a) observe situations carefully, b) prepare measures of some extent, c) carry out measures step by step on exact judgement of situations, d) carry out measures positively and speedily on exact judgement of situations.

2. Top-management (denoting members of board of director)

2-1. President's career. Please mark suitable position.

- a) founder president (one who has substantially has brought up your firm), b) second-successor president (son, brother, relative or partner

of founder), c) president born from your firm (engaged in management at least for ten years), d) president who has come from other firm or organ and become president within a year).

- 2-2. Speciality fields of executives. Inform in what fields your executive are most strong. Please insert ○ for the line of president and numbers for other executives:

	Engineering (R & D)	Production control	Financial management	Personnel affairs	Planning & Research	Other
President						
Executives (persons)						

- 2-3. Replenishment of executives. Have any executives been replenished from outside in the last three years? If any, please fill the following: (1) Number (persons); (2) Origins: customer (persons), other firm of the same industry, supplier of materials, financial organ, public organ, miscellaneous; (3) Inform the total number of persons who have become your executive in the last two years (persons).
- 2-4. Average length of service and age of executives. Please inform: average length of service (years), average age (years old).
- 2-5. Appraisal on division performance. Top's appraisal is made (please mark one position): a) mainly respecting relations to firm's short-run business result, b) mainly respecting efficient management of the division and its contribution to firm's business result, c) ditto but taking account of coordination with other divisions, d) from a long-run viewpoint respecting efficiency and coordination.
- 2-6. Appraisal on research performances. Top's appraisal on research result is made (please mark one): a) in relation with firm's business result only, b) mainly by relation to firm's business result but referring to appreciation in the researcher's study area, c) mainly by appreciation in the researcher's study area from an long-run view, d) mainly by researcher's self-appreciation from a long-run view.
- 2-7. Appraisal on project team. Top's appraisal on project-team members as compared with line members is (please mark one):
a) not so high, b) equal, c) slightly higher, d) higher than on those of any other lines.
- 2-8. Supply of information to tops. As regards information to top (please mark one):
a) all sorts of information are apt to be inaccurate, b) information top may pay attentions are almost accurate but other sorts are apt to be inaccurate, c) informations top may pay attention are accurate but other sorts are sometimes inaccurate, d) all informations coming to top are allways accurate.
- 2-9. Labor-management relations. In the case of trouble on management, what attitude do top take to labor union? (Answer-writer's personal

view shall be well. Please mark one).

a) Top's will is one-sidedly pushed secretly from union's eyes because of antagonistic relation, b) Top advances bargaining merely on conciliable points evading important point opposed, c) Top intends to wash opposite points and find out solution through collective bargaining on account of some degree of mutual confidence, d) Top enters thorough talking with union before decision and take up its views on account of deep mutual confidence.

3. Delegation of authority

3-1. Authority in general. Assuming president's authority as 100%, please express that of the following posts at rough percentage:

1) executive vice-president (%), 2) division-chief (incl. office work manager), 3) section-chief.

3-2. Competence on personnel affairs. Where is the competence on employment and discharge? Please mark one. As for high-school graduates:

a) top-management, b) division-chief, factory manager, c) branch-manager, section-chief. As for college graduates:

a) top-management, b) division-chief, factory-manager, c) branch-manager, section-chief.

4. Rationalization

4-1. Organization reform. As regards organization reform, has any reform of system been performed in the past three years? Please Yes or No on the following categories each:

a) abolition of section-subsection system, b) unification or simplification of division, section or subsection, c) provision of "speciality task" system, d) reinforcement of project structure such as project team or task force, e) set-up of special committee of top (e.g., for new-product development), f) strengthening of general staff.

4-2. Rationalization and labor-saving.

To what extent is rationalization or labor-saving is advanced? Mark all suitable items, even if only partial (plural answers):

a) computerization of pay calculation, b) computerization of form systems, c) computer-filing of personnel information, d) computer-filing of information on customers and suppliers, e) definite provision of budgeting procedures, f) publication of standards for job evaluation (e.g., scoring, ranking, classification), g) publication of eligibility to promotion, (below inquiry to manufacturing only) h) computerization of inventory control, i) computerization of cost-accounting, j) clear stipulation of routes of sales information through selling, production and accounting sectors. (below inquiry to trade, bank and insurance only) h') system for immediate grasp of credit accounts between divisions or branches (trade), deposit (bank) and contact (insurance), i') computer-modeling of sales forecast (trade),

evaluation of firm (bank, insurance) and evaluation of contract subject (insurance), j') mechanization and uniformity of papers for direct mail (trade), or contract documents (bank, insurance).

5. Project team

5-1. Project structure. Have you any project structures such as project team or task force? Please answer Yes (having) or No (not).

5-2. Contents of project structure. If you have any:

- 1) How many persons are included at present?
- 2) How many organizations?
- 3) What percentage of total budget is appropriated to project structure in total (excl. personnel cost)?
- 4) Under what classes below do project leaders come mainly?
 - a) director, b) division-chief, c) section-chief.

5-3. Inter-organization communication. Communication between project team and line is performed (mark one suitable position among the below):

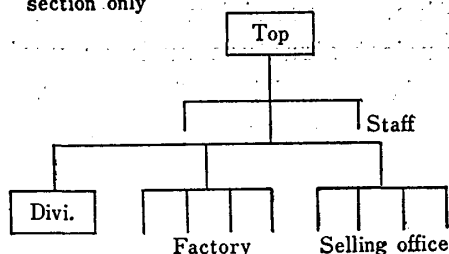
- a) always by direct and cooperative contact between members of team and line, b) mostly between members, c) mostly through team leaders and line chief but sometimes by members directly, d) always through team leader and line chief (e.g. director in charge).

6. The division system

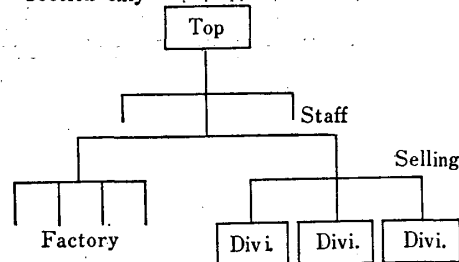
6-1. The system. Have you any? (Yes or No).

6-2. Form of division. Please mark one of the following forms below you think nearest.

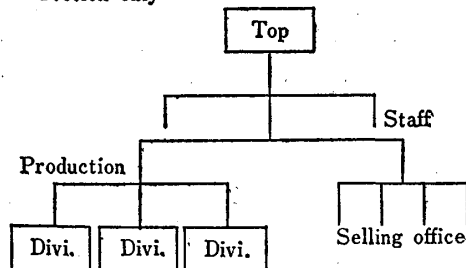
(a) In particular section only



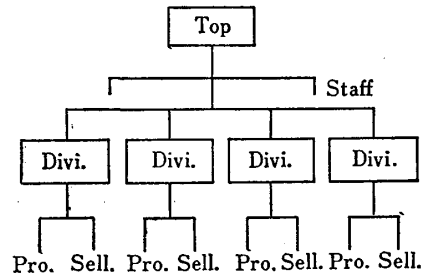
(c) In selling section only



(b) In production section only



(d) Divi. covering all lines



6-3. Responsibility of division. Please mark one.

- a) independent firm type, b) profit responsibility type, c) cost responsibility type.

7. Overseas investment

- 7-1. Overseas branch or office. Have you any?
- 7-2. Overseas sales subsidiary. Have you any mainly for selling?
- 7-3. Overseas production subsidiary. Have you any?
- 7-4. Distribution. In how many countries are your footholds of investment distributed? Developed (number), developing (number).
- 7-5. Equity capital ratio. What percentage do your investments to total capital hold in the oversea selling and production subsidiaries on average? Developed (%), developing (%).
- 7-6. Ratio of native executives. What percentage do native executives to total executives hold in your overseas selling and production subsidiaries on average? Developed (%), developing (%).
- 7-7. Ratio of native middles. What percentage do middles (division- and section-chief) hold? Developed (%) and developing (%).

8. Middle-management

- 8-1. Development system of man-power. Inform about development systems for middle-management. Please mark suitable positions (plural answering).
 - a) boarding training for division-section chiefs (at least once a year).
 - b) active aid to attendance to outside lecture or correspondence-course education (e.g., fees, permission of attendance within work hour), c) provision of study abroad, and of dispatch to outside group for joint research (constant and longer than a year), d) system for research, planning and promotion of man-power development itself (e.g., self-development center, system to assess own ability, training center, etc.), e) pay-increase system reflecting performance and ability (covering more than 5% of increase), f) annual periodical training for college-graduate employees (longer than one week annually; including sensitivity training but excluding those for new school graduates), g) examination system for promotion to section- or division-chief, h) system for publishing and discussion of research results and for report connected with personal appraisal, i) system of magt. by objective, j) duplicate organization, that is, a person included in project structure and function organization at the same time (e.g. project team and line).
- 8-2. Initiative of information. Where lies initiative of information to lower?
 - a) entirely at top; middle and lower merely execute received orders,
 - b) mainly at top, c) mainly at middle, d) at all strata.
- 8-3. Reflection of operational field opinion. For budgeting, opinions of operational posts are (....) in the decision-making of home office. Please mark one position.
 - a) not so much reflected, b) reflected to some extent, c) reflected appreciably, d) reflected very remarkably.

8-4. Coordination of opinion. At discrepancies of opinion on budgeting (mark one position):

- a) disputes continue till the time limit, and final decision is made by the leadership of influential divisions, b) views of less-influential divisions are taken into account but mostly influential ones take leadership, c) coordination from firm's standpoint is somewhat achieved by meeting of budgeting members, d) smooth coordination from firm's standpoint is achieved by meeting.

8-5. Resistance to reform of organization. Against reform by top-management:

- a) strong resistance, and hence stagnation of management, b) few resistance at middle, but appreciable at lower and hence some stagnation of management, c) some resistance at both middle and lower but almost smooth management, d) no resistance and very smooth management.

9. Employee

9-1. Loyalty-raising scheme. Mark every one, Yes or No.

- a) proposal system (incl. complaint adjustment), b) employee's stock ownership system, c) entertainment for employee's family members (e.g., athletic meeting, tour, women's society, etc.), d) employee deposit system, e) discount sale to employees, f) employee house ownership plan (e.g., service for land, loan, and sale of firm's house), g) counselor system, h) some pages of firm's journal edited by employees, i) managt-by-objective system for norm setting, j) system to reflect employee's opinion about job rotation.

9-2. Participation to norm setting. Decision of norm of work is made:

- a) by administrating division one-sidedly, b) framework by administrative division taking account of employee's views, c) firstly employee's views and lastly by administrative division, d) mainly by employees.

9-3. Idea to motivate employee. What idea among the below for motivation of employee is respected? Please mark one.

- a) economic wish only, b) mainly economic wish and slightly self-actualization, c) equally economic wish and self-actualization, d) mainly active self-actualization (self-actualization means that for status, friendship, achievement, etc.).

9-4. Attitude to the superior. Generally the attitude is:

- a) antipathy yet sneak, b) sneak, c) moderate goodwill, d) much goodwill and cooperative.

9-5. Attitude to the equal. The attitude is:

- a) antipathy, b) sometimes antipathy due to rival sense, c) some rival sense but generally goodwill, d) much goodwill and cooperative.

9-6. Promotion of employees. Promotion is decided by:

- a) solely by the appraisal by the superior, b) mainly by the superior's appraisal, but taking view of fellows for reference, c) by the superior appraisal adding self-appraisal, d) by self-appraisal, adding the superior's appraisal.
- 9-7. Morale of college graduates. To compare moral of college-graduate employees (male) with that of other firms:
a) slightly inferior, b) almost equal, c) slightly superior, d) very superior.
- 9-8. Morale of lowerer-school graduates. To compare with other firms:
a) slightly inferior, b) almost equal, c) slightly superior, d) very superior.
- 9-9. Productivity I. Target output of production (for mfg.; as for trade sales volume, bank deposit, insur. contract):
a) target is often unfilled, b) sometimes unfilled, c) almost filled, d) perfectly filled.
- 9-10. Productivity II. To compare the quality of products (of service for trade, bank and insur.) with other firms:
a) slightly inferior, b) almost equal, c) slightly superior, d) very superior.
10. **Turn-over rate of labour**
What is the turn-over rate of labour (lower-school graduates)?
rate = $\{(\text{total employees at 1972-beginning}) - (\text{employees at the term-end} + \text{retired age-limit persons})\} / (\text{total employees at 1972-beginning})$.
a) under-5%, b) 5-10%, c) 10-20%, d) 20-30%, 30% and over.

11. **Financial indicators**

Please enter figures in the below.

Financial year	1962	1967	1972
Sales			
Net profits (before tax and after depreciation)			
Capital (total liabilities and net worth)			
Genetal administrative and selling expense			
Number of employees (excl. division-section chief)			
Persons of division-section chiefs(incl. chief of branch, etc.)			
Average wages of employees (annual, before tax)			