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May 1984

COMPARISONS OF MANAGEMENT MOBILITY IN THE U.S. AND JAPANESE AUTOMOBILE INDUSTRIES

Working Paper No. 378

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1. INTRODUCTION

Our ability to analyze organizations would probably be severely questioned if we argued that the structure and management style of Japanese and American firms in the auto industry are essentially the same. Indeed, it is the preponderance of rather obvious differences between them that has led many to speculate on the causes of their diverging fortunes in recent years. However, the value of casual speculation is limited. What is needed are more systematic examinations of the essential differences between the two types of organizations.

In this paper, we explore differences in the subsystem that is probably the most often cited cause of Japanese success and American difficulties: the human resource management system. Specifically, we will examine the intra-organizational mobility patterns of managers. It is often asserted in the literature that, due to differences in human resource management policies, most Japanese managers tend to have generalist careers which lead them through many organizational subunits and functions. This is in contrast to the more specialized careers of the American managers (Ouchi and Jaeger, 1979). What we present here is an analysis comparing career path patterns of middle-level managers in Japanese and U.S. automotive firms.

This comparative study focuses on three career path dimensions--functional domain, positional domain, and velocity of career changes--and on one career outcome--attained ranking. The units of analysis are individuals who share similar demographic characteristics and are subject to similar organizational and environmental constraints--the cohort. Our analysis is designed to contrast mobility patterns of middle-level managers in American and Japanese automotive firms while accounting for possible mediating effects of occupational class.

2. CAREER PATH DIMENSIONS

Our analysis expands Schein's career model (Schein, 1971). In particular, we clearly differentiate two patterns of lateral mobility; one across functional boundaries (e.g., a move from sales to personnel), the other across intra-organizational, departmental or divisional boundaries while remaining in the same functional area. Such a distinction has so far been neglected in the organizational literature.

The functional domain encompasses all job functions performed by an individual during his or her career in the organization. Regardless of whether cross-functional experience building is intentional, after a period of time even in an originally homogeneous cohort of employees, important differences will occur based on changes in their human capital endowment related to their functional expertise. Through on-the-job training, some employees may become more specialized, concentrating on one narrow job activity, while others acquire broad experience in many different job functions.

Furthermore, the career trajectories of some employees may bring them in touch with numerous organizational subunits, while others have careers limited to a relatively constrained area within the organization. Performing a particular job function in a single subunit within the organization may have different career consequences than performing a similar function in a sequence of assignments in various parts of the organization. This dimension of career paths is labeled position domain and encompasses all positions experienced by an employee classified with respect to the internal organizational structure.

While these two career domains reflect what are basically qualitative aspects of careers, they can be readily transformed into quantitative terms. For example, in order to operationalize employees' functional domains, a set of mutually exclusive job functions is generated, based on the job histories

of all employees in their respective firms. Its scope depends on the level of detail required in the analysis. Then, the number of unique job functions is counted for each individual. A similar procedure--based on job histories categorized by organizational subunits--is followed to quantify employees' position domains.

The third career dimensions, career velocity, measures the frequency of career changes irrespective of their functional or positional consequences. Finally, attained career ranking measures the level of an employee's career achievement and is typically closely related to an individual's status, salary, or a combination of both. In the single-organization studies, the use of the former is preferred, as the collection of highly sensitive information can be avoided. However, due to frequent incompatibility of managerial ranks across organizations, salary level indicators are more appropriate for comparative surveys.

3. HYPOTHESES

Two sets of hypotheses will be tested in this paper. First, patterns of career mobility will be examined separately in the U.S. and Japan, focusing on the impact of occupational class. The organizational literature suggests that certain aspects of occupational task uncertainty may have an impact on mobility (Thompson, 1967; Anderson et. al., 1981).

The emphasis here is on differences between level of uncertainty associated with technical and non-technical career lines. Martin and Strauss (1966) proposed that in more technically specialized jobs, the career path will be more specialized. They reasoned that in order to meet the qualification demands of these positions, intense and specialized training is required. This may result in longer periods in a particular function or position, and, therefore, fewer career changes--lower career velocity--over time (HYPOTHESIS 1).

Similarly, if manager's occupational class (technical versus nontechnical) can be seen as a proxy for core job technology, then extending Thompson's (1967) and Vardi and Hammer's (1977) reasoning with regard to the relationship between technology and job mobility (the more intensive the technology, the less mobility is expected), leads us to propose that the career paths of technical managers will be more specialized relative to non-technical managers. Non-technical managers in both countries should have higher functional and position domain sources than their colleagues with technical backgrounds (HYPOTHESES 2 and 3).

With respect to career ranking, we expect the non-technical managers in both countries to score higher than the technical managers, since career progression depends to a large degree on the bargaining power of individuals (HYPOTHESIS 4). For technical professions, Thompson (1967) argues that such bargaining power depends on visibility among occupational colleagues, and on their ability to reduce dependency on the organization through opportunities to seek comparable, or better, employment elsewhere. Given the limited job opportunities for automotive engineers outside of their industry, their bargaining power is restricted in comparison to managers in non-technical occupations.

The second set of hypotheses addresses expected differences between the U.S. and Japan. Numerous references in organizational literature assert that functional and/or position domains of Japanese managers are much broader than those of Americans--the so-called "generalist versus specialist career" theory (e.g., Ouchi, 1981; Pascale and Athos, 1981). Moreover, so far these are untested propositions only. In addition, distinctions between the two career path dimensions are generally not even made.

With regard to these issues, findings reported here should help clarify whether career paths in Japanese organizations are indeed characterized by broader functional domains, broader positional domains, or both (HYPOTHESES 5 and 6). As for career velocity, we also expect that the Japanese will score higher than the Americans (HYPOTHESIS 7). However, no hypothesis is offered regarding contrasts of salary rank distributions, since these measures are not comparable. Instead, an exploratory analysis of salary rank distribution will be presented.

4. RESEARCH DESIGN

The sample for the study consists of 135 managers from one major Japanese automobile manufacturer (Company J) and the same number of managers from a similar U.S. firm (Company A). All have twenty years of experience and entered the respective firm at approximately the same time (the equal n is coincidental). The length of experience was chosen in order for it to be sufficient to allow managers to form distinct career path patterns.

The U.S. sample was randomly selected from a complete cohort of college-educated managers with the required experience, based on the company's computerized personnel records. These were then matched with manually maintained job histories. The group originally selected (n=169) was then reduced by the elimination of employees who, first, had an interrupted record of employment in Company A, second, whose age was higher than one standard deviation from the cohort mean (to eliminate any age effect), third, who could not be unequivocally classified into either occupational class, and fourth, had incomplete job records.

The Japanese sample was selected from a complete cohort of college graduates recruited twenty years ago who are still with the firm (n=151). The

sample was reduced by eliminating those who did not attain a managerial position, those who had ambiguous job histories, and those with incomplete job records. The age of the managers was not a discriminating factor, as none of them had any previous work experience.

The reason for the difference in the size of the original cohorts in Companies A and J is the size and growth rates of the respective firms. Even though the production volume today is comparable, Company J was substantially smaller twenty years ago. Also, Company A is an integrated manufacturer, while Company J is supplied with many parts and components by its nominally independent affiliates.

All managers in the sample were categorized as either technicians or non-technicians as indicated by their college education and career experience. Based on the methodology explained earlier, variables operationalizing career path domains were created. Variables FUNCTION1 and FUNCTION2 were designed as functional domain scores, the latter using a more detailed classification of functions (e.g. engineering vs. car engineering, finance vs. budget planning) (Note 1). Variables POSITION1 and POSITION2 express position domain scores measuring, respectively, interdivisional and interdepartmental mobility.

The variable VELOCITY indicates the number of all job changes during the twenty years of the manager's career. In this study, only those changes followed by more than a year on the job were counted. However, such a cut-off point is essentially arbitrary and should therefore be based on a careful review of job placement and career planning in each of the organizations

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1. Because of the nature of the data, job functions are differentiated at a much finer level for the American firm than for the Japanese one. As a result, findings for FUNCTION2 are not directly comparable across the two firms, as any comparison would be confounded by an underestimation of the functional mobility of Japanese managers.

examined. In this case, jobs shorter than one year were mostly temporary assignments necessitated by sudden staffing gaps. Finally, the variable RANKING was measured as the salary grade attained at the time of the sampling.

5. RESULTS

The sub-group n's, as well as means and standard deviations on all variables computed by country of origin and occupational class are presented in TABLE 1. Here, one outcome is worth special note, although it is not directly related to the subsequent analysis. The ratio of technicians to administrators is much larger in Company J (87:48 or 1.8:1) than in Company A (72:63 or 1.1:1). Perhaps in this we have stumbled (finally!) upon the "real" cause of Japan's economic success?

Analysis of variance tests (ANOVA) between subgroups matched either by country of origin or occupational class were performed on each of the six variables using the MIDAS computer package. TABLES 2 and 3 summarize the analysis of relationships between occupational class of managers and their career dimensions by country of origin.

5.1. Within-Country Analyses

In Company A, as predicted, technicians scored significantly lower ($P<.001$) than non-technicians on both measures of the functional domain. FUNCTION1 and FUNCTION2. An additional frequency analysis reveals that nearly fifty percent of technicians never served in more than one two-digit level or more than two three-digit level functions. Among non-technicians, only twenty-five percent were limited to one two-digit function, while experience in more than three three-digit functions was the common rule.

For position mobility, the findings are more equivocal. Here, the technicians again score lower ($p<.05$) on the position domain variable

POSITION1, which measures inter-divisional mobility. However, with respect to inter-departmental mobility (variable POSITION2), no significant difference between the two groups was observed.

Nearly all technicians experienced only either one or two divisions--both groups were equally represented within the cohort. Among non-technicians, while the majority, nearly 50 percent, actually never left the division to which they were originally assigned, twenty-five percent moved very frequently inside the organization and held positions in more than three divisions.

The non-technicians in Company A also changes jobs (VELOCITY) significantly more often than technicians ($p<.01$); the average duration on the job was 2.6 years for the former, and 3.1 years for the latter. Among technicians, most managers experienced between four to eight jobs. Among non-technicians, seven or eight jobs were the most frequent. In total, more than fifteen percent of the cohort experienced more than ten jobs in twenty years.

Finally, the distribution of salary grades in Company A was examined. As predicted, technicians scored substantially lower than non-technicians ($p<.05$). In fact, the top ten cohort members in terms of salary rankings were 11 non-technicians. Among non-technicians, salary distribution resembles a pyramid: the higher the grade, the less the number of managers in it. Among technicians, the grade-two positions are actually the most numerous.

In Company J, the distribution of most relevant variables was similar to Company A. On the two measures of cross-functional mobility (FUNCTION1 and FUNCTION2), Japanese technicians scored significantly lower than non-technicians (in both cases $p<.001$). A majority of technicians experienced at least two functions (using the two-digit index), with the mean for non-technicians nearly a full point higher. The difference between the two groups

was less pronounced when the more detailed three-digit classification of functions was utilized, but it still remained significant.

Findings from Company A were also replicated with respect to inter-divisional mobility (POSITION1). As predicted, non-technicians scored significantly higher ($p<.05$). Nearly one-half of all technicians experienced no more than two divisions, while over eighty percent of non-technicians were rotated through no less than three divisions. The same results were observed when variable POSITION2--measuring inter-departmental mobility--was used. Again, non-technicians scored significantly higher. Three quarters passed through more than four departments. However, the score was less than five for nearly two-thirds of technicians. A number of them did not even experience more than one or two subunits.

On the career velocity measure, Japanese patterns were again similar to those observed in the U.S. Non-technicians scored significantly higher than technicians ($p<.01$), averaging more than eight jobs in twenty years, nearly one job more than the technicians. Moreover, given the unequal variances and unequal sample sizes for this test, some caution in the interpretation of this result is appropriate (Kirk, 1968). The inequality of variances is primarily due to the fact among non-technicians, all but four managers passed through from seven to ten jobs during their twenty years in the firm. For technical managers, while the majority was within the same range, more than a quarter experienced only a small number of assignments.

Contrary to our expectations, even in Japan, non-technicians scored higher on salary rankings ($p<.05$). Nevertheless, in comparison to technical managers in Company A, their Japanese counterparts were more frequently represented among the top group (actually twenty-five percent of the top-grade managers were technicians). Yet, given their two-to-one dominance in the cohort, they

were still underrepresented. For the bottom grades, no difference between the two occupational classes was observed.

5.2 Between-Country Analyses

Since the raw salary data are not comparably scaled, a direct test of the differences between the U.S. and Japan is not feasible. However, FIGURE 1 exhibits salary-grade distributions in the two firms. In the American firm, as pointed out earlier, the distribution resembles a pyramid, with a small group of "fast-trackers" far ahead of the main cohort body. The basic principle driving this kind of salary administration policy is an emphasis on the "recognition of stars." In contrast, in Japan those who are separated from the bulk of the cohort are not the winners but the losers. Japanese salary administration policies attempt to maintain "cohort homogeneity," and only those who fail are left far behind.

Even in Japan, however, there seem to be limits to "equal treatment." In fact, after twenty years with the company, for the managers in the upper half of salary grades, the salary distribution is bi-modal. This suggests that there may be in fact two categories of managers, each normally distributed around a separate salary mean. The slightly smaller group is composed of those who are stars, at least for the time being, and the other group represents the average managers. Nevertheless, it should be emphasized that the cohort stars are far more numerous than in Company A.

For all other relevant variables, ANOVA results for U.S.-Japan comparisons--segmented by occupational class--are presented in TABLE 4. It should be noted that because of the nature of the data, we were able to differentiate functions at a much finer level for the American firm than for the Japanese one. This poses no difficulties for our analysis of the two-digit

function variable. However, the Japanese and American data on the three-digit functions are not comparable. Such a comparison would be confounded by this underestimation of the functional mobility of Japanese managers.

For both groups of managers, cross-functional mobility is higher in Japan ($p<.05$ for technicians, $p<.01$ for non-technicians). Also, as expected, on both measures of intra-organizational mobility, both groups of Japanese managers scored significantly higher than their American colleagues (in all cases $p<.001$). On career velocity, however, a significant difference was observed for technicians only; the Japanese scored significantly higher ($p<.001$). For non-technicians, no significant difference in the frequency of job changes was detected. In other words, most of our hypotheses were supported.

6. DISCUSSION

As pointed out earlier, for some of our analyses, the data are either skewed or have significantly different variances--violating ANOVA's assumptions. However, in the majority of cases, the data did not exhibit both markedly skewed distributions and statistically nonequivalent variances. We feel confident, therefore, in making inferences to differences in the entire cohorts based on Lindquist's (1973) and Winer's (1971) conclusions that neither of these violations alone have a substantial impact on the analysis.

Four of the twenty analyses did involve considerable skewness and heterogeneous variance. Lindquist (1973) proposed that, depending on the degree of skewness, the analytical procedure may overestimate the significance by two to three percent when the distributions are markedly different. However, three of the problematic tests (the contrast between U.S. technical and non-technical managers on FUNCTION1 and FUNCTION2, and between the U.S. and Japanese technicians on POSITION1) are significant to a greater extent than could be

accounted for by the tendency of the test to overestimate. Nevertheless, the comparison between U.S. technicians and non-technicians on POSITION1 must be interpreted with caution, as the significance level of .046 may be inflated.

With these caveats in mind, the results, by and large, confirm our hypotheses regarding the effect of occupational class on career path patterns. Consistent with the theoretical propositions, technical managers in both Company A and Company J change jobs less often relative to non-technical managers and their career paths appear to be more functionally specialized. With the exceptional case of interdepartmental mobility in Company A, the career paths of technical managers seem to be positionally narrower. Finally, the career paths of technical managers in both firms result in lower average salary grades than those for non-technical managers in our sample. This is so, even though a majority of top executives in the company J are technicians. In other words, relatively fewer technicians may succeed as managers, but those who do may go a long way.

FIGURES 2 and 3 present graphic comparisons of career dimensions for managers in the two firms. With the exception of the POSITION2 variable, the occupational class has the same impact in both countries: levels of mobility are different, yet the slopes of the lines connecting occupational class means are similar. Also, it should be considered that some differences between the two countries, while statistically significant, in reality do not amount to very much. For example, an average difference over twenty years of .7 job assignments on the variable VELOCITY is probably meaningless in real-life organizations. On a number of career dimensions, differences between occupations within a country are larger than differences between countries.

Where the Americans and the Japanese differ most is in the amount of inter-subunit mobility. Japanese managers rotate through many parts of the

organization (though often within the same function). This increases their socialization into the firm, improving communication and coordination, as well as reducing costs of control and supervision (Edstrom and Galbraith, 1967). On the other hand, both organizations rotate their managers more often than the literature on timing of career changes would recommend (Katz, 1980).

Differences in compensation policies are also rather dramatic. Clearly, this is an area where further study is needed, especially with respect to their relationship to organizational effectiveness on the one hand and job satisfaction on the other. Again, as a preliminary observation, we can say that the relatively slow recognition of stars in Company J may lead to a high level of internal competition. Under such circumstances, efforts to curb the negative effects of such competition by emphasizing socialization as the principal control tool seems natural.

We believe that our findings have several important implications. For example, many writers on Japanese organizations claim that--in contrast to the U.S.--affiliation with the company, rather than occupational class, dominates stratification in Japanese society. Such a perception often leads to the conclusion that employees in Japanese organizations form a homogeneous group. However, as demonstrated above, at least in the case of Company J, with respect to career path patterns as well as with respect to career outcomes, such a conclusion may be unwarranted. In a manner very similar to Company A, career patterns and career outcomes vary depending on managers' task technology in Company J. As a result, clearly differentiated career paths emerge for technical and non-technical managers. Occupational class does appear to have an impact.

When this is the case, any comparative inquiry should take this into account. For example, given the differences in relative numbers of technical

and non-technical managers in the two firms, testing career path variation without taking into account the mediating impact of task technologies might confound the results. On nearly all variables, the differences between career path patterns would decrease rather steeply when these differences are ignored.

The similarity of career path pattern differentiation in the two companies also suggests that, while differences persist, there are also important similarities between organizations in Japan and the U.S. In this sense, this study indicates that the relationship between task technology and career path dimensions is relatively robust and insensitive to cultural environments.

7. CONCLUSIONS

Our study focused on career path differentiation between cohorts of managers in U.S. and Japanese automotive firms. Significant differences in the level of mobility were discovered. The linkage of these differences to organizational effectiveness could be a fruitful agenda for future research. At the same time, intra-firm patterns of mobility are similar in the two countries, suggesting caution in putting too much emphasis on cross-cultural differences.

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TABLE 1

MEANS, STANDARD DEVIATIONS BY COUNTRY AND OCCUPATIONAL CLASS

VARIABLE	COMPANY A				COMPANY J			
	TECHNICAL PERSONNEL		NON-TECHNICAL PERSONNEL		TECHNICAL PERSONNEL		NON-TECHNICAL PERSONNEL	
	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD
FUNCTION 1	1.68	0.78	2.35	1.05	2.09	0.82	2.85	1.03
FUNCTION 2	2.74	1.26	4.60	3.79	2.62	1.11	3.31	1.21
POSITION 1	1.58	0.60	1.87	1.04	2.78	1.20	3.25	1.30
POSITION 2	2.72	1.25	2.70	1.63	4.05	1.48	5.40	1.40
VELOCITY	6.38	2.17	7.68	2.47	7.59	1.92	8.40	1.36
RANKING	10.34	1.28	11.10	2.19	8.11	2.85	8.47	2.91
N	72		63		87		48	

TABLE 2

COMPANY A: TECHNICIANS x NON-TECHNICIANS

VARIABLE	SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
FUNCTION 1	Between	1	15.022	15.022	17.844	.0000
	Within	133	111.97	.84188		
	Total	134	126.99			
FUNCTION 2	Between	1	117.13	117.13	44.885	.0000
	Within	133	347.07	2.6095		
	Total	134	464.19			
POSITION 1	Between	1	2.8196	2.8196	4.0548	.0461
	Within	133	92.484	.69537		
	Total	134	95.304			
POSITION 2	Between	1	.19048 -1	.19048 -1	.91883 -2	.9238
	Within	133	275.71	2.0730		
	Total	134	275.73			
VELOCITY	Between	1	57.445	57.445	10.753	.0013
	Within	133	710.53	5.3423		
	Total	134	767.97			
RANKING	Between	1	18.968	18.968	6.1447	.0145
	Within	130	401.30	3.0869		
	Total	131	420.27			

TABLE 3

COMPANY J: TECHNICIANS x NON-TECHNICIANS

VARIABLE	SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
FUNCTION 1	Between	1	17.971	17.971	22.287	.0000
	Within	133	107.24	.80634		
	Total	134	125.21			
FUNCTION 2	Between	1	14.805	14.805	11.265	.0010
	Within	133	174.80	1.3143		
	Total	134	189.60			
POSITION 1	Between	1	6.7865	6.7865	4.4278	.0372
	Within	133	203.85	1.5327		
	Total	134	210.64			
POSITION 2	Between	1	56.364	56.364	26.840	.0000
	Within	133	279.30	2.1000		
	Total	134	335.66			
VELOCITY	Between	1	20.277	20.277	6.6656	.0109
	Within	133	404.58	3.0420		
	Total	134	424.86			
RANKING	Between	1	32.463	32.463	3.9407	.0492
	Within	133	1095.6	8.2379		
	Total	134	1128.1			

TABLE 4

US x JAPAN

TECHNICIANS

VARIABLE	SOURCE	DF	SUM OF SQRS	MEAN SQR	F-STATISTIC	SIGNIF
FUNCTION 1	Between	1	6.6678	6.6678	10.373	.0016
	Within	157	100.92	.64278		
	Total	158	107.58			
POSITION 1	Between	1	56.568	56.568	59.069	.0000
	Within	157	150.35	.95765		
	Total	158	206.92			
POSITION 2	Between	1	69.035	69.035	36.339	.0000
	Within	157	298.26	1.8997		
	Total	158	367.30			
VELOCITY	Between	1	57.795	57.795	13.960	.0003
	Within	157	649.98	4.1400		
	Total	158	707.77			

US x JAPAN

NON-TECHNICIANS

FUNCTION 1	Between	1	6.9466	6.9466	6.4007	.0128
	Within	109	118.30	1.0853		
	Total	110	125.24			
POSITION 1	Between	1	51.656	51.656	38.569	.0000
	Within	109	145.98	1.3393		
	Total	110	197.64			
POSITION 2	Between	1	198.22	198.22	84.154	.0000
	Within	109	256.75	2.3555		
	Total	110	454.97			
VELOCITY	Between	1	13.861	13.861	3.2482	.0743
	Within	109	465.13	4.2672		
	Total	110	478.99			

Figure 1

Salary Grade Distributions

Figure 2

Comparisons of Career Dimensions

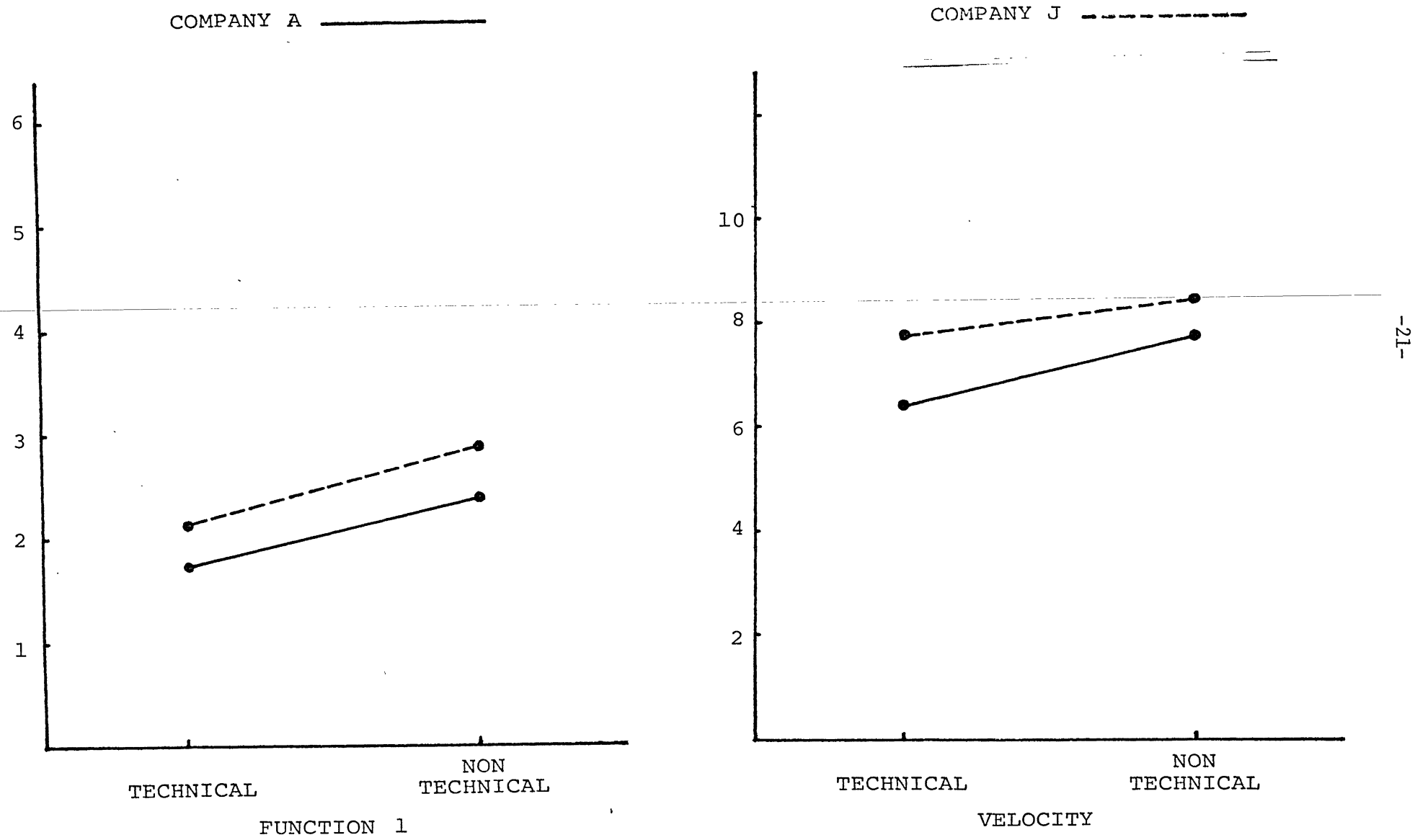

Figure 3

Comparisons of Career Dimensions