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HUMAN RESOURCE MANAGEMENT: TECHNICAL AND MANAGERIAL PERSONNEL. COMPARISON OF THE U.S. AND JAPANESE AUTOMOTIVE INDUSTRIES

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Introduction

In the discussion about the current competitive position of the U.S. and Japanese automotive industries and their prospects for the future, great attention is given to issues related to blue-collar workers, their productivity, wages, and labor-management relations in general. The role of white-collar workers has so far received little emphasis.[1] Yet, not only do the white-collar employees comprise today nearly one third of the total labor force in the automotive industries of both countries, their share is expected to grow with the changing structure and content of jobs brought about by technological change. In this environment, an effective management of white-collar human resources becomes one of the key conditions for long-term success in the world's auto markets.

For example, within the engineering function which constitutes probably the most critical area of white-collar employment in the auto industry, increased technological sophistication and the complexity of both the final product and the manufacturing process will require large numbers of qualified technical employees to maintain and improve the competitive position of each vehicle manufacturer as well as their suppliers. Recruiting, developing, and motivating this group of employees is already one of the critical tasks facing corporate human resource management professionals.

[1]Within the scope of this chapter, white-collar employees are defined as managers, supervisors, administrators, technical professionals and support personnel, sales employees and clerical workers.

In this context, the objective of this chapter is to present a review of current conditions of white-collar employment in the U.S. and Japanese auto industries, with a particular emphasis on the corporate human resource management policies. The chapter begins with an analysis of white-collar labor force composition and demographic profiles. This is followed with a discussion of the corporate structure, the role of the personnel function and specific human resource management functions targeted at white-collar employees. It concludes with a summary of current trends and their implications for human resource management policies.

White-Collar Labor Force Composition

The proportion of white-collar labor force in the total labor force is similar for automotive firms in both countries, ranging from 26 to 33 percent.[2] In fact, it seems that variations within each country are sharper than the difference in the "average" for the United States and Japan. For example, in American company A, the ratio of white-collar employees relative to the total labor force is 26 percent, while in company B this proportion reaches 33 percent. In Japan, the white-collar share for company X is 29 percent; for company Y 33 percent. Among parts suppliers in both countries, the proportion of white-collar labor is slightly smaller, 24 to 29 percent depending on size. Some of the differences between firms can be accounted for by differences in job classifications at the interface between white-collar and blue-collar jobs. However, especially in the case of the U.S. firms, differences in "lay-off" policies in the period of retrenchment also may play a role, as pointed out below.

In the U.S. firms, 68 to 72 percent of the white-collar labor force are salaried exempt employees. Among these exempt employees, about 32 to 37 percent are placed in supervisory and managerial positions, accounting for approximately 10 percent of the

[2]Unless specified otherwise, data cited in this study are based on research conducted by V. Pucik in the course of the Joint U.S.-Japan Automotive Study.

total labor force. However, only about one tenth of the supervisors and managers are eligible for an incentive bonus, a distinction of considerable status. In Japan, these ratios are again similar, although direct comparisons are difficult not only due to differences in job classification but also due to the exclusion of female workers from the available personnel statistics. It should be kept in mind that the term "exempt salaried employee" has little meaning in Japanese firms where both blue-collar and white-collar employees are paid on a salaried basis and where lower level white-collar personnel belong to the same union as blue-collar workers in the same firm.

In Japanese company Z, supervisors and managers (including employees of equal status without managerial responsibilities) account for 8.2 percent of the total labor force. In company X, the number of managers (excluding first-level supervisors) equals just over 3 percent of the total employment, or 13 percent of white-collar employees. About 25 percent of these are ranked as assistant general manager (jicho) or higher.

Although the ratio of white-collar to blue-collar employees is comparable in the auto industry of the two countries, differences appear when employees' occupational class (e.g., technical or nontechnical employees) are also considered. A survey of vehicle manufacturers revealed that in Japan, the proportion of engineers and technical support personnel reaches nearly 14 percent of total employment (7.6 percent engineers, 6.2 percent technical support). In the United States, the total engineering share is only 6.5 percent (4.1 percent engineers, 2.4 percent technical support). The functional employment of engineers is on average about the same in both Japan and the United States, and among vehicle manufacturers and parts suppliers. In all cases, slightly over 50 percent of the engineers are in product engineering and the rest are in manufacturing. In addition, some engineers may be assigned outside of product or manufacturing engineering, such as those in marketing or in the corporate planning staffs (Harbeck, 1983:7).

However, notwithstanding the averages, large differences can be observed reported within the industry in each country. In Japan, most of the differences can be attributed to the company's age and size (the smaller and younger the company, the higher share of engineers). Similarly, in the United States, the larger the firm, the smaller share of engineering personnel. In general, a higher ratio of engineering personnel may indicate a higher potential for new product development and improved process engineering. At the same time, the size of engineering overhead, if excessive, may negatively affect the competitive position of individual firms.

One could even argue that under some circumstances a lean engineering staff would give an advantage to the U.S. firms if the "savings" in the engineering manpower were not absorbed by expansion in administrative personnel. As a result, and as pointed out above, the final white-collar/total labor force ratio is similar among OEMs in both countries. The disparity in use of administrative personnel is most pronounced in the finance and accounting function. In American company A, the number of salaried labor force employed in these two functions can be counted in the thousands, reaching 8 percent of total salaried employment; in company B the ratio is 10 percent. In contrast, in Japanese firm X, it is less than 2 percent, and the total number of financial staff is well under five hundred. This is not to say that Japanese companies do not employ strict financial controls in their operations. However, the collection of financial data, as well as a substantial part of the financial analysis and planning, is delegated to line managers and dual control systems are infrequent. Given the current average salaries for white-collar employees, the resulting cash savings per car are over $100.

It should be added that the composition of the white-collar labor force is today in a state of flux due to personnel cutbacks or freezes implemented in both countries during the world recession of the past several years. In U.S. company A, while the number of white-collar employees as a group declined in the same proportion as the number of blue-collar workers, white-collar employees assigned to sales decreased most, followed by

technical support personnel, clericals, and managers and supervisors. In contrast, the number of technical professionals remained stable. As a result, their share of the total white-collar labor force increased by 10 percent. Similar proportional changes were observed in company B, although in comparison to blue-collar workers, the decline for the white-collar group was more than 50 percent less.

In Japan, the changing share of white-collar labor was due to differences in rates of employment increase, as the favorable competitive position of Japanese vehicle manufacturers protected their and their suppliers' employees from an employment decline. However, a number of rationalization policies aimed at reducing the direct labor input were conducted throughout the period. As a result, the share of white-collar employment increased by 2 to 7 percent, depending on the firm. For example, in company Y, since 1974, direct labor decreased marginally, indirect labor increased by 2.9 percent annually, administrative white-collar employees gained an annual increase of 4.1, and the engineering professionals enjoyed the fastest growth - 4.7 percent per year.

Gender, Education and Age Profiles

In both Japan and the United States, the proportion of females in white-collar jobs varies with occupational class. For example, in American company A, women workers comprise nearly 60 percent of office and clerical employees, but only 18 percent of technicians and professionals and 6.5 percent of managers. It should be pointed out that even though total employment in the U.S. automotive industry declined over the last several years, the proportion of women in technical and managerial jobs has increased. The same can be said about minority employment. In company A, 9.5 percent of managers and 10 percent of technicians and professionals are minority employees.

In Japanese firms, 24 to 25 percent of white-collar employees are women, virtually all of them in non-managerial positions. Most of them are young office workers. For example, over 90 percent of women employed in company X are younger

than thirty. Although this may be changing recently, the vast majority of them still expect to retire at the time of marriage or soon thereafter and are seldom assigned to jobs that may lead to future managerial positions. This lack of promotional opportunities in return reinforces their motivation to resign. Thus, in both countries, white-collar employees in managerial or technical jobs are still predominantly male.

The educational profile of white-collar employees in Japanese and U.S. automotive OEM firms is also similar. The proportion of employees with a college degree ranges from 33 to 38 percent. Not surprisingly, the number of employees with advanced degrees is higher in the United States (6 to 10 percent), reflecting a higher reliance on formal training outside of the firm as opposed to on-the-job training practiced in Japan. Among managers, in American company B, about 50 percent have a college degree, and 20 percent an advanced degree. Among technical employees, 35 percent have bachelors degrees and 12 percent an advanced degree. In Japanese company X, only 3 percent of managers have advanced degrees, but 80 percent are college graduates. However, the proportion of engineers with graduate degrees began to rise since the mid-1970s.

Among college-educated engineers, educational differences are greater between the U.S. OEMS and parts suppliers than between the U.S. and Japanese vehicle manufacturers. In Japan, 22 percent of OEMs' engineers have graduate degrees. This ratio is 19 percent for the U.S. vehicle manufacturers and 26 percent for the U.S. parts suppliers. Available data indicate no significant differences with respect to engineering disciplines. The mix is about 50-60 percent mechanical or related engineering, 13-20 percent electrical-electronic, 6-15 percent chemical-metallurgical, and 10-20 percent industrial and others (Harbeck, 1983:11).

In general, the average age of white-collar employees is higher in the United States than in Japan: 41 in contrast to 33-34 (36-37 for male employees only). The same is true of parts suppliers in the two countries. Not surprisingly, given the well-known low

inter-firm mobility among large Japanese firms, the average tenure is high for all Japanese vehicle manufacturers. However, long tenure is also characteristic for the white-collar employees in the U.S. auto industry. In company A, only 5 percent of the managers have less than 10 years of seniority, while 70 percent have been with the firm 20 years or longer. Only 15 percent are younger than 40 years of age. Among engineers, 20 percent are younger than thirty, which is about equal to the proportion of those over 50 years old.

Among the top officers in American firms, over 80 percent have more than 20 years seniority with the firm, not much less than for Japanese vehicle manufacturers. It is interesting to note that among Japanese parts suppliers, the proportion of higher-level managers with seniority of less than 10 years is higher for the first-tier suppliers than among the second-tier firms: 47 versus 32 percent (Kodama, Yakushiji, and Hanaeda, 1983:16). This can be explained by the fact that executive positions in first-tier suppliers are often staffed by retired officers from affiliated manufacturers. From the viewpoint of OEM managers, Japanese second-tier suppliers offer generally much less attractive retirement opportunities.

Organizational Hierarchy

Organizational hierarchy and the resulting span of control is best understood in terms of specific cases, as organization charts or position titles often do not present a true picture of the distribution of power and responsibility. For example, in the engineering area, U.S. vehicle manufacturers may use the same title for two positions which are not at the same supervisory level. These differences will perhaps diminish under current efforts in the United States to reduce levels of engineering management, which may lead to standardization of titles, at least within each company. In addition, however, titles and levels of supervision do not match one another, and thus levels of supervisory responsibility are often difficult to decipher.

In basic organizational units, such as divisions or plants, the main differences in structure among the U.S. and Japanese vehicle manufacturers is in the span of control, rather than in the degree of vertical differentiation. Generally, Japanese executives and managers are assisted by several deputies, who while nominally second in authority, are not in the direct line of supervision. Also, at the section level, the span of control of a typical Japanese manager is substantially wider. For example, in the engineering area, a Japanese engineering manager may supervise 10-15 employees as opposed to 5-6 employees in the U.S. firms. As a result, a Japanese equivalent of the American function of chief engineer or director may often supervise about three times as many employees as his U.S. counterpart (Harbeck, 1983:15).

As pointed out above, currently significant attention is being given in the United States to reducing layers of management throughout the organization. In the factories, such efforts usually result in the elimination of general foremen or assistant plant managers. However, while such reductions are certainly useful in streamlining the organization, comparison with Japanese manufacturers reveal that a top-heavy structure hampers effective communication and decisions from the plant management upwards, rather than downwards. For example, in company A, the chief executive officer is six or seven management layers away from a typical plant manager. In company B, the picture is similar. In contrast, in Japan, plant managers are often appointed to the companies' boards of directors (though these are overwhelmingly "insider" boards) and are at most only two levels below the CEO.

Even adjusting for the relatively larger size of many Japanese manufacturing sites (with respect to the number of employees), in relation to the total size of the companies, it seems that in the United States vehicle manufacturers may have considerable room for improvement in the efficiency of management at the higher corporate levels. Part of the "surplus" of administrative personnel discussed earlier is probably a result of "demand" for staff to assist numerous senior managers and executives on divisional and

corporate levels. Also, it should be pointed out that Japanese vehicle manufacturers, while nominally smaller in size, in fact represent mainly the assembly and engineering part of a much larger corporate group. In that sense, the propensity of Japanese firms to organize a family of independent firms - in a legal sense - rather than to build single-firm corporate empires, allow them time to reduce the levels of managers and free resources away from administration and control towards product and manufacturing development.

Personnel Control, Selection, and Development

In American auto industry firms, approximately 6-7 percent of white-collar employees are assigned to the personnel/industrial relations area. In general, the number of personnel/IR staff has increased in the past decade partly to handle tasks associated with new federal and state regulations as well as to handle the expanded benefits. While the two functions are usually split on the corporate staff level, they are often integrated on the division and plant level. The link between the personnel/IR functions and the CEO varies by company, but it is usually less direct than in Japan.

White-collar personnel control is mostly decentralized. For example, in company B, the head office personnel staff of 170 people is responsible primarily for executive personnel control and a general personnel policy planning; personnel control of managers just below the executive level is the responsibility of the functional staff; the remaining managers or supervisors and other white-collar employees are handled by division and plant personnel staffs. A typical divisional personnel office has approximately 25-35 employees, including a sizeable group administrating benefits; personnel staff in plants vary in size from 5 to 40 depending on the size of the plant workforce.

Japanese personnel staff is relatively more numerous than in American firms. For example, in company X, 9.5 percent of all white-collar employees are assigned to the personnel division or to personnel staff at the plant level. Nearly two thirds of these

work directly in one of the central personnel areas; the rest are guards, dormitory employees and medical staff. Personnel control, as in most Japanese firms, is decentralized; the central personnel office has a staff of only 100 employees. It is responsible for personnel policies for both white-collar and blue-collar employees, although contract negotiations with the union are conducted through a specialized section. In a typical large manufacturing facility in Japan (with approximately 4-5,000 workers), the personnel department is staffed on average with 60 personnel specialists. In addition, 15 dormitory employees, 15 employees maintaining recreation facilities, and 10 on the plant medical staff report to the head of the plant personnel.

One of the main tasks of the corporate personnel function in both countries is the hiring and training of white-collar employees. For employees with college educations, major auto industry companies in both countries rely on recruitment on college campuses. Exemptions exist (more frequently in the United States than in Japan), but the vast majority of new college-educated employees is hired straight from school or a few years after graduation.[3] In the United States, some new employees are also hired from graduate schools, a trend which is also increasing in Japan, at least for engineering personnel.

College recruitment planning in both countries is coordinated by the central personnel staff. However, in Japan, all college-educated employees are usually recruited through the head office and then assigned to divisions and plants; in the United States, both direct and indirect placement is used. Also, in American firms, there is no difference in the recruiting process for engineers and other college-educated employees. Although direct walk-ins do occur, most prospective employees sign up for an interview on their college campuses. After three or four rounds of interviews, final offers are made. In Japan, administrative personnel are selected based on applications

[3]Until very recently, many college-educated employees of General Motors were graduates of the GM-sponsored "General Motors Institute." Direct institutional sponsorship was, however, recently discontinued.

solicited through mass mailings and promotion efforts on campuses; engineers are selected using the university faculty or staff as an intermediary. In some instances, when demand exceeds supply, companies are "allocated" a quota of graduates. Such a mechanism assures most firms a "fair share" and limits upward pressure on starting salaries.

So far there has been no general shortage of engineers in Japan, due mainly to past government efforts to expand the capacity of engineering departments. However, as the technological foundation of the automotive industry continues to change rapidly, many companies in the auto industry are facing the task of adapting to these changes by recruiting engineers with a particular technical knowledge. Those with electronic or information processing background are in especially high demand. For the future, in view of the fact that Japanese companies will be required to rely more than in the past on their own "in-house" R&D, demand for top-quality technical professionals is likely to increase. In order to respond to such a demand, a reform of the current university education system may be essential.

In the United States, need for reforms may be more immediate as enrollment in engineering schools lags behind Japan and many other developed countries. Two issues are of concern here. First, teaching jobs are unattractive relative to opportunities in the industry. Second, career opportunities in engineering fields are perceived as limited in comparison to law, finance or management consulting. For example, among firms in the automotive sector, the percentage of engineers on the companies' boards of directors is over 50 percent in Japan, but only 20 percent in the United States.

To rectify the emerging imbalance, a joint effort of the U.S. corporate community and the public sector may be required, as problems in the area are beyond the control of any single company. However, in order to promote such an effort, better forward planning for engineering and technical manpower is desirable. Such planning is still in its infancy in the U.S. firms, as well as in Japan.

White-collar employees in both countries can take advantage of large training programs sponsored by their employers. The U.S. firms rely to a greater extent on courses and training offered by outside institutions, mostly nearby colleges. With few exceptions, such as senior manager development programs at leading business schools, program, course or seminar selection is left to the employee's initiative. For college courses, there are only very broad limits on tuition refund programs. In Japan, in contrast, the emphasis is on internal training programs. Developmental planning is more structured, and course or program selection results from discussions between the employee and his/her manager and monitored by personnel staff. On-the-job training is limited to lower-level white-collar employees.

High potential employees in both countries are often rotated through special developmental assignments. However, for the white-collar employees as a group, those in Japan have more opportunities to move for training purposes, although there is not much difference in the overall job mobility. For example, in American company B and Japanese company X, a significant difference in overall volume of job mobility between the two firms was observed for technical managers only. For nontechnical managers, no significant difference in frequency of job changes was detected. In general, it seems that differences in mobility patterns are larger across occupational class of white-collar employees (e.g., engineers vs. non-engineers) than between countries.

In both countries, the functional job mobility of nontechnical managers is higher than the mobility of engineering managers and professionals. In other words, non-engineers have more general career experience than engineers. Also, the difference in functional specialization of technical professionals disappears when job functions are narrowly classified. Therefore, it seems that the popular perception that contrasts the Japanese "generalist" manager with the American "specialist" manager is, at best, an oversimplification.

Where the Americans and Japanese differ most is in the amount of interdivisional and interdepartmental mobility. Japanese managers, non-engineers even more than engineers, rotate through many parts of the organization (though often within the same function). This may increase their socialization into the firm, reduces costs of control and supervision, and improves communication and coordination. As a result, the job rotation system of Japanese firms has a direct impact on their ability to facilitate organizational changes in general, and product development in particular.

Appraisal and Reward Systems

In most U.S. firms, appraisal of white-collar employees is linked to an employee's potential. Management appraisals are coordinated by the central staff, but only higher-level managers and executives are reviewed by the Executive Office. Others are reviewed in divisions and plants. The process is annual, and requires five months from the drafting of guidelines until the final review. The appraisal at all levels is performance oriented, although in several firms, an evaluation of management style was recently introduced into the appraisal. Succession planning is an integrated part of the appraisal process, and promotions are seldom granted unless an appropriate position in the upper rank is available.

In Japanese firms, the appraisal system differs from the United States on several basic characteristics. First, the cohort of peers with similar education, seniority, and status forms the base for performance comparisons. Second, the evaluation process is centralized, and performance of all managerial-class employees is reviewed in the central personnel office. Third, an employee's performance is reviewed more often, generally at least two to three times per year, in conjunction with bonus payments in

summer and winter, and with salary and status reviews in spring or autumn. Finally, while self-report and interview with the employee is one of the key components of the evaluation system, a decision to inform an employee on the appraisal results is left to the discretion of his or her immediate superior.

As for the actual level of compensation, comparisons between the United States and Japan are complicated by a whole range of factors, such as the cash value of benefits, or bonus eligibility.[4] Differences in career structures discussed earlier may also hinder the comparisons. However, at least partial comparisons are feasible, if the focus of inquiry is limited to cash compensation payable to a majority of white-collar employees. In Japan, that would include a bonus that is payable to all employees basically in proportion to their salaries. In the United States bonus is excluded, as over 80 percent of white-collar employees are not eligible for supplementary compensation plans. Three questions are of interest here: the patterns of cash compensation in firms within each country, the absolute levels of compensation, and differences in compensation levels between white-collar and blue-collar employees.

At the entry level, the starting salaries in the United States are generally substantially above those in Japan. For example, for college-educated engineers starting salaries in the U.S. OEM firms range between $22-27,000; for parts suppliers between $20-28,000. In Japan, starting salaries for engineers range from $9,500 to $10,500 (Harbeck, 1983:12). In both countries, the entry salaries are 15 to 25 percent above the entry wages for blue-collar personnel. However, as a consequence of the seniority wage system established in Japanese firms, annual wage increases granted to blue-collar workers follow the pattern set up for white-collar employees (in fact the basic wage structure is the same for both groups), while in the United States, blue-collar wages do

[4]For discussion of the Japanese bonus and benefit systems, see M. Flynn, Differentials in Vehicles' Landed Costs: Japanese Vehicles in the U.S. Marketplace, Working Paper Series No. 3 (Ann Arbor, Michigan: Joint U.S.-Japan Automotive Study, October 1982).

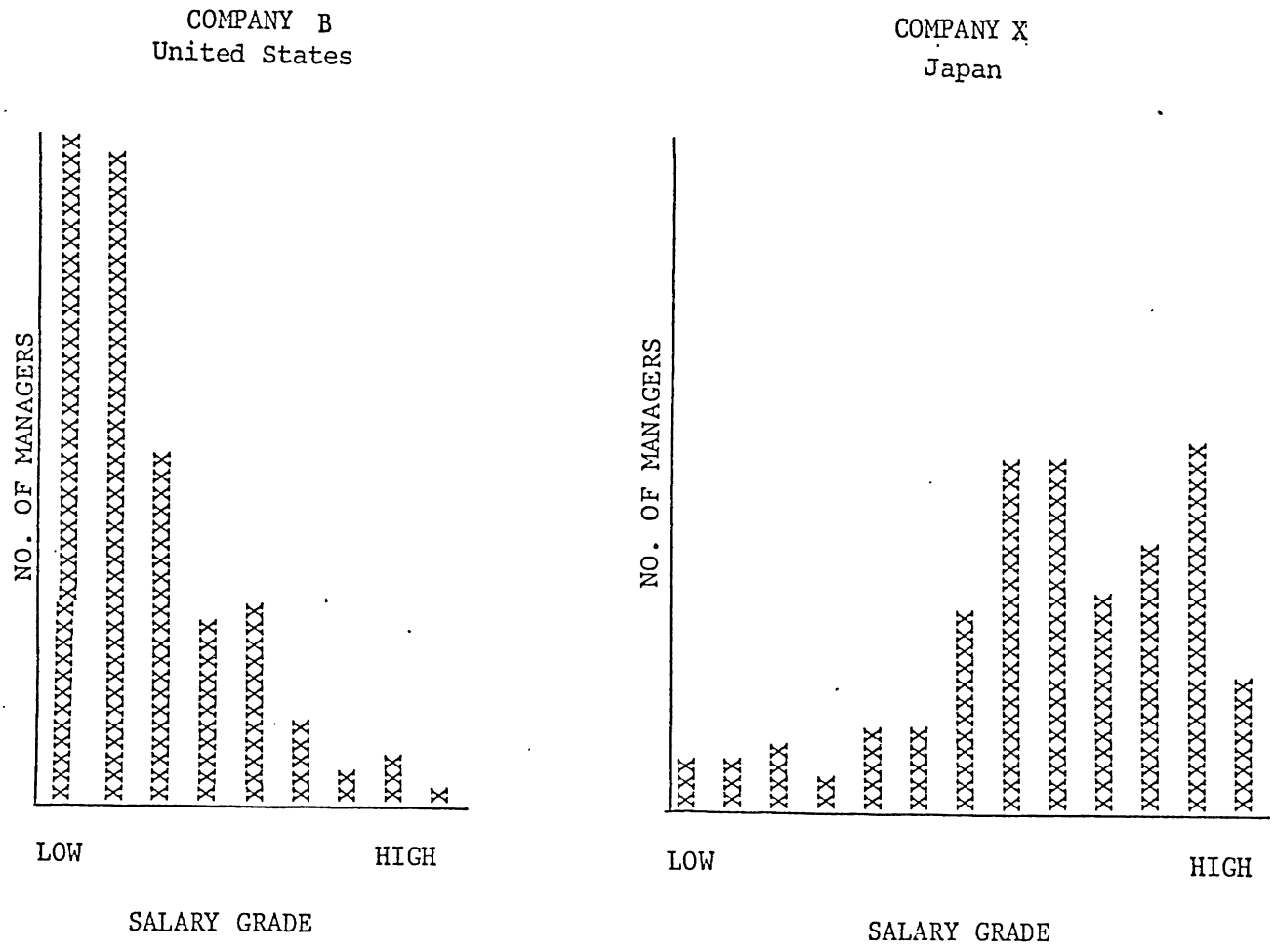
not change after the first 18 months of employment (except by across-the-board contractual increase, or by reassignment to a skilled-trade job). A more detailed functioning of the two systems can be illustrated in the example of salary-grade distributions in cohorts of white-collar employees with 20 years' seniority in American firm B and Japanese firm X.

In the U.S. case, the reward system is structured along salary grades and ranks. Just over 50 percent of the cohort is in rank A (plant superintendents, sales managers, supervisors - product engineering) with an estimated cohort average salary of $43,000, 30 percent are in rank B (estimated average salary $54,000), 15 percent in rank C (estimated average salary $76,000), and 3 percent in rank D which also includes all executive positions (estimated cohort average $111,000). The average cohort salary is about $54,000, nearly 30 percent over the Japanese cohort average of $42,500. However, in contrast to relatively broad salary differentials in the U.S. firm, the highest-paid Japanese employees receive only $2,500 over their cohort averages, and only less than 10 percent of employees receive less than $40,000. In other words, the average cash compensation for Japanese white-collar employees with 20 years' experience is equal to the cash compensation for the bottom 50 percent of the U.S. employees with the same seniority (Figure 1).

Finally, an "average" U.S. white-collar employee with 20 years of seniority receives nearly 120 percent more in annual cash compensation than a blue-collar co-worker of similar age; for top performers among the white-collar group, the difference increases up to 500 percent. In Japan, the difference is less than 40 percent considering the average compensation levels for the two groups, and only marginally higher for the elite. Thus, the income differential between the two groups of employees is - on average - nearly three times as large as in the U.S. firm, nearly eight times as large in the case of the elite. This is a conservative estimate, not including the bonus payable to the high-ranking American employees.

FIGURE 1

SALARY-GRADE DISTRIBUTIONS



Source: Cohort Salary Data - Company B and Company X

Similar trends become apparent when the salaries of key executives of the vehicle manufacturers in the two countries are considered. For top engineering officers, the range for the U.S. firm is between $100-200,000 (Harbeck, 1983:12). In Japan, the range is $80-90,000, but their position in the corporate hierarchy is generally higher. Also, a Japanese CEO salary including bonus is generally not more than 6-8 times larger than the income of the highest-paid blue-collar employee. For the United States, even if bonus and stock options are excluded, such a ratio is in the 12-18 range, again more than double the income differential observed in Japan. However, in profitable years, when American executives collect bonuses and stock options, this difference may triple.

Two explanations can be suggested for this phenomenon. On the one side, the lower income differentiation in Japan can be attributed to the deliberate policy of maintaining the cohesiveness of the organization by reducing salary differences across different strata of employees. On the other side, it can be argued that such a policy can be effective only when the dominance of internal labor markets in the economy restricts the mobility of movement across different companies or industries especially for high-ranking managers and executives.

With respect to benefits, again, direct comparisons are difficult due to differences in accounting procedures (e.g., retirement payments). However, it can be estimated from the available data that in both countries retirement, health care, insurance and other welfare benefits provide an additional 20 to 25 percent of compensation, not counting social security taxes payable by the employers. It should be pointed out, however, that in the case of Japan, a number of benefits are not costed out in wage/benefit statistics, the most important being housing mortgage subsidies.[5]

[5]For a discussion of Japanese benefits, see M. Flynn, op. cit.

Future Trends and Policy Implications

In the future, the auto industries in both countries will have to adjust their human resource management systems to the profound organizational changes stemming from the accelerated introduction of new technology. For example, the computerization of design (CAD/CAM) in the product engineering area, the automation and robotization of manufacturing processes in the process engineering area, and office automation in administration, will necessitate changes in the employment structure of white-collar employees as well as require a massive retraining, if the present employees are to qualify for new jobs.

Although future growth may vary by company, the maturation of the auto markets limits future opportunities for growth for the industry as a whole, compounded by rapid aging of the labor force in Japan. By extension, opportunity for employee advancement may be restricted as well. If unchecked, this may result in a decline in motivation, especially among white-collar employees, and a loss of the talent necessary for these enterprises to other, still-growing industries. The motivational "technology" may become an important strategic resource. Under the circumstances outlined above, the centrality of the human resource function to competitive strategy will increase dramatically. Future human resource management strategies in the white-collar area should foster flexible and timely adaptation to technological change, encourage innovation, and most generally, provide equitable treatment and career opportunities to all employees in order to mobilize their creative potential.

The design and implementation of successful human resource management policies will, however, require strong and steadfast support from the top levels of management in each enterprise. In this context, while there are numerous differences in white-collar human resource management practice between the auto industries in the United States and in Japan, there are also many similarities, and an exchange of experience in coping with some of the new challenges may prove to be mutually advantageous.

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