

The Japanese Human Resource Management Before World War II: A Case of the Engineers

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I. Introduction

The purpose of this paper is to analyse the characteristics of the Pre-WW II Japanese corporate management from the perspective of the human resource development. The essential framework of the Japanese-style human resource management before WW II constituted differentiated employment by a few ranks; then, different duties and treatments followed accordingly. The initial ranks were determined by the level i.e. social recognition and overall academic achievement of new employees' schools. Thus, the approach was called "an educational class system". The graduates of either universities or polytechnics were hired as high-ranking employees with monthly payment, whilst the graduates of technical or commercial schools which were on a level with secondary education filled the posts of employee in semi-staff condition. Their wages were paid either monthly or daily. In the case of workmen with basic education at shop floors, the payment was only made daily. The gap of prestige and remuneration amongst the different ranks was distinctive¹. This noticeable correlation between educational background and ex officio standing was developed within a group of large corporations from the beginning of the 20th century. Afterwards, during the 1920s and 30s, it became common in large-scale firms. It has been agreed that, as a key element of corporate employment, the custom of periodically employing new graduates of universities and other educational institutions characterised the growth of the Japanese internal labour market².

¹ Ujihara Syojirou, *Nihon no Roushi-Kankei*(Industrial Relations in Japan),Tokyo ,1968,pp62-76,

² Sugayama Sinnji, 1920nendai Judenki Keiei no kakyu syokuinsou (Employment Management of Junior Staff in Electrical Machinery Industry in the 1920's: A Case Study of Hitachi Ltd) ,*Shakai-Keizai Sigaku*(Socio-Economic History),vol53,no3,

There has been a general viewpoint that this “educational class system” was abolished by the Japanese policy of democratisation after WW II; nonetheless, my study points out a new fact that a couple of misapprehension exists there. The first misconception is that it was rather exceptional for a new employee with comparatively weak educational background to be promoted to a prestigious post despite his long commitment and contribution to his firm³. The second is that any potential disaccord between the highly ranked and compensated group of university graduates and the lower with basic education was dealt with by the former alongside the unique Japanese code of group behaviour. Especially, the superior engineers with university education were known to take a serious view of operatives’ works at shop floor more than assignments at laboratories; and this attitude was positively appraised in the past studies and discussed as a key success factor⁴.

Yet, the two standpoints seem invalid. The statements of the management and leading engineers of the period prove that the university graduates of engineering did not possess adequate knowledge for production operation. Besides, they did not show any preference to practices at shop floor and instead complained a lot about technical operations at workshops. The Japanese firms necessitated both university-educated engineers with theoretical knowledge and shop floor technicians with operational understanding, when they developed new products on the basis of imported western technologies. My research⁵ has investigated the Japanese human resource management of pre-war Japanese corporations, and it presents that the technicians were mostly the graduates of technical schools which were on a level with secondary education and, even in some cases, those with only elementary education. They were, at the beginning, hired as a junior group of workforce i.e. workmen or employee in semi-staff condition,

³ Ujihara, op,cit,

⁴ Morokawa Hidemasa, Nihon Gijutusya no “Genba-Syugi” ni Tuite(The Origins of Genba (Job Site) - oriented Mind of the Modern Japanese Engineers), Yokohama Keikei Kenkyu(Yokohama Business Review), vol18,no4,

⁵ Ichihara Hiroshi, Jinji-Kanri - Jinteki-Sigen no Keisei to Mibun-Seido(Personnel Administration – Development of Human Resource and Educational Class System),Abe Takasi, Nakamura Naofumi ed, Nihon Keieisi Kouza,vol2, Kyoto, 2009,

however, got promoted later to the higher ranks in accordance with their commitment to work and internal training programmes, and consequent appraisals of their technical capability. The Japanese firms of the period required those human resources to improve technological capacity, and facilitated the development by providing them with incentives of promotion to prestigious posts.

II. Higher Technical Education and Appraisal of University-graduated Engineers

Throughout the historical context of adopting western industrial technologies, Japan experienced the early disintegration of apprentice system and the swift institutional development of technical educations even before the full-scale industrialisation. Henry Dyer, a graduate of Glasgow University, attempted to integrate theoretical and technical educations, and this resulted in the establishment of a symbolic institution of engineering in 1873, Kōbu Daigakko, which was the precursor of the Engineering Department of Tokyo University. Dyer's ideology of the combined education of technology gained high reputation of "deserving international attention", and his approach was recognised to bring forth the university-educated Japanese engineers' common ethos of taking operations at shop floor seriously⁶.

Nevertheless, it is worth noting that a considerable number of managers, engineers, technician, and workmen brought up harsh criticism about the effectuality of the university-level technical education as well as the overall capability of university graduates. Oh'uchi Ai-Sichi, managing director of Mitsubishi Electric and an ex rear admiral of technology of the Japanese Imperial Navy, advised his men in 1938 that they should ease up on the "yet unprofessional" new recruits from universities and stop despising the "rookies of practical engineering at real workshops" since the university programmes were generally concerned more with highbrow engineering theories⁷. Ohkouchi Masatoshi, professor of engineering at Tokyo University and who was also an eminent guru of engineering of the time, was vexed by the fact that a noticeable majority of managers were dissatisfied with university graduates without

⁶ Miyoshi Nobuhiro, *Nihon Kougyo Kyoiku Seiritu-Si no Kenkyu*(A Study on the History of the Formation of Industrial Education in Japan),Tokyo,1985, Morikawa,op cit,

⁷ Oh'uchi Ai-Sichi, *Syokuchou ni Nani wo Motomu-Bekika*(The Duties of Chargehand), Nagoya, 1938,

comprehension of their potentials⁸. Their views of supporting university graduates, as a matter of fact, proved the growing public voice of censuring their inevitably underdeveloped competency in shop floor practices.

A few causes of the university graduates' insufficient practical knowledge and incapacity of directing workshop technicians and workmen were discussed: firstly, the drawback of university programmes was derived from the overstress upon note takings at lectures instead of development of the ability of thinking and reading; secondly, university students of engineering tended to dislike practical trainings; and furthermore, the content of the university programmes lacked technical trainings necessary for the actual operations at shop floors⁹.

Concerning the sustainable technological development, Japanese corporations began to necessitate a new group of workforce that could fill the social and professional gap between "highbrow theoreticians" from universities and "practitioners" with relatively insufficient theoretical understandings. The Japanese firms then obtained the essential human resources from their own internal training programmes as well as personnel administration. The following section will introduce the author's research on the managerial endeavour in the shipbuilding sector, which led the noticeable growth of the Japanese heavy industry.

III. Internal Development of Human Resources and Professional Promotion

In the case of the shipbuilding industry, this research analyses the human resources development and personnel administration of the naval arsenal and the Nagasaki dockyard of Mitsubishi Shipbuilding Company. The following three points deserve our attention. Firstly, along with the development of the modern educational institution, they recruited university or polytechnic graduates for the prestigious post of administration, but this was not the only approach of employment; another method of personnel was to train talented workshop technicians and workmen internally and then promote them to the superior positions. Secondly, it is worth denoting that the technological underdevelopment facilitated the industry to build up the personnel policy.

⁸ Ohkouchi Masatoshi, *Kougyo Kyoiku Siken*(My Personal View on Industrial Education), *Toyo Gakugei zasshi*(Journal on Eastern Arts and Sciences), vol31,no392,1914, p218

⁹ *Kouseikai,kousei*(Journal of Kouseikai), no69,1925, p33, Ohkouchi,op cit, p216,

Then, lastly, due to the industrial underdevelopment, the two organisations transferred newly recruited assistant engineers from university or polytechnic to workshops for a while during the initial period of their career development: the intention of this programme was to let them experience the technical practices. The three features are well illuminated in the following historical descriptions.

The naval arsenal in its early phase of 1870 benchmarked a French model of technical school to set up its own, and commenced development of two kinds of human resources: superior technical staffs with education of professional apprehension of theories (similar to the French naval technical officers) and skilled chargehands at shop floors with basic theoretical education. In tandem with the founding of modern technical schools in Japan, only university graduates were recruited for the superior posts of engineering from 1882, and the corporate training programmes for professional engineers was abolished. The internal technical school then was transformed into an institution for educating workmen for workshop technicians, and this system was in operation until 1907: at last, the corporate training programmes for workshop technicians became unnecessary in 1907 since the entire newcomers were recruited

Table 1 New Employees' Educational Background (%)

	1907	1908	1909	1910	1911	Average
Corporate School	41.0	22.2	17.2	42.9	17.2	27.9
Apprentice	2.6	0.0	0.0	0.0	0.0	0.8
Industrial Polytechnic	12.8	33.3	69.0	50.0	58.6	42.6
Technical School	0.0	5.6	0.0	0.0	6.9	2.3
Workmen's School for Engineering	7.7	5.6	0.0	0.0	0.0	3.1
Workmen's School for Science	2.6	0.0	0.0	0.0	0.0	0.8
High School (not graduate)	2.6	0.0	0.0	0.0	0.0	0.8
Junior High School	2.6	11.1	0.0	0.0	0.0	2.3
Junior High School (not graduate)	2.6	5.6	0.0	7.1	3.4	3.1
Elementary School	7.7	5.6	6.9	0.0	3.4	5.4
Unknown	17.9	11.1	3.4	0.0	10.3	10.1

Source: Kaigunsho (Imperial Navy) "Syukusinintairoku, Bunkanninjo" (Record of Employment and Discharge) each year

However, as can be seen from Table 1, based upon the curriculum vitae of newly recruited junior engineers, the new employment from the internal technical school still continued. However, as can be seen from Table 1, based upon the curriculum vitae of newly recruited junior engineers, the new employment from the internal technical school still continued.

Moreover, the corporate school was resumed in 1919 to admit talented workmen with age over 21 and more than 3-year shop floor experience. The selected workmen learned

the basic theories of shipbuilding and mechanical engineering together with factory practices; and then the graduates were hired for the junior posts of engineering¹⁰.

Table2 Educational Background of Newly Recruited Junior Engineers (%)

	1921	1922	1924	1925	1927	1928	Average
University		2.5					0.5
Industrial Polytechnic	18.2	17.5	38.1	48.1	33.3	56.5	29.0
Other Polytechnic	25.0	25.0			26.7	4.3	19.2
Junior Highschool	1.1	2.5					0.9
Junior Highschool(not graduate)	3.4	2.5					1.9
Technical School	2.3	0.0		7.4			1.9
Workmen's School	6.8	2.5		3.7	6.7		4.2
Upper Elementary School	27.3	12.5				4.3	14.0
Elementary School	2.3	17.5		3.7			4.7
Corporate School		7.5	38.1	22.2	26.7	26.1	12.6
Corporate Apprentice	2.3	2.5		3.7	6.7	4.3	2.8
Unknown	3.4	5.0		3.7			2.8

Source: Kaigunsyou (Imperial Navy) "Syukusintairoku, Bunkannin, j" (Record of Employment and Discharge) each year

As presented in Table 2, the rate of university graduates and polytechnic graduates within the newly recruited junior engineers during the 1920s reached approximately 50 percent. In the first half of the same period, elementary school graduates covered 20 to 30 percent of the population; then in the second half, the ratio was replaced by the graduates of corporate technical schools. The latter group were also elementary school graduates; thus, this implies that they were employed, at the beginning, as wage earners right after their graduation. They acquired technical knowledge from workshop practices, and then learned basic theories through the corporate school: therefore, the personnel administration of hiring those internally developed labourers for the junior posts continued. In addition, and surprisingly, their path of career development was extended to the positions of superior engineers.

Table3 Background of Newly Appointed Superior Engineers (%)

	1921年	1922年	1924年	1925年	1927年	1928年	合計
University	9.1	0.0	0.0	12.5	0.0	4.8	6.0
Industrial Polytechnic	42.4	50.0	44.4	62.5	40.0	28.6	41.7
Other Polytechnic	12.1	12.5	11.1	0.0	20.0	19.0	13.1
Junior Highschool	0.0	0.0	0.0	0.0	0.0	4.8	1.2
Workmen's School	0.0	0.0	11.1	0.0	0.0	14.3	4.8
Upper Elementary School	0.0	0.0	0.0	12.5	0.0	9.5	3.6
Corporate School	30.3	12.5	33.3	12.5	20.0	14.3	22.6
Corporate Apprentice	3.0	0.0	0.0	0.0	0.0	0.0	1.2
Unknown	3.0	25.0	0.0	0.0	20.0	0.0	4.8

Source: Kaigunsyou (Imperial Navy) "Syukusintairoku, Bunkannin, j" (Record of Employment and Discharge) each year

¹⁰ Ibid, pp94-103

Table 3 presents that only 60 percent of the total population of the upper-class engineers was covered by university and polytechnic graduates whereas the graduates of corporate school occupied nearly 20 percent during the 1920s.

The development of the personnel system of promoting a part of talented workmen and workshop technicians to engineering staffs was realised by the fact that the skilled workmen and technicians with sufficient operational knowledge and experience at shop floors played a significant role in the ship design of the time. The blueprints described, at most, ship concepts and hull structures; no information regarding how to build them was provided. Hence, engineering staffs with conceptual understanding of the blueprints, technical capability of choosing proper materials, and managerial experience of directing dockyard workmen and technicians were demanded, and the internally trained workforce from shop floor turned out to be the most capable¹¹. The unique scheme of promotion was therefore developed to increase their working incentive.

In contrast, the role of superior engineers with university or polytechnic education was limited to the managerial posts of each sector and preparation of the blueprints of basic design. It was therefore inevitable to let them have workshop experiences.

Table 4 The Number of years from Recruitment until Appointment to Junior Engineer

	1921	1922	1924	1925	1927	1928
0	16	9				3
1	20	4	7	7		3
2	1	3	3	3	5	4
3			1	1		3
4					2	
5					1	
12					1	
Total	37	16			9	13

Source: Kaigunsho (Imperial Navy) 'Syukusinintairoku ,Bunkannin.jp', Bunkannin.jp' (Record of Employment and Discharge) each year

As described in Table 4, the personnel scheme of recruiting university and polytechnic graduates as workmen at shop floor and then promoting them to junior engineers

¹¹ Maema Takanori, *Senkan Yamato no Isan* (Engineering Inheritance of Battle Ship Yamato), Tokyo, 2000, p94, Hori Motomi, *Kaigun Zousenkan Tositeno Hibi* (Job and Life of Shipbuilding Engineer in Imperial Navy), Tokyo, 1976, p117,

became common during the 1920s.

The largest private industrial leader, Mitsubishi Shipbuilding Company's Nagasaki dockyard, was not an exception. The employment of university or polytechnic graduates started in 1890, and the recruitment from university increased from the beginning of the 20th century. In 1911, the corporate policy of employing only university graduates for the superior posts was forged. Nonetheless, owing to the identical context of the naval arsenal, the internally educated skilled workforce with affluent shop floor experiences and technical knowledge was constantly on demand. In consequence, the company decided to promote staffs without university education to the superior posts in engineering as well¹².

Table 5 Ratio of ex Technician Within Newly Appointed Superior Engineers

	Ex Tech	Total	Ratio
1918	8	37	21.6
1919	6	44	13.6
1920	16	33	48.5
1921	3	11	27.3
1922	24	29	82.8
1923	11	14	78.6
1924	5	17	29.4
1925	15	24	62.5
1926	15	20	75.0
Total	103	229	45.0

Source: Mitsubishi Syasi Kankoukai (Publishing Committee of Chronicle of Mitsubishi), Mitsubishi Syasi (Chronicle of Mitsubishi) Tokyo, 1979-1982, each year.

Table 5 indicates that, from 1916 to 1926, nearly a half of the new superior technical staffs were the recruitment of workshop technicians without any kind of high education. Some of the new staffs were the graduates of Mitsubishi Kogyo Yobi Gakko (preparatory school of engineering), which was established in 1899 to train operatives for blueprint reading; at least 37 men were included, and their educational background was elementary school only¹³.

¹² Mitsubishi Jukogyo (Mitsubishi Heavy Industries, LTD), Mitsubishi Jukogyo Kabisiki-Kaisya Si (A History of Mitsubishi Heavy Industries, LTD), Tokyo, 1956, p167, p172,

¹³ Mitsubishi Gohsi Kaisya (Mitsubishi Limited Partnership), Roudousya Toriatukai-Katani Kansuru Chousa Houkokusyo Sono-Iti Furoku Sono-Ni (The Investigation Report on the Way of the Treatment of Workmen, no1, Appendix, no2), preserved in Mitsubishi Siryokan (The Mitsubishi economic Research Institute Archives Division) 1912, pp54-75,

Just like the naval arsenal's personnel scheme, Mitsubishi also developed a programme of transferring superior engineers with university education to the post of apprenticeship at workshops to let them obtain live knowledge and experience. In 1923, the period of apprenticeship was fixed as a half a year, then, extended to a year in 1927¹⁴.

IV. Concluding Remarks

In the advance of the Japanese heavy industry, two sorts of technical talents were required: a group of workforce for adopting the western technologies, and the other group of skilled engineers, who could direct workmen and workshop technicians in operation and understand engineering theories as well. The former was supplied by university graduates alongside the establishment of higher education in Japan; then, the latter was grown by both the corporate training programmes for talented workmenworkshop technicians (with relatively weak educational background) and the personnel scheme of promoting them to superior posts. The Japanese firms tried out a plan of fully utilising their potentials by promoting them to the most prestigious position of workman i.e. chargehand, but the attempt was unsuccessful since chargehands did know their unsatisfactory social status and even tried to leave the post of chargehand, if possible. It was thus necessary to firstly develop an incentive system of promotion, based upon corporate training programmes, and then integrate it into "the educational class system". The personnel ways and means enabled management of any kind of potential disaccord or communicational blockade between superior staffs (with university-level education) and workmen and workshop technicians; and the personnel scheme facilitated the efficient internalisation of the imported technologies at shop floors.

Mitubishi-Syasi Kankoukai(Publishing Committee of Chronicle of Mitubisi), Mitubishi Syasi(Chronicle of Mitubisi), Tokyo, 1979-1982, each year,

¹⁴ Mitubishi-Syasi Kankoukai, *ibid*,35(1927-1930),p8,