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《論　文》

Compensation System in the Chinese Automobile Industry:

A Case Study of a Leading Automobile Firm in Notheastern China

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Abstract

This research investigated the compensation system of one leading Chinese government operated automobile firm. Currently, the development of Tanoko have attracted the attention from the global automobile industry. From now on, Tanoko also need to be developed in Chinese automobile industry not only for improving the productivity but also for easing the approaching ageing society and labor shortages in China. This study is based on in-depth interviews with one leading automobile Company C in northeastern China in order to clarify the effectiveness of the compensation system on motivating workers' skill development. The findings have shown that the compensation system in Company C has no motivational effect on involving workers into productivity improving activities, which have brought a huge inefficiency to the assembly plant. This paper is a strong evidence to point out the necessity of the future reformation of Chinese automobile companies' compensation system by reflecting workers' skills into the compensation system.

Keywords: Tanoko, Compensation system, Government-operated companies, Automobile industry, China.

1. Introduction

Since 2008, China has become the largest automobile producing country in the world. According to the statistics from OICA (International Organization of Motor Vehicle Manufacturers), China now is possessing the production capability by 23, 722, 890 units which is followed by USA and Japan.

However, when it comes to product's quality and brand power, the image towards Chinese automobile makers are still not good[1]. Therefore, from now on, the development of Tanoko[2] is necessary for improving the quality as well as productivity for Chinese auto makers. In addition, China have entered the list of aging countries and it will suffer from the labour shortage in the near future. According to the Chinese statistics of social services and development[3] that the labor force of China is 916 million by 67.0% of the total population in 2015. The aging population is 138 million by 10.1% of the total population. The current birth rate of China is extremely low by only 1.18. If the situation could not be improved, In 2050, the aging population of China is anticipated

to reach 36.5% (around 500 million). Therefore, by considering the low birthrate and longevity of China, raising up the labour productivity is compulsory for keeping the living standard and supporting the future social stability.

During the time when the survey of this paper have been done, Toyota production system (TPS) have been accepted as the best practice" due to its high efficiency. The transition of TPS from Japan to the other countries can be also widely observed. One of the important factor that support TPS is supposed to be the wide formation of Tanoko. According to Koike (2005)'s the theory of intellectual skills" (*Chitekijyukurenriron*) that Tanoko is the person who is not only be able to do the regular work" but also irregular work" when it occurred in the workplace. The high efficiency of TPS is because of the wide formation of Tanoko" who are able to deal with both of the regular and irregular work.

Because of the high performance of Tanoko, the transition of Tanoko from Japanese automobile manufactures to the other countries' manufactures can be widely observed. Kumon and Yasuho (2005) have done the research to observe the transitional degree of application of the typical Japanese management of automobile companies to other countries using the five steps evaluation method"[4]. He pointed out that the degree of the application of Tanoko in North America, South America, England, Continental Europe, Korea, Taiwan and Southeast Asia are 3.0, 2.6, 3.3, 2.8, 2.9, and 2.6 respectively. Therefore, we can know that the development of Tanoko have been widely introduced and accepted throughout the whole world.

Under the global trend of the development of Tanoko and the situation of Chinese future problem of labor shortage, what is the current situation in Chinese automobile companies of Tanoko development need to be clarified. However, workers' skills are too abstract to observe because it would be subjective sometimes. In order to identify whether the workers are Tanoko or not, the way of how the workers are being rewarded play an important role to determine the workers' attitude of learning new skills. Besides, the way of how workers are being rewarded determine the attitude of how the workers use the new skills back to the workplace actively or not. Therefore, this research is focusing on one leading automobile Company C as a case study to clarify whether the compensation system has positive effect on production workers' skill development in the assembly plant. Company C is one of the fourth largest automobile companies in China with the largest annual production capacity. Company C have been separated from its parents company (ministry goods producer) as an independent Automobile Company in 2005. Besides, Compensation system is the sum total of all monetary and non-monetary benefits provided to employees in exchange for their willingness to work. Usually, compensation system consist of two parts which are direct financial compensation and indirect financial compensation (fringe benefit). This paper only focuses on the direct financial compensation of Company C.

There are two objectives in this paper. First, to clarify the compensation system in Chinese government-operated company C. Second, to examine the effectiveness of compensation system on Tanoko's development. Because the way of how workers' compensation being determined has a strong effect on how the workers behaving in the workplace. Therefore, from observing the compensation system, we can know whether the company have recognized the importance of workers' skill development and whether there have incentive effects on motivating workers to

developing their skills. Then, in order to define whether the workers are Tanoko or not, how the workers deal with the irregular works will be observed based on Koike (2005)'s the theory of intellectual skills". The irregular works are being shown as following 3 points which are the issues directly influence productivity of assembly plant.
(1)When defective products occurred. (2)When machine problems occurred. (3)When market demands decrease.

2. Methodology

There are two compensation patterns－skilled based compensation and job based compensation are being widely used in the world in order to link workers' compensation to organizational goals. Therefore, this paper is to observe in Company C, which compensation pattern does Company C belongs to and how does the compensation motivating workers' skills development.

In order to collect data, the in-depth interviews have been conducted. The interviews have been conducted based on planned questions which are made up of 4 parts. They are compensation system for production workers", the organizational structure of assembly production line", workers' process of promotion and upgrading" and workers' working behaviors in dealing with the urgent problems".

The research target is the assembly plant in Company C. This assembly plant consist of 580 production workers. Among the workers, there are 174 irregular workers. The targeting interviewees consists of 7 people. They are division chief in HRM department, production division chief in assembly production plant, foreman, 3 team leaders and assistant team leader. All the interviews have been conducted from 1 to 2 hours and 1 to 2 times. For objective 1, the questions were mainly asked with division chief in HRM department and the production division chief of assembly line, since they are being considered as policy maker. For objective 2, the questions were mainly asked with the floor manager－foreman, team leaders and assistant team leaders, since they are most similar with the issues in the actual workplace.

3. Research results

3.1. Outline of assembly plant

This assembling plant was established in 1982 as the automotive production division which was under the parent company H. The company had achieved an annual production capability of 100 thousands vehicles in 1991. Moreover, Company H invested 198 million Chinese RMB[5] in its automobile production division by purchasing the new assembly equipment which has matched the global standards. After acquiring the new investment, the automobile production division has achieved the production cycle time of 1.85 minutes and the annual production capability of 200 thousand vehicles. In the year 2002, under the permission of the Chinese Ministry of Foreign Trade and Economic Cooperation, the automobile production division in Company H became an independent Company. However, because of the problems of management, Company H suffered from a huge financial deficit in 2006. Eventually, it has been merged into Automobile Company

C in 2007 as a member of Company C group. Currently the total number of employees in Heilongjiang factory are 7000. The factory in Heilongjiang province is composed of 4 plants: stamping, welding, painting and assembling. The research target of this paper is the assembling plant in the factory of Heilongjiang. The factory's current production cycle time of 1.85 minutes and the annual production capability of 200 thousand vehicles.

The total numbers of assembling workers in the assembly division are 580 workers, there are 26 assistant-team leaders, 25 team leaders, 8 foremen, 4 vice-production chiefs and 1 production chief. For the in-depth interviews of this study, one production unit was selected to be interviewed. Within this production unit, there exists 6 teams with 144 production workers. There are 7 assistant-team leaders, 6 team leaders and 1 foreman. From team 1 to team 6, the number of members in each team are 23, 20, 22, 22, 24 and 19 respectively. There are 2 assistant-team leaders in team 5. The detailed work map of this unit are shown in Figure 1 in Appendix. Team one's assembling process is being shown as an example. Team one is consist of 23 production posts and 23 production workers. The components are flowing on the conveyor from previous post to the next post along with the direction of the arrow. Team one's job contents are attaching the doors and lights on the automobile's body. Each production post for each workers consist of from 3 to 6 movements. Since the current cycle time is 1.85 minutes, the workers need to finish his assembling work within the time.

3. 2. The Compensation System in Chinese Company C

The following data was mainly from the in-depth interviews with the division chief of HRM department which took 2 times by 1 hour for each. In Company C, production workers compensation are being calculated by the following formula:

Production workers' compensation＝age-based compensation＋post-based compensation＋performance-based compensation＋perfect attendance reward＋allowance for managerial positions[6]**.**

Firstly, the age-based compensation for production workers is only determined by their years of service. The starting age-based wage is 420 RMB, and this increases along with the years of service. The upper limit does not exist, but it only increase for as low as 10 RMB yearly, so there is very little change in the total amount of the age-based wage of the workers.

Secondly, post-based wage are based on the difficulty of the actual jobs. In the assembly production line, the job pressure for workers are not same. Some jobs need heavy physical strength while others are relatively easy. Therefore different coefficient numbers have been

Table 1　the coefficient numbers for each type of post

	General worker	Heavy physical worker	Assistant Team leader	Team Leader	Foreman
Coefficient number	0.9	1.0	1.2	1.3	1.5
Total amount	620	690	825	895	1030

Source: created base on the in-depth interviews

created in order to present the degree of difficulty of each job description and the post wage are being calculated based on these numbers. The coefficient numbers and the total amount of post position for each type of jobs are shown in Table 1. The post wage for General workers is the lowest (620 RMB per month) while the highest post wage is that of the foreman (1030 RMB per month).

Thirdly, the performance-based compensation is be showed as the following formula.

Performance-based wage＝[(**the money for producing one vehicle**) × (**the total production amount per month**) − (**the fine for producing the defective part**) × (**the total defective numbers per month**)]

The money for producing one vehicle depends on the degree of the job's difficulties. Generally, it is 0.2 RMB for each vehicle and 0.3 RMB for the posts which easily comes out with defective products. If the defective products are due to the mishandling of workers, the workers' performance-based wage will be reduced based on the degree of the damage, but the fixed amount is not determined. However, this performance-based compensation does not mean a higher wage for the worker who can produce more. The reason is because the monthly production planning has a certain production quota. It is impossible for workers to produce more vehicles than the decided quota. When the market demands for Company C's products to increase, the income of the workers would increase as well. Therefore, the performance-based wage is directly linked to the market's demands, but does not reflect workers' skills. Besides, despite the corporate regulation states that the salary will be reduced when the workers produce defective parts, in the reality the regulation is never functioning at all. It means that even if the workers have produced defectives, their salary never be reduced.

The performance-based wage accounts for the largest proportion of the workers' total wage. The current production volume of this assembly production factory is around 6000–7000 vehicles, so assuming one worker who produced 6000 accepted products; his performance-based wage will be: 6000×0.2＝1200 RMB per month. Therefore, even though this wage element is called as performance-based wage", but it is not reflected on the workers' individual performance. Instead, it is firmly based on the workers' attendance rate (as long as the workers come to work every day, he can produce one month' production quota). The workers who are not on the assembly line, such as team leaders and foremen are being rewarded with the same piece-rate wage based on a monthly production plan.

Then, Perfect attendance reward is determined by every month's attendance rate. One month's full attendance rate is equal to 100 RMB.

Finally, the allowance for managerial positions are only paid to the workers who are above team leader levels. The managerial allowance for each of the floor managers are the fixed. They are Assistant-team leader－300 RMB, Team leader－500 RMB and Foreman－1000 RMB respectively.

According to the above introduction of compensation system in Company C, we can calculate each compensation element's composition and each type's workers total compensation of each month. Now, supposing all the workers have 8 years of service and have full attendance rate that is under this wage system, each variable's amount, composition and total wage are

Table 2　the wage of each element's amount, composition and total wage

Unit: RMB

	General worker	Heavy physical worker	Assistant team leader	Team leader	Foreman
Age-based wage	500（21%）	500（20%）	500（17%）	500（16%）	500（13%）
Post-based wage	620（26%）	690（28%）	825（28%）	895（28%）	1030（27%）
Performance-based wage	1200（50%）	1200（48%）	1200（41%）	1200（38%）	1200（31%）
perfect attendance reward	100（ 4%）	100（ 4%）	100（ 3%）	100（ 3%）	100（2.6%）
Managerial allowance	0	0	300（10%）	500（16%）	1000（26%）
Total	2420	2490	2925	3195	3830

Source: created base on the in-depth interviews

Note: Some percentages are not 100% even if add them up. It is because that the numbers after decimal point have been rounded off.

shown in table 2.

According to Table 2, we can summarize the characteristics of the workers' compensation system as follows: First, performance-based wage and perfect attendance rate both have a strong impact on encouraging workers not to be absent from work. Performance-based wage accounts for the biggest portion of the workers' total wage by around 45%. However, as mentioned before, the speed and amount of the production is not controlled by the workers. Therefore, the performance-based wage in Company C plays an important incentive to motivate workers to not be absent from work. Besides, it's obvious that the perfect attendance reward is an incentive for encouraging workers to come to the workplace. Therefore, the piece-rate wage element and the perfect attendance reward, together, accounts for 50% of the workers' total wage, which encourage workers to come to work every day.

Second, the post-based wage and the managerial allowance, together, play an important function to encourage workers to compete with each other in order to be promoted to a higher job ladder. Post-based wage represents the second largest part by around 30%. The workers who work on general posts or heavy physical posts strongly depends on gender and age, but does not depends on work experience. Normally, the workers who work on the heavy physical posts are the young, male workers. The wage gap between them is small, only by 70 RMB. However, looking at the floor managers' positions (assistant-team leader, team leader and foreman), the wage gap from the general workers becomes larger by 205 RMB, 275 RMB and 410 RMB respectively. Moreover, the managerial allowance are only paid to the workers who are higher than the assistant team-leader by 300, 500 and 1000 respectively. Therefore, the post-based wage and the managerial allowance, together, give a strong incentives to compete with each other in order to be promoted. In other word, as long as the workers want higher income, the only way is through the promotion process. Therefore, the promotion process should be confirmed in order to see

whether the process of determining promotion has influence on enhancing workers' skills.

3. 3. Workers' Promotion Process

The promotion process generally follows the orders from assistant-team leader, team leader, foreman and production chief. But, the assistant-team leader do not have managerial functions. Instead, he is called as the replaced workers," whose function is to replace the workers who are absent from work.

The first promotion process to be an assistant-team leader is by the recommendation from a team leader, then reported to the foreman. After that, the foreman writes the recommendation letter to the production chief. Finally, production chief decides who will be promoted. As previously stated, one of the functions for assistant-team leader is to work in the line in place of the workers who are absent. Sometimes, the assistant team-leader needs to replace the workers who even work in other teams, or which production post the assistant team-leader have never experienced before. Therefore, in order to be able to catch up with the cycle time, one of the necessary conditions for assistant-team leaders to be promoted is that he must have a high learning ability.

Then, the promotion procedure for a team leader is that he need at least 3 years of service and then the foreman will recommend the qualified workers to the production chief. Production chiefs have the authorization to determine who can be promoted. The conditions for a team leaders' promotion are as following. First, he has to have good knowledge of his belonging team's working contents and has a good relationship with the other co-workers. Second, he must have no records of violating the corporate discipline. Third, the absent rate is low. The recommended workers have to pass the interview exams with the production chief. The candidate who passed becomes the team leader. Generally, team leaders do not work on the production line, but on occasions when there are many absent workers at the same time which is beyond the number of assistant team-leaders, the team leader should also work in the production line. Moreover, another function for a team leader is to coach the newly hired workers.

Next, the promotion process for a foreman is basically based on Self-recommendation system", with at least 5 years of service. If the vacancy exists for a foreman position, the information will be announced on the bulletin board. The announcement will be kept for 1 week, during the period of time, the workers who have the intension of wanting to be a foreman can inform to the production chief. It does not required that the capable person must be the current team leaders. General production workers also have the rights to apply for the self-recommendation. After that the writing test and interview test will be conducted for the applicants. The weight of the writing test and interview test accounts for 40% and 60% respectively. Only the applicants who have passed the writing test can go on to have the interview test. The evaluators for the interviews are 3 people: the vice-production chief, the production chief and the representative of the HRM department. Although, it does not require the workers to be the current team leader, mostly, the actual promoted workers are the current team leaders.

Finally, for the production chief, a bachelor degree is needed for the workers to be promoted as the production chief. Because there are no bachelor degree holders in the production line, so the opportunity for the workers to be promoted to production chief is 0. The current production

chief has been recruited from the external market 3 years ago who has the experience of working at the other automobile companies, but he has no experiences of the actual production operation before.

The average spending time for being promoted to team leaders and foremen is as follows: The average age for team leaders are 30 years old, and the time they have spent for promotion are 3–5 years. On the other hand, the average ages of foremen is 40 years, but the years for them to be promoted varies among different people.

The probability of being promoted to each job ladders was shown in Table 3. Aforementioned, there are 580 workers working in the production line, but there only exist 26 assistant team-leaders, 25 team leaders and 8 foremen as the floor managers. Compared with the total numbers of workers, the floor managers are very few. The probability of being promoted is 4.5%, 4.3% and 1.4% respectively. As long as no vacancy exists on the higher positions, even if the workers are capable enough, they cannot be promoted.

Table 3　the probability for workers to be promoted to each job ladder

Job ladder	Assistant team-leader	Team-leader	Foreman	Production chief
Total numbers	26	25	8	5
Probability	4.50%	4.30%	1.40%	0%

Source: Created based on the results of in-depth interview

From the above description, we can interpret the promotion process as follows: First, because the performance evaluation is not conducted for production workers, so clear and specific criteria does not exist for workers to refer to. Therefore, the candidates who can be promoted are strongly based on supervisors' subjective opinions, so bias might occur. Second, since the wage system for the production workers does not reflect skills, performances and efforts, so that the promotion has little effect on motivating worker' skill development. Moreover, the probability for workers to be promoted is extremely low. As long as no vacancy exists in the higher positions, the workers cannot be promoted. Therefore, we can conclude that promotion process also has few motivational effect on workers' skill development.

3. 4. Effectiveness of the Compensation System

Above, we have described the compensation system for the production workers. It is already clear that the compensation system does not reflect workers' skill level as well as performance. Therefore, we can anticipate that the average skill level of workers is supposed to be low. In order to find out the evidence to support the assumption, how workers are being involved in dealing with irregular works" will be described. As have been mentioned before that the irregular works" are being defined as follows. (1)When defective products occurred. (2)When machine problems occurred. (3)When market demands decrease.

Firstly, when defective products occurred, the company requests that the workers themselves must inspect the defects which flowing from the previous production post. For the important components which might lead to accidents or conflagrations, the inspection technicians are

being allocated to monitor the production. But, the inspection technicians are not the production workers, they are almost graduated from vocational school who has no production experience before. When the defective products are seen in the production line or are discovered by the workers, the general workers have no authorities to stop the production line to fix the problem immediately, which is normal in Japanese makers. Instead, the workers have to check the problematic parts on the quality checking list" which is being attached to the vehicle. After that, the problematic vehicle will keep moving on the conveyor until the end of the production line, which is called quality inspection area". Until the problematic vehicle reaches the quality inspection area", the workers will then stop attaching the components on the vehicles. Currently, the cycle time is around 1.85 minutes, so when the problematic vehicle comes, the workers just stand there and do nothing, so a large of cost to time is happening. The quality inspection technicians deal with the problematic vehicles after it goes off-the-line, when the problems are serious and are beyond the quality inspection technician's capability, the team leader of the team where did the problem happened will be called to fix the problem together. Demolishing the vehicles in order to find out the problems are frequently happening. Therefore, excepting discovering the problems and checking the list on vehicle body, the production workers have been excluded out of the quality control process. Moreover, from the perspective of management side, they even does not allow the workers to stop the production line, from the interview results with the production chief, if any huge problems should occur which will result in stopping the process of in the production line, the foreman of the unit will be fined because the efficiency rate of assembly line only be calculated by the time of line stop. Therefore, the foreman hates the interruptions in the production line.

Secondly, when machine problems occur, the management side does not allow the workers to solve it even if the minor problems which can be easily solved by restarting the machine or fixing the broken line. If the workers touch the machine when problems occur, the worker will be fined. From this point, we can clearly know that the intention for management is to exclude workers from machine maintenance. Instead, when problems occurred on the machine, the regulation of the company is to call the maintenance engineers to come and ask him to solve the problems. However, the office for maintenance technicians is out of the assembly plant, so when problems occurred, team leader will call the maintenance technicians to come. Until the technicians arrive, the workers just stand there or chat with the others. Besides, small problems such as the products intervening in the line and machine restarting are being solved only by the maintenance technicians. In the case that the machine produces defective products continuously and the problems cannot be solved by simple machine restarting, the authorized person from the machine supplier will be called to come and solve the problems.

Finally, when market share shrinks, how to deal with the decreasing demands are being shown as follows: According to the interview results with the HRM division chief, the current marketing demands on vehicle models which is being produced in the factory in Heilongjiang province is decreasing rapidly in the recent years. Despite the decreasing market share, the production cycle time has been maintained the same as usual. In 2006, the production line has reached its peak production volume by 300 vehicles per day. At that time, the production cycle

time reached to 1.85 minutes which was the fastest in the history. However, in the recent years, the average production volume per day is only 200, but the production cycle time still remains the same as before by 1.85 minutes. In the normal case, when markets demands declined rapidly, job combination should be conducted in order to raise the productivity. However, in Company C, Job combination and changing the cycle time are not being implemented at all. Therefore, regardless of the working time of this factory is from 8 am to 5 pm every day, but by the same production cycle time, currently this production quota can be finished at 2 pm. Sometimes, the workers have no jobs to do, so the floor managers will ask the workers to clean the machines and the floor many times. In the worst case, the managers just let the workers go home early. Even in events like these, the production workers are still being maintained by 580 production workers. As have been mentioned before that there are 174 irregular workers are working at Company C, but no worker have been dismissed under the demands declining time.

Above are the processes about how the workers being involved in to the irregular jobs. Aforementioned we have learned that the workers are not involved in the quality control process and machine maintenance even for the simple problems. The reason for that is supposed to be the low average skills of workers, which made the management side do not trust the workers. The reason for the workers' low skills level is also due to the managements are lack of the awareness of workers' skills development. Therefore, during the time of market sharing shrinking, the workers are not able to participate into the job combination and increase the cycle time because no workers can undertake it, which brought a disaster for the assembly plant. As a result, the efficiency is extremely low in Company C, recently workers even do not have jobs to do in their working hours.

To sum up, from section 3.4 that we have clearly known that the current compensation system have no motivational effects on workers' skill development in Company C. The current compensation system have resulted in a low skills' level. Because of the low skills level, the workers have been excluded from quality control, machine maintenance and production cost reduction process. As a result, the evidence have shown that a lot of inefficiencies in the side of the workers and a huge loss in the production line might occur. But, Company C cannot find a way to solve it.

4. Conclusion and policy recommendation

In this paper, we have clarified the compensation system and its effectiveness on workers' skill development. Then, we found the following problems.

Firstly, the implementation of Compensation system is based on Job titles". Since job-based compensation is based on the principle of equal job equal pay" so that the current job-based compensation have created the barriers of movement between different production posts. This rigid staffing planning have a huge negative impact on the formation of Tanoko in Company C. Besides, the compensation of Company C does not reflect workers' different skills, responsibility and performance into different salaries, so under this system, it will be hard to motivate workers to participate into the skill development' methods such as job rotation. As a result, the

compensation system have resulted in a low levels of workers' skills in Company C. Secondly, due to the compensation system has no motivational effect on workers' skill development, it has brought a low workers' skill level, so the workers are excluded from the processes of quality control, machine maintenance and the reduction of production cost. This have also resulted in a huge production inefficiency and production waste in Company C's assembly plant. The evidence is that even though company C is suffering from market's demands declining, the cycle time still remain the same as the peak time and the job combination is not being conducted.

Therefore, we can conclude that the compensation system in Company C have brought a big obstacle on bringing up Tanoko. In order to solve this problem, both of the short run and long run solutions should be taken.

In a short run, the factors which limit the workers' skill development should be addressed. The biggest barriers in Company C' assembly line are supposed to be the job design, skill development and the delegation of authority. Therefore, reflecting workers' skills into workers' compensation system should be proceeded. Japanese automobile companies' skill-based ranking system is a good reference.

In a long run, the form of government-operated companies should be reformed. The problems are that government is the biggest shareholder and government directly interfere into companies' management, so that the self-responsibility's management does not being conducted in government-operated companies. Therefore, for the future reforming of government-operated companies, the situation of government is the biggest shareholder" should be changed. Stock transfer from government to the employees and external investors should be proceeded from now on. Along with the deepening of stock transfer, on one hand, the value of the companies will be reflected by market which would have impact on managers and employees' reforming of managerial consciousness. On another hand, the government-operated companies can absorb external investors' advanced managerial perspectives which can enhance companies' Management culture.

Notes

1 According to Chinese auto quality report which available at www.people.cn. This website is the most authorized auto website aiming to report the quality related issues of Chinese automobile products.
2 Taboko in Japanese language means the workers who have high-qualified skills that he not only can take the regular jobs but also the irregular jobs such as quality control, kaizen activities and workload reduction activities. He is able to maintain and support the flexible and high-mix low-volume production system so that he is the essential person to achieve the high prod
3 Available at http://www.gov.cn/gzdt/2011-06/16/content_1885931.htm
4 Five steps evaluation method: the degree of application are being scored from 1 to 5. 5 means the Japanese management have been perfectly transferred which totally same with it in Japan. If the factor's score is higher than 2.5, it means that this factor is similar with it in Japan.
5 RMB is Chinese currency. The exchange rate was 1 RMB＝18.71 JPY during the time when the survey have been done.
6 Allowance for managerial positions: Only being paid to the workers whose positions are above team leader.

References

Asano, K. (2001).『自動車産業における働き方に関する考察 (1)』(Observation of the way of work in Japanese automobile industry (1)). *Tohogakushi, 40* (1), pp. 47–65.

Asano, K. (2010).『トヨタ生産方式と労働密度』(TPS and labor intensity) *Tohogakushi, 39* (1), pp. 113–132.

Asano, K. (2012).『自動車産業における働き方に関する考察 (2)』(Observation of the way of work in Japanese automobile industry (2)). *Tohogakushi, 41* (1), pp. 47–74.

Bemson, J., & Debroux, P. (2004). Flexible Labour Markets and Individualized Employment: The Beginnings of a New Japanese HRM System? In C. Rowley, & J. Benson, *The Management of Human Resources in the Asia Pacific Region: Convergence Reconsidered.* pp. 55–75. London: Frank cass.

Casey, I., & Shaw, K. (1999). *The effects of Human Resource Management systems on economic performance: An international Comparison of U. S. and Japanese plants.* Maryland: Institute for Operations Research and the Management Sciences.

Chow, I., Huang, J., & Liu, S. (2009). Strategic HRM in China: Configurations and Copetitive advantage. *Human resource management, 47* (4), pp. 687–706.

Cooke, F. (2009). HRM in China. In J. Storey, W. Patrick, & D. Ulrich, *The Routledge Companion to Strategic Human Resource Management* (pp. 447–461). New york: Routledge.

Gan, B. (1996).『国有企业工资分配研究』(Wage distribution of Chinese government operaed companies) Chengdu: The publisher of Xi Nan finance and economics university.

Gao, Y. (2007).『岗位绩效工资是国有企业工资制度改革的方向』(Post and performanced based compensation is the reforming direction for Chinese government-operated companeis) *Xi Bei Mei Tan, 5* (2), pp. 51–53.

Han, L. (2004).『日中合弁自動車メーカー DQAM 工場におけるトヨタ生産システムの導入実態』(Implementation of Toyota Production System at a Japan-China Joint-Venture, DQAM, in China). *Economic magazine of Okayama University, 46* (1), pp. 31–46.

Ishida, M. (2003).『仕事の社会科学』(*Social science of Job*). Kyoto: Minerva Publishing.

Ishida, M., Nooki, M., & Yoshinori, T. (2009).『日本自動車企業の仕事・管理・労使関係』(*Job, management, and labor management relations in Japanese automobile companies*). Tokyo: Chuokeizai-Sha, INC.

Kang, S. (1998).『工资理论和工资管理』(*Compensation theories and Compensation administration*). Beijing: The publisher of Chinese security of laour and soceity .

koike, K. (2008).『海外日本企業の人材形成』(*Human resources formation of overseas Japanese companies*). Tokyo: TOYO KEINAI INC.

Koike, K. (2005).『仕事の経済学』(*Economics of job*). Tokyo: TOYO KEINAI INC.

Kumon haku & Yasuho Tetsuo. (2005).『日本型経営・生産システムと EU── ハイブリッド工場の比較分析』(*Japanese management style and production system and EU－Comparative research of Hybird factories*). *Tokyo: Minerva Publishing.*

Li, J. (2000).『中国国有企業の経営と労使関係　鉄鋼産業の事例』*1950–90* 年代 *(Corporate management and labor relation in Chinese goverment-operated firms- the case study in steel industry from 1950th to 1990th).* Tokyo: Ochanomizusyobo.

Liu, J. (2006).『谈岗位技能工资与岗位绩效工资之优劣』(The advantages and disadvantages of post and skill based wage administration system). *Baog Gang Ke Ji, 32* (4), pp. 63.

Macduffie, J. (1995). Human Resource Bundles and manufacturing performance: organizational logic and flexible production systems in the world auto industry. *Industrial and Labor Relations Review, 48* (2), pp. 197–221.

MunJae Ho. (1996).『トヨタ生産方式の韓国への移転に関する考察』(A study on the transfer of Toyota prodution system into Korea". syougakukennkyuronnsyu 5), pp. 239–256.

Pan, S., & Xu, C. (2004).『深化国有企业分配制度改革的障碍与对策』(Obstacles and Countermeasures for Deepening the reform of state-owned Enterprise Distribution System). *Economics Journal of Hebei Unoversity, 25* (3), pp. 83–84.

Saruta, M. (1995).『トヨタシステムと労務管理』(TPS and Labor Management). Tax accounting association.

Suehiro, A. (2002).『キャッチアップ型工業化論』(*Catch-up theory of industrialization*). Nagoya: The university of Nagoya press.

Sumiya, M. (1976).『日本賃金制度の歴史研究』(*A historical analysis of wage employment in Japan).* Tokyo: Ochanomizu Shobo.

Tang, L. (2010). *Income Distribution System Reform of Chinese State-owned Enterprises in Recent Years－The trend, significance and problems".* Tokyo: Momoyama University.

The comprehensive plan and wage division of Chinese labor ministry. (1995).『岗位技能工资制方案设计与操作』(*Post and skill-based compensation plan and its operation).* Beijing: The publisher of Chinese labor ministry.

Toyama, E. (2006).『日露合弁企業における日本型経営・生産システムの移転』(The transmission of Japanese style management and production system in Japanese-Russian joint venture company). *ERINA REPORT, 68*, pp. 17–27.

Tsuji, K. (2007).『戦後トヨタにおける昇格管理　昇格と昇進』(Toyota's Promotion Management and Employee Selection/Competition in the Post war Period: Promotion numbers and promotion management). *Ritsumekan Sanngyou Syakayi Ronsyu, 43* (2), pp. 1–19.

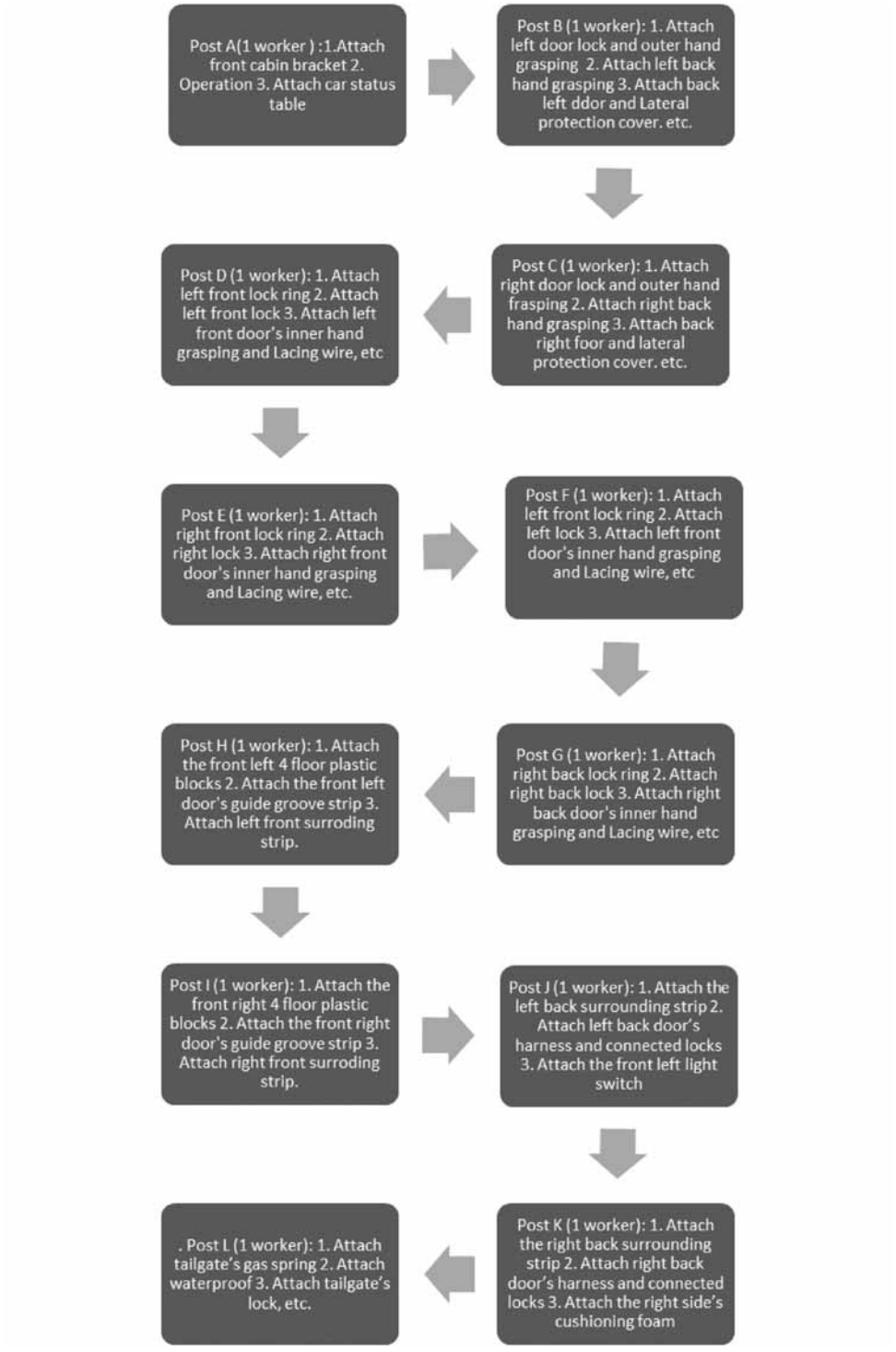
Wang Haibo. (1986).『中国の国有企業における賃金制度の改革』(*Reforming process of Chinese goverment-operated firms' wage administration*). Tokyo: Chikumasyobo.

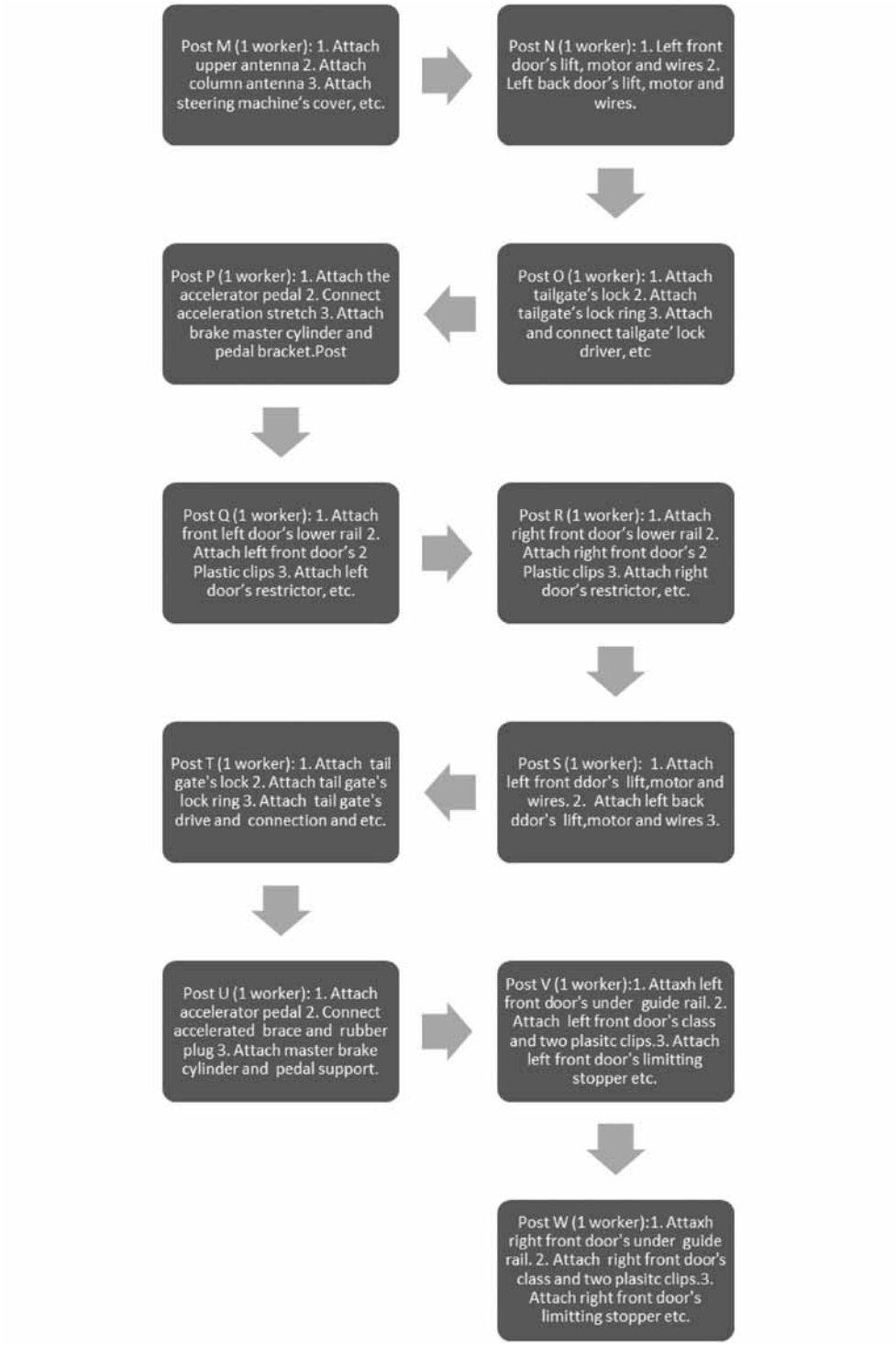
Yamamoto, T. (2000).『現代中国の労働経済 1949–2000』「合理的低賃金制」から現代労働市場へ』(*Morden Chinese Labour Economy 1949–2000: From resonable low wage system to opening-up labour market*). Tokyo: Sodosya.

Yang, T. (1988).『企业结构工资制系统设计』(*Design of firms' compensation system*). Beijing: Economics and Management publisher.

Appendix

Figure 1　Work map of team 1




Post M (1 worker): 1. Attach upper antenna 2. Attach column antenna 3. Attach steering machine's cover, etc.
Post N (1 worker): 1. Left front door's lift, motor and wires 2. Left back door's lift, motor and wires.
Post O (1 worker): 1. Attach tailgate's lock 2. Attach tailgate's lock ring 3. Attach and connect tailgate' lock driver, etc
Post P (1 worker): 1. Attach the accelerator pedal 2. Connect acceleration stretch 3. Attach brake master cylinder and pedal bracket.Post
Post Q (1 worker): 1. Attach front left door's lower rail 2. Attach left front door's 2 Plastic clips 3. Attach left door's restrictor, etc.
Post R (1 worker): 1. Attach right front door's lower rail 2. Attach right front door's 2 Plastic clips 3. Attach right door's restrictor, etc.
Post S (1 worker): 1. Attach left front ddor's lift,motor and wires. 2. Attach left back ddor's lift,motor and wires 3.
Post T (1 worker): 1. Attach tail gate's lock 2. Attach tail gate's lock ring 3. Attach tail gate's drive and connection and etc.
Post U (1 worker): 1. Attach accelerator pedal 2. Connect accelerated brace and rubber plug 3. Attach master brake cylinder and pedal support.
Post V (1 worker):1. Attaxh left front door's under guide rail. 2. Attach left front door's class and two plasitc clips.3. Attach left front door's limitting stopper etc.
Post W (1 worker):1. Attaxh right front door's under guide rail. 2. Attach right front door's class and two plasitc clips.3. Attach right front door's limitting stopper etc.