Suggestion and the construction of the production information management system in the medium and small-sized enterprises.

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I. INTRODUCTION

A high quality and low cost, the improvement of the appointed date of delivery are demanded from the medium size or small size Production enterprises. In the global environment, speed and communalization of the information are needed to offer a product quickly. For customer satisfaction and security of the company profit, a production schedule system is necessary. A computer-assisted system to decide production activity is essential to the medium and small-sized enterprises. However, the burdens of duties increase by system introduction and affect production schedule. However, the burdens of duties increase by system introduction, and there is a thing affecting production schedule. I investigate problems to occur by the production schedule management that used a computer-assisted system. In this study, I suggest the production schedule management that is appropriate than a thing of a medium and small-sized enterprises.

II. SUMMARY OF COMPANY M

I investigate the problem that happened by a computer-assisted system. And I clarify the essence of the problem that happened. The investigation method investigates a company using a computer-assisted system.

Company M performs the production schedule management that used a computer-assisted system. The summary of "Company M" is as follows.

① Capital 10,000,000 yen. The sales amount is 2,500,000,000 yen.
② The number of employees is 130 people.
③ The company produces industrial use machine parts.
④ The production form is build-to-order manufacturing.
⑤ The date of delivery has many delays.
⑥ There is a strong client of the power.

III. PROBLEM IN COMPANY M

The problem that occurred is as follows. The precision of data is bad. A system does not support adaptation to circumstances. There is not the expert who is familiar with a system. The breakaway from an old system is not done. Therefore I investigated influence on production schedule of the problem that occurred in Company M. As for “The precision of data is bad”, a fall of the productivity and the influence that the accurate office situation cannot grasp come out. Therefore the production schedule of "A" is opaque. The shop floor produces product by low information of the decision degree. The enterprise can accomplish a production schedule system of administration by solving the problem that can be settled. The problem that cannot be settled must cope as a problem to happen. And the construction of an expensive production schedule system of the decision degree becomes the key.

IV. ESSENCE OF THE PROBLEM

Only by a computer-assisted system, cannot raise "precision of the information". Figure 1 is essence of the problems in “the precision of the information”.

The first, because the data of the company are not managed, the worker cannot do judgment. Second, data become too much complicated and are hard to give useful output. Third, because the production system is complicated, production schedule and management of the stock are not to go well. It is this problem that two points can be settled by an effort of the company side among three points.
The production system is complicated.

Data are not unified.

The problem that can be settled by a company's effort.

The production system is complicated.

The problem that cannot be settled by the company's effort.

Figure 1. Essence of the problems

Therefore it may be said that it is the problem that it can control. However, the third problem is a difficult problem in the medium and small-sized enterprises. The medium and small-sized enterprises have many cases becoming the subcontract of the large enterprises. Therefore the company must take the production system which bore a risk. This problem has difficulty with control. In a problem to occur in internal environment in this way, it is the problem that can be settled in own company. A flexible system is necessary for a problem to occur in outside environment.

V. INFLECTION OF SCM

The production is not performed only in an enterprise. Enterprises purchase the materials such as material or the part from the other companies, and the enterprise sells a product to other companies and a customer. There is the enterprise sandwiching the outside order before a process. Therefore, the enterprise has relations with the outside. Being involved with the outside enterprise cannot ignore the enterprise. A problem that the production system becomes complicated happens by outside environmental influence in the medium and small-sized enterprises as had shown in figure 1. Therefore a way of thinking of SCM is necessary to build the relations that are close to the outside. A problem is adaptation to the office information of the outside information. Therefore the enterprise utilizes interface to join department environment together, and it is necessary to keep flexibility for information. “Company M” has low relationship with the outside information so that interface is not utilized, and the input work by the manual labor occurs. Therefore the correspondence of the office is late and causes a delay in drafting of the production schedule.

VI. PROBLEM OF THE PRODUCTION SCHEDULE IN “COMPANY M”

The enterprise causes a delay in production schedule by outside information. In Company M, I investigated the factor that caused a delay on the appointed date of delivery.

A factor to generate a delay on the appointed date of delivery of Company M

Figure 2 is a factor to generate a delay on the appointed date of delivery in Company M. There were the inside and an outside factor and placed it. The cross axle is easiness of improvement. It is the problem that is hard to be improved so as to go to the left. The vertical axis is influence degree. A higher factor has an influence on the appointed date of delivery. In figure 3, “Discrepancy in order(s)” and “Special sudden order(s)” and “Defect of materials” are hard to be improved. The factor that influence is big is an outside factor. The outside factors such as “Delay of materials” or “Defective quality of ordered goods” cannot evade. Therefore it is the problem that cannot be settled in the own company. From these problems, in Company M, production schedule always changes. Therefore, it is the situation making opaque production schedule.

VII. PRODUCTION SCHEDULE IN THE MEDIUM AND SMALL-SIZED ENTERPRISES

In the medium and small-sized enterprises, opaque production schedule can be said to be the situation making. Large size enterprises produce it by settled production schedule. In the medium and small-sized enterprises, a change of the production schedule occurs frequently, and a decision degree of the production schedule is low. When a decision degree raises most, there is the large size enterprise just before production schedule decision, and there is it just before a production start in the medium and small-sized enterprises. This environment
cannot change in medium and small-sized enterprises having a strong client of power. Therefore drafting of the production schedule that let the outside and inside factor become a decision is necessary to improve this situation.

VIII. SUGGESTION OF THE DECISION DEGREE PRODUCTION SCHEDULE

In the medium and small-sized enterprises, production schedule becomes opaque from power relations with the outside enterprise. Therefore it becomes necessary for the medium and small-sized enterprises to make the production schedule that took a decision degree in production schedule. The decision degree in the production schedule defines it as the degree that it decides that a certain products are produced. Opaque production schedule will increase reliability by taking in a decision degree. In this study, I suggest 2 of "the decision of the factor to have an influence on production schedule" and "the case to keep a decision degree to a product".

IX. THE DECISION OF THE FACTOR TO HAVE AN INFLUENCE ON PRODUCTION SCHEDULE

The decision of the factor to have an influence on production schedule is a method letting production schedule settle for chronological order based on a factor to generate a delay on the appointed date of delivery in Company M of the foregoing paragraph.

X. THE DECISION OF THE FACTOR TO HAVE AN INFLUENCE ON PRODUCTION SCHEDULE

For example, correspondence is an easy problem even if “Problem with drawing(s)” of the D area occurs after a plan was decided. Therefore it raises determinacy of production schedule to remove this factor. High production schedule of determinacy is that “A” is settled just before production. In other words a decision degree smashes the decision of the factor to have an influence on production schedule from a high factor, and it is a method to put up high production schedule of the determinacy.

XI. A DECISION DEGREE FOR THE PRODUCT

The second is to introduce a decision degree into “the production schedule of one product” and “total production schedule”.
① The product with much volume of production sets a decision degree highly.
② The order to resemble it in the past sets a decision degree highly.
③ It was set with ①, ② highly, but sets a decision degree with possibility to the product which an order does not have.
① sets a decision degree from a product with much volume of production with Pareto analysis such as figure 5. The product with much volume of production is high in the decision degree for a main product.
② sets a decision degree to an order from a plan produced in the past. The product with much volume of production can mind a decision degree high every year in the time.
③ sets a decision degree as possibility. Production schedule is better off by setting it beforehand. It is desirable for the present production schedule to acquire a decision degree with three points. High production schedule of the decision degree is made by these methods.
XI. CONCLUSION

I spoke necessity of the decision degree production schedule in the medium and small-sized enterprises and suggested two methods. The drafting of the decision degree production schedule is very important in today when quick correspondence is demanded. The decision degree enables drafting of flexible production schedule. I want to make the decision degree production schedule a good theory by inspection. By this study, the route of the one of the production schedule management of the medium and small-sized enterprises becomes clear, and it seems that a more effective production system is enabled.