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THE DEVELOPMENT OF THE SCIENCE OF BUSINESS ADMINISTRATION IN JAPAN SINCE 1955

OSAMU MANO

I. PREFACE

In the previous paper[1] I dealt with the development of the science of business administration in Japan and divided them into two groups. That is, there is one group which regards the science of business administration as an independent social science just as economics or law, and another group which considers it as one of the departments of economics. The foundation of the former theory was put forward by Teijiro Ueda and developed by his followers, especially Yōjiro Masuchi (1879–1940) and Yasutaro Hirai (1896–1970). This study has the same characters as business administration in the U.S.A. or Betribswirtschaftslehre in Germany, so I call it the orthodox school of the science of business administration. The latter one, called the critical science of business administration or the theory of individual capital, founded by Prof. Torao Nakanishi (1896–) and is a school of Marxian Economics. After the second world war, the study done by those who deal with the field of Modern Economics has been involved. Their study can be said to be similar to the study of Business Economics or Managerial Economics in the U.S.A.

In this paper I intend to order the development of these studies since about 1955 and to make clear the course of their studies.

II. THE DEVELOPMENT OF THE ORTHODOX SCHOOL OF THE SCIENCE OF BUSINESS ADMINISTRATION

Though both Drs. Masuchi and Hirai agree to establish the science of business administration as an independent social science, they have different points of view on considering whether the purpose of business is singular or not. In other words, Dr. Masuchi considers the purpose of business is to pursue the efficiency (Wirtschaftlichkeit) and tries to make its behavior systematic from this point of view. On the other hand, Dr. Hirai maintains that the purposes of business behaviors and their weights can be various, and he tries to make those business behaviors systematic from this point

[1] Osamu Mano, "On the Science of Business Adminstration in Japan", HOKUDAI ECONOMIC PAPERS, Vol. 1, 1968–1969, pp. 77–93.

of view. These two courses of the orthodox theory have continuously developed after 1955.

1. The Development of the Theory of Single Purpose of Behavior of the Firm

This theory has been developed by Dr. Shigetaka Mōri (1911～), one of the followers of Dr. Masuchi. He mentioned this point in his book titled "The Foundation of the Science of Business Administration" (*Keieigaku no kiso*, first edition 1956, second edition 1963).

He pursued the concreate purpose of behavior of the firm on the profit-making principle, that is, the maximization of profit, and he considered these five steps of the profit-making principle:

1. The maximum amount of profits in individual bargaining.
2. The maximum net worth profits in a financial year.
3. The maximum profit rate of net worth.
4. The maximum profit ratio of the total liabilities and net worth.
5. The maximum ratio of the added value of the total liabilities and net worth.

Of these five, the first one can be applied only to the earlier business behavior from the historical viewpoint. It doesn't apply to the firm which is working as a going concern or has a policy of small profits and quick returns. As firms are settled in order to increase their owned capitals, it is possible to think that the pursuit of profits is actually to gain the maximum profit rate of net worth. When production facilities are small and changeable and the kinds of commodities to be dealt with also changeable, as far as the owned capital is fixed, the maximum of profit amount in a given period should be equal to the maximum of the profits ratio of net worth. Therefore, the principle of profit-making can be thought of as the maximum of the profits in the period.

Now, supposing that the amount of stock of products is set,

G profits of the given period
R the returns of the period
C the costs of the period

$$G' = (R-C)' = R' - C' = 0$$
$$R' = C'$$

The amount of the profits in the given period becomes maximum at the meeting point of the marginal revenue and the marginal cost.

g the profit rate
K the amount of the invested capital

$$g' = \left(\frac{G}{K}\right)' = \frac{G'K - K'G}{K^2} = 0$$

$$\frac{G'}{K} = \frac{GK'}{K^2} \qquad G' = \frac{GK'}{K}$$

If K is constant, $G' = 0\,(= g')$

Therefore the maximum amount of profit in the given period is equal to the maximum profit rate of net worth.

This concept of the principle of profit-making works well when the production facilities are small and changeable, and the kinds of commodities are easily changeable, because in this case the principle of profit-making could be thought of as to get the maximum profits in a rather short-run period.

Even now we might say that the concept of the principle of profit-making in economics is still on this step.

With increase of the scale of production, facilities become large and unchangeable, the change of the kinds of commodities also become difficult, and it becomes necessary to consider the maximum profit rate of net worth the long-run viewpoint.

Here the profit ratio of the total liabilities and net worth attracts people's attentions as an index of the business capacity to earn continuing profits, because the profit rate of net worth is affected by the change of the relation between the profit rate of total liabilities and the profit rate of the net worth, and the constructive ratio between owned capital and borrowed capital. It is clear that we cannot judge the business capacity of the whole capital to earn continuing profits over a long period of time from the profit rate of net worth ; we must know the capacity of the whole capital to gain profits.

Therefore, the principle of profit-making of contemporary big businesses is maximization of the profit ratio of the total liabilities and net worth with the precondition of the superiority of the rate of net worth to the interest rate of borrowed capital. If the maximum profit rate of the total liabilities and net worth can be regarded as the concreate purpose of business behavior, the economic concept of production behavior up to now should be improved. That is ;

$$g = \frac{G}{K} = \frac{G}{C} \times \frac{C}{K}$$

$$g' = \left(\frac{G}{K}\right)' = \frac{G'K - GK'}{K^2} = 0$$

$$\frac{G'}{K}=\frac{GK'}{K^2}$$

$$\frac{G'}{K'}=\frac{G}{K} \qquad (1)$$

now, supposing $\frac{C}{K}$ (turnover ratio of total liabilities and net worth)$=T$

$$K=\frac{C}{T} \qquad (2)$$

(1)+(2)

$$\frac{G'}{\left(\frac{C}{T}\right)'}=\frac{G}{\frac{C}{T}}$$

$$\frac{G'}{\frac{C'T-CT'}{T^2}}=\frac{GT}{C}$$

$$\frac{G'T}{C'T-CT'}=\frac{G}{C} \qquad (3)$$

if T is constont,

$$T'=0 \qquad CT'=0 \qquad (4)$$

(3)+(4)

$$\frac{G'T}{C'T}=\frac{G}{C}$$

$$\frac{G'}{C'}=\frac{G}{C} \qquad (5)$$

$$G=R-C$$

$$\frac{(R-C)'}{C'}=\frac{R-C}{C}$$

$$\frac{R'-C'}{C'}=\frac{R-C}{C}$$

$$\frac{R'}{C'}-1=\frac{R}{C}-1$$

$$\frac{R'}{C'}=\frac{R}{C} \qquad (6)$$

$$\therefore \quad \frac{R'}{C'}=\frac{\frac{R}{x}}{\frac{C}{x}} \quad \text{(the maximum point of the profit)}$$

(a) the selling price of the commodities are fixed (in the case of completely free competition)

P price
x the amount of products
$R = P \cdot x$

putting this into (6)

$$\frac{(Px)'}{C'} = \frac{\frac{Px}{x}}{\frac{C}{x}}, \qquad \frac{P'x + Px'}{C'} = \frac{P}{\frac{C}{x}}$$

Now, as P is fixed

$$P' = 0 \qquad \therefore \quad P'x = 0$$

$$\therefore \quad \frac{Px'}{C'} = \frac{P}{\frac{C}{x}}$$

$$C' = \frac{C}{x}$$

Supposing that the price is fixed, it is at the crossing point between the marginal cost and the average cost that the amount of the products gets the maximum profit rate. This point is the so-called optimum output.
(b) In the case that the selling price changes according to the volume of sales, (as in the case of a monopoly),

$$\frac{R'}{C'} = \frac{\frac{R}{x}}{\frac{C}{x}}$$

$$\frac{R'}{\frac{R}{x}} = \frac{C'}{\frac{C}{x}}$$

$$\frac{\frac{R}{x}}{R'} = \frac{\frac{C}{x}}{C'} \tag{10}$$

The equation (10) is applicable to the following cases.

a. If $C' = \frac{C}{x}$, $R' = \frac{R}{x}$

As in the case of monopoly, the marginal return is always below the average return, this case is not exist.

b. If $C' > \frac{C}{x}$, $R' > \frac{R}{x}$

Thus the marginal return cannot become bigger than the average return,

this case is not exist.

$$\text{c. If } C' < \frac{C}{x}, \quad R' < \frac{R}{x}$$

In the case of monopoly, the marginal return is always below the average return. Therefore, this case is only exist.

Thus, when the price falls according to the increase of the amount of products (monopoly), the maximum profit rate is obtained at a point where the marginal return is smaller than the average return. In other words, it is short operation below the optimum operational capacity.

Compared with usage of the profit rate of net worth, it is superior in finding the total profit making capacity of the business and offering the long run index to measure the profit ratio of total liabilities and net worth as one of the actual bases of the principle of profit-making. The increase of the fixed state seen in contemporary business has reached not only to the aspect of capital but to that of labour. We can easily see it in the phenomena of the increase of the amount of lasting employment of labour and the constant rising of the wage level. Nowadays, the willingness to work of the labour is indispensable to use capital effectively in firms. Both lasting employment and the rising of wage level should be accepted as natural.

Nevertheless, in order to calculate the profit ratio of total liabilities and net worth, the amount of profit of the numerator is gotten by subtracting the amount of wages (a kind of cost) from total returns. The increase of the profit ratio of total liabilities and net worth can stand on the sacrifice of the amount of wage. From the long-run viewpoint, however, this policy leads to reduction of the willingness to work and to decrease of the profits. Now as the index of lasting profit-making capacity, the added value ratio of the total liabilities and net worth which can increase the amount of wage paid should be considered.

The added value ratio of the total liabilities and net worth can be gotten as follows.

$$\frac{\text{the profit of net worth} + \text{the paid interest of total liabilities} + \text{wage}}{\text{the total liabilities and net worth}}$$
$$= \text{the profit ratio of the total liabilities and net worth} + \text{the wage rate of the total liabilities and net worth.}$$

In the following cases, the added value ratio of the total liabilities and net worth can increase:

1. When the profit ratio of total liabilities and net worth is fixed and the wage rate of the total liabilities and net worth increases;
2. When the wage rate of the total liabilities and net worth is fixed and the profit ratio of the total liabilities and net worth increases;

3. When the wage rate of the total liabilities and net worth decreases but the profit rate of the total liabilities and net worth increases more than enough to offset the decrease;
4. When the profit ratio of total liabilities and net worth decrease but on the contrary the wage rate of the total liabilities and net worth increases by a greater degree;
5. When both rates increase.

Now,

c invested capital (total liabilities and net worth)
v wages (variable capital)
m the profit gained through a circle of capital (total liabilities and net worth)
n the turnover ratio of capital (total liabilities and net worth)

The added value rate of the total liabilities and net worth

$$=\frac{mn}{c}+\frac{vn}{c}=\frac{vn}{c}\cdot\frac{mn}{vn}+\frac{mn}{c}\cdot\frac{vn}{mn}=\frac{vn}{c}\cdot\frac{m}{v}+\frac{mn}{c}\cdot\frac{v}{m}$$

Today in the long run there is a certain ratio between the profits and wages in society. With this precondition m/v is fixed, and if so it is impossible to increase the rate of the added value of the tatal liabilities and net worth without increasing "n". It is only in case 5 that the rate of the added value of the total liabilities and net worth increases.

Three preconditions are necessary to accept the rate of the added value of the total liabilities and net worth as the practical index of the principle of profit-making.

That is to say,

1. The necessary profit ratio of total liabilities and net worth is kept;
2. The necessary profit rate of net worth is kept;
3. The necessary wage rate of the total liabilities and net worth is kept.

If we try to increase the added value ratio of the total liabilities and net worth under the condition of the fixed m/v, two of the preconditions, namely 1 and 3, will be satisfied. It will be possible to consider the added value ratio of the total liabilities and net worth as the practical index of the principle of profit-making in modern business when paying attention to the relation between the profit rate of net worth and the interest rate of total liabilities.

In this case the increasing of "n" means the reduction of the periods of manufacture and distribution to a certain volume of products or services, which will cause the productivity to rise.

Therefore the pursuit of profits in the modern business (firm) can be said

to make productivity rise.

These theories maintained by Prof. Mōri have been supported by many scholars in Japan and efforts to formulate the system of business behavior from these points have been made.

One point that I wish to question, however, is the cost curve. Prof. Mōri uses the cost curve S which is normally used in economics and does not pay any attention to the straight cost line[2]. Beside, I wonder if the capacity for increase of profit-making in future can maintain and make it rise with the use of the added value ratio of the total liabilities and net worth on the basis of past data only. Therefore, the question of the future capability of profit-making still remains.

2. The Development of the Theory on Various purposes of the Firm

Prof. Hirai and other scholars who have the same ideas of various purposes of the firm abandoned the concept of economic man at the beginning of 1930's, and have insisted that we should regard realistic man as the basis of the understanding of business behavior and also that we should pay stress on the fact that every firm has its own characteristics. They insist that there is no one like an economic man who is directly controlled only by desire for money and never controlled by any other desires, and there is no one who can know not only all alternative courses of action that men can take but also the outcomes of the selected courses. Thus, a man who is controlled by various desires and knows only limited information or alternatives should be at the starting point. A course which is suitable for one firm cannot always be suitable for another one, because different firms have different characteristics. That is why they have been insisting that they have to develop an approach which can take the characteristics of an individual firm into consideration. The men who stimulated this kind of study were C. I. Barnard and his followers, who were introduced to us in the 1950's. By the way, I am a student of Prof. Hirai, and I have the same point of view. We young scholars who have basically the same idea as Prof. Hirai, have been affected by Mr. Barnard and Prof. Simon since the 1950's.

Our point of view of the purposes of the firm is as follows: We all have not only physical limits but also intellectual limits. Therefore there are various limits on a person who wants to satisfy all his desires. If we try to exceed these limits to satisfy our desires more completely, this trial will produce a human cooperation. Among those various kinds of successive cooperations, the one whose common purpose is to do economic actions is a firm. Consequently, the firm consists of not only stockholders, employees,

[2] Total cost curve shows often a straight line; Joel Dean, Managerial Economics, 1951.

and managers, but also creditors, government authorities, consumers and material suppliers.

To be explicit, stockholders contribute a cooperative action to supply long-term capital in order to pursue the dividends, stock dividends, and the rise of stock value. Creditors contribute a cooperative action to supply short-term capital mainly to earn interest. Consumers contribute a cooperative action to supply cash in order to purchase goods or services. Government authorities contribute a cooperative action to supply many conveniences in order to receive various taxes or donations, and material suppliers contribute a cooperative action to supply materials and facilities to get returns. Employees and managers contribute the cooperative actions which combine the actions contributed by other members to produce organizational utilities[3] as large as possible and divide the utilities into various inducements or incentives as mentioned above in order to get contributions from members. They contribute such actions in order to get wages, utilizing right of employee benefit plans, social positions, honors and authority.

Therefore the activity of the firm should be thought of as the process of producing the organizational utilities by combining the various cooperative activities and converting them into inducements and deriving the next contributions from the member mentioned above. In this case all the members want to sustain such cooperative activities to get more satisfaction (or inducements) and less sacrifice (or their cooperative activities). The actual purpose of leading principle of the firm can be abstractly said to be the maintenance and development of the firm itself. In other words, it can be said to be the maintenance of the balance of the organizational utilities and their increase. Unless the differntial between the produced organizational utilities and the inducement derived from its utilities is equilibrium or positive, the firm will become bankrupt at some future time.

However, the above organizational utilities are the value produced by the activities of the firm as the whole. Actually it is produced as a whole organizational value on the systematic equilibrium of management system, production system, marketing system and financial system. The value increase of one particular system does not always mean the increase of organizational utilites; there can be cases of decrease. For example, increase of products without increase of selling capacity is a specific case.

As seen above, the balance among systems is always necessary. According to this, the actual purpose or the leading principle of the firm will vary in each case. It changes into, for instance, maintenance of liquidity, increase of profit, increase of market share, improvement of the relation

3) C. I. Barnard, The Functions of the Executive, 1938, pp. 241–244.

between employers and employees, diversification or acquisition and merger. Today it is still difficult to observe directly an organizational utility itself and we can know it only through the indirect index of seeing the general tendency of the firm to develop or reduce. So we regard the study of the process of decision making as the clue to understanding the movement of organizational utilities. The theory of decision making in the firm comes to be one of the most important problems.

We divide the decision making in the firm about the actual purposes of the firm into two cases: one is the ordinary short-term actual purposes and the other is the strategic long-term ones. First, the ordinary purposes of the firm are basically analyzed as follows. The demands of each member of the firm are infered by the employees or executives and are offered to the top managers from each department in the forms of budget requests, staff increases, new plans, etc., together with the occupational demands of emplyees or executives. Here I will look at the consumer's demands as an example. They are detected in marketing department, and offered to the executive committee as the demand for more progressive advertisement activity or new products, etc., together with the employees demands of the marketing department. At the same time, the demands of stock-holders are proposed to the executive committee by the financial department, for instance, as the necessity of constant dividends, together with another plan of financing.

We can recognize that each demand from each department is offered and arranged mutually, and at last some present actual purposes are decided. In this case, there are many demands; for example, mass production of a kind of commodity for cost decrease in the productive department and production of many kinds of commodities in the marketing department. The process of handling such demands is a very important problem. The way it is solved is that the resourses (organigational utilities) are shared so as to fill the lowest level (or necessary level) of each department's demand, and no one special demand is pursued exclusively. It is a useful method in solving the above problem to not try to attain many purposes simultaneously, but rather to approach one of them at a time. At the same time, the firm trys to decide the work of both executives and employees, and to limit the necessary variety of imformation and the decision making of a person in order to get high accuracy. Also, the firm trys to make a person not pursue multiple purposes but to pursue one purpose at a time; this is the principle of division of labour in the firm. Moreover, the firm has various experiences or knowledge in the from of habits or standard operating procedures[4],

[4] R. M. Cyert and J. G. March, A Behavioral Theory of the Firm, 1963.

and they constitute a system which acts not to make contradictory decisions but foward more accurate decision making; this system makes more accurate decisions in the firm than individuals. The process of decision making for ordinary short-term purposes of the firm is such a process, so we think the communication system, management system or many short-term plans have been studied from this view point.

On the other hand, the strategic longterm purposes are decided by many factors, especially the usage of synergy effects[5] which depend upon the characters of organizational slacks in every firm, and the original innovative discoveries. These decisions should be finaly made by the top management who are in a position to receive all important data or infomations, and the employee and the executive join the decision-making process by supplying the necessary data. Here, organizational slack means the unused productive services, which were previously noted by Charles Babbage[6], unused human resourses[7], especially unused human abilities that have developed with the growth of the human beings, and the excessive distributions of money or employees to commodities or businesses out of date or unproportional distribution of expeses to income[8]. Every firm has its own slack, so it is necessary to make suitable business policies according to the condition of the individual firm. Thus the strategic long-term purposes of the firms are mainly decided by the analysis of the organizational slack of each firm.

One theory of the science of business administration in Japan, which is based on the work of Prof. Hirai, has been developed as described above. In this school the ordinary short-term purpose are considred to be helped, to some degree, by the usage of computer simulation model; the study of this field is now progressing.

III. THE DEVELOPMENT OF OTHER THEORIES

As I mentioned before, the theory that the science of business administration should be considered as one of the departments of economics has been followed by the school of Marxian Economics. Dr. Torao Nakanichi, who established this theory, maintained that economics concerns the movement of the social total capital, while the science of business administration concerns the movement of individual capital which composes the social total capital. Some of his followers studied how labourers are exploited in firms, which are of the movement of individual capital, and went to the point of criticizing this kind of exploitation. Even now these kinds of studies are

5) H. I. Ansoff, Corporate Strategy, 1965.
6) C. Babbage, On the Economy of Machinery and Manufacturers, 1832.
7) E. T. Penrose, The Theory of the Growth of the Firm, 1966.
8) P. E. Drucker, Managing for Results, 1964.

being followed by this school.

Parting from these Marxian scholars, this school has been developed into two new directions since 1955. One of them has been followed by Dr. Katsuzo Baba[9], and this is the attempt to make the concept of individual capital as the object of study accurate. He established five grades on the concept of individual capital.

1. The case in which it is sometimes called individual capital but actually is one of the forms of the social total capital. This is seen, for example, in the process of consideration of the productive process of annual total social products.
2. The case where individual capital is thought of only as the units which compose the social total capital. Here the individual capital is used to make clear the movement of the social total capital.
3. The case where individual capital is regarded as the capital unit of competition among the different kinds of industries under the control of the average profit rate.
4. The case where the individual capital is regarded as the capital unit in the competitive condition within a certain industry. Instead of the concepts of value, surplus value, variable capital or constant capital, the concepts of profit, cost, fixed capital and current assests are used.
5. The case in which individual capital consists of owned capital and borrowed capital; in other words, the case where it is considered with the relation of ownership. Here the movement of the individual capital is caught in the consciousness of the capitalists.

Dr. Baba and his followers say the following:

The study done by Dr. Nakanichi conceives of individual capital as per step 2, so he cannot follow the movement of individual capital sufficiently. When the science of business administration studies the purpose of the movement of individual capital, the concept of individual capital should be understood as per step 5; then we can systematically understand the meaning of the technique of management which is used in the firm. Those who have this point of view try to clarify the relationship of the consciousness of the capitalists in the firm, the techniques of management, and the rule of general movement of capital.

On the contrary, the other group trys to find out the practical development of marxists business management by studying the conditions of business management in the nations of socialism; therefore they began to examine

9) K. Baba ed., Methodology of the Science of Business Administration, 1967. (Keieigaku Hōhōron)

the conditions of business management in East Germany, Soviet Union and Communist China. The systematic development will be studied in the future. This can be said to be one of the newest movements to offer a rather positive suggestion, compared with the critiques of the present condition of the firms by the marxian school in the past.

The effort to clarify business behavior in modern economics has been done only in the field of financial management, especially in the field of determination of the amount of investment.

In addition to this new movement, a group of industrial psycologists have studied the leadership of executive or the relationship of employees and employers. However, the objects of these studies by industrial psycologists or modern economists are very limited, so we must consider that an attempt to analyze the whole behaviour of the firm systematically from these point of view has not yet been made.

IV. CONCLUSION

The development of the science of business administration in Japan since 1955 has been varied, just as it has been in other countries, therefore it is very difficult to guess what direction it will take in future. However, the importance of the interdisciplinary approach has gradually become highly regarded in Japan. Many scholars have come to observe the necessity of studies by many experts in each field. Especially in the study to use the practical personal model (non-economic man model), which is moved by various desires and has only limited data, as the precondition of the study, the interdisciplinary approach is indispensable.

We think that our approach, which bases its studies on the assumption of the non-economic man model and the variable purposes of the firm, has much possibility for uniting the results of many kinds of studies.