Challenges in Improving Productivity in the Service Industry

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Points

- **This article provides an overview of the challenges to improving productivity in the service industry, based on the author's researches.**
- **The two engines of productivity growth, regardless of industry, are innovation and improvement in the quality of human capital. The expansion of the use of new technologies, including artificial intelligence (AI), and the enhancement of schooling and job training will contribute to higher productivity in the service industry. Resource reallocation through the expansion of market share of highly productive firms through competition and the exit of inefficient firms is also of high potential importance for the growth of the service industry.**
- **In addition to policies to increase productivity, it is also important to remove or reduce factors that are pushing down productivity. Social regulations are on the rise in developed countries, including Japan, and it is desirable to reduce compliance costs through streamlining and digitization of regulations and rules.**
- **The service industry has a constraint that the manufacturing industry does not: the simultaneity of production and consumption. In this regard, demand leveling through dynamic pricing (a variable pricing system) and other means and maintaining population agglomeration in the face of a declining total population are important issues.**

Introduction

In order to increase the potential growth rate of the Japanese economy, which continues to experience a decline in the working population, it is essential to improve productivity. In particular, the service industry accounts for more than 70% of the gross national product (GDP), yet its productivity growth rate is noticeably lower than that of the manufacturing industry, and its improvement has been a challenge. I have long studied productivity in the service industry and have presented the challenges of improving productivity in book form (Morikawa, 2014, 2016, 2018). The basic ideas remain the same even today, and in this section, I would like to introduce the main points of them, reflecting the recent situation such as the rapid development and spread of artificial intelligence (AI) and the impact of the Covid-19 pandemic.

In considering productivity growth in the service industry, it is easier to understand if we divide the issues into (1) cross-industry issues (generally important for productivity growth, including the manufacturing industry) and (2) service industry-specific issues (unique to the service industry, which differs from the manufacturing industry *(Table)*. There is a consensus among economic growth experts that the two engines of productivity growth over the medium to long term are innovation and improvement in the quality of human capital. In addition to these, reallocation of resources within an industry is also important. Productivity growth in an industry can be decomposed into two sources: productivity growth of individual firms ("within effect") and metabolism ("resource reallocation effect"), such as the expansion of market share of highly productive firms and the exit from the market of low-productivity firms. Innovation and improvements in the quality of human capital are mainly related to the "within effect", while the "resource reallocation effect" is a separate factor that raises productivity at the industry

TABLE
The issue of improving productivity in the service industry

1. Cross-industry issues
   - ① Innovation
   - ② Improve the quality of human capital (schooling, vocational training)
   - ③ Improve resource allocation (entry and exit, economies of scale)
   - ④ Elimination/reduction of productivity depressors (regulation, compliance)

2. Responding to the "simultaneity of production and consumption": a challenge unique to the service industry
   - ① Improve capacity utilization rate through demand leveling
   - ② Maintain population density

Source: Compiled by the author

level.

When discussing policies to increase productivity, the focus tends to be on policies to raise productivity, but it is also necessary to take the perspective of removing factors that are driving down productivity. For example, various government rules and regulations, including policies that protect inefficient companies, often depress productivity.

One might think that increasing capital investment and replacing labor with machinery (capital) would increase value-added per person or per hour (labor productivity). While this is not necessarily wrong, it will not raise labor productivity forever. If capital investment cannot ensure a return on investment that exceeds the cost of capital, the company will likely suffer from excessive equipment. For additional equipment to generate a certain rate of return on investment, total factor productivity (TFP) must increase. Conversely, unless TFP increases, a company has no incentive in adding equipment beyond replacement investment.

While the above is true for both manufacturing and service industries, there are challenges unique to service industries. In general, many service industries are characterized by the "simultaneity of production and consumption". In manufacturing industries, production and consumption (including not only final consumption by households but also demand for intermediate goods and investment goods by companies) are separated both temporally and physically. Because industrial products can be stocked and transported, production and consumption need not take place in the same place at the same time. In contrast, as can be seen when considering food and lodging services, medical and nursing care services, and transportation services, typical services are produced and consumed in the same place and at the same time, and the services themselves cannot have inventory. One might think that a retail store would have an inventory of goods, but there is no inventory of the service activity of selling itself. There are some cases, such as information services, where there are no restrictions on time and distance, but these are exceptional among services.

Due to the constraint of "simultaneity of production and consumption", capacity utilization is a critically important factor for service industry productivity. Therefore, the leveling off of demand over time and the geographic concentration of demand are major factors that determine the productivity of the service industry.

Innovation & Human Capital

There is no dispute that innovation is a major source of productivity growth. While there is no one-to-one relationship between innovation and R&D, there is no doubt that R&D is a major source of innovation. According to standard economic thinking, an increase in R&D investment has the effect of increasing the rate of productivity growth in the economy as a whole in a sustained manner. The quantitative effect can be approximated as the ratio of R&D to GDP (R&D intensity) x the rate of return on R&D investment. The rate of return on R&D investment varies greatly depending on individual R&D, but on average it is quite high, around 30%. Thus, a 1 percentage point increase in the R&D intensity of a country as a whole would increase the rate of increase in TFP by about 0.3 percentage points.

There are various types of innovation, including product innovation, process innovation, and organizational innovation, all of which are important for productivity. According to my analysis of Japanese firms, the productivity of firms that innovated in the past three years was higher than that of firms that did not innovate. Such a relationship can be observed in both manufacturing and service industries, but the difference in productivity between the presence and absence of product innovation, such as the development of new products and services and the improvement of existing products and services, is larger in the service industry than in the manufacturing industry. On the other hand, the relationship between productivity and the improvement of production and distribution methods for products and services (process innovation) is more pronounced in the manufacturing industry than in the service industry.

Among innovations, AI has recently been the focus of much attention. Some believe that AI has an extremely large productivity-raising effect, but there is limited information on its quantitative effect on productivity, partly because there are no statistical surveys that comprehensively capture the actual status of its use by firms and workers. I surveyed Japanese workers on their use of AI (including generative AI) (Morikawa, 2024a). The results showed about 6% of all industries were using AI in their work. By industry, use was higher in the information and communications (14%), professional services (10%), financial (9%), and manufacturing (9%) industries.

According to the results of a question on the extent to which the use of AI has increased the efficiency of work, there were very large individual differences, and some people said it had nothing to do with the efficiency of their work, but a simple average of 22%, assuming such people to be zero. Of course, this is only a subjective assessment, and not all of these people may be using AI for all of their jobs, but mechanically multiplying the percentage of users by the rate of improvement in work efficiency, it is calculated to have increased macro productivity by a maximum of 1.3 percentage

points. Since AI should be introduced from the fields where it is most likely to be effective, the effect on business efficiency is expected to diminish as the scope of use expands, but the productivity effect is quantitatively non-negligible.

Next is human capital investment. Schooling is by far the most important factor in this regard, and many studies have shown that the level of education of the population contributes significantly to a country's income level and economic growth. According to the decomposition of macroeconomic growth, we can observe the effect of an increase in the average education level of workers on productivity. In the case of Japan, however, this effect has been declining compared to previous years because the increase in the rate of university enrollment has reached a plateau. In terms of the productivity effect, graduate education has become more important.

In Japan, corporate investment in education and training has stagnated, and recently there has been much interest in workplace education and training, such as reskilling (relearning). According to my study on off-the-Job Training (OFF-JT), for which firm-level quantitative data are available, there is a strong relationship between corporate investment in education and training and productivity. A 1% increase in education and training stock is associated with a little over 0.03% higher productivity. Although this figure may seem small, the absolute amount of investment in education and training accounts for only a small share of corporate spending, so the relationship is quantitatively very large. In terms of return on investment, it is much higher than capital investment. Interestingly, when we estimate separately for manufacturing and service industries, we find that the contribution of education and training to productivity is larger in the service industry than in the manufacturing industry.

It is a kind of paradox that firms do not invest enough despite high rates of return on human capital investment. If worker turnover (separation rate) is high, the investment in employees may be underinvested because it will not be recouped. Recently, there has been an increase in job changes, and this may have a negative impact on human capital investments, but when compared internationally, Japan's labor market is not as liquid as other advanced countries. One possible reason, although difficult to interpret, is the possibility that the high rate of return on investment in education and training is not well recognized. Another is that workers receive a relatively large portion of the fruits of education and training investments sponsored by firms. The standard thinking is that since the company bears the cost, the company (shareholders) should receive the fruits in the form of profits. However, compared to the results of overseas studies, a larger proportion of the benefits is reflected in workers' wages in Japan. While this may be desirable in light of recent discussions on raising wages, it may also be a factor in underinvestment.

In recent years, a corporate tax system has been introduced to encourage firms to invest in human capital. While this may have the effect of correcting underinvestment, empirical verification is needed to determine whether the net effect is to increase investment in education and training. The government's role would be to improve the quality of public vocational training. Another important role for the government is to implement policies to ease financial constraints on individuals' investment in human capital, such as by enhancing scholarships in school education.

Improvement of Resource Allocation Efficiency Through Reallocation

As mentioned above, two factors contribute to productivity growth: the "within effect" of higher productivity of individual firms and establishments, and the "resource reallocation effect" of firms and establishments with low productivity exiting the market and those with high productivity expanding their market share. Several studies have shown that the resource reallocation effect is more important in service industries than in manufacturing industries. This is because, while high productivity firms and low productivity firms coexist in any industry, the dispersion in productivity between firms in the service industry is large, meaning that there is greater inefficiency in the allocation of resources. For example, according to a study that decomposed productivity growth in the US manufacturing and retail industries, the "within" and "resource reallocation" effects contribute about half to productivity growth in the manufacturing industry, while the contribution of the "within effect" is almost zero in the retail industry, and the "resource reallocation effect" explains almost all of the productivity growth. The potential implication is that it is important from a policy perspective to remove the factors that inhibit new entrants and smooth exits in the service sector.

The resource reallocation effect is also related to "economies of scale". My research on Japan's personal services industry confirms the existence of economies of scale in terms of the size of establishments and the size of companies. Not only is productivity higher the larger the size of individual establishments (stores), but productivity is also higher for establishments with chains of large firms, even if the size of the establishments is the same. Therefore, through competition in the market, the productivity of the service industry will increase as the scale of business becomes larger and

chains expand.

International trade is also related to resource redistribution. According to the "new new trade theory" proposed by Marc Melitz, highly productive firms export, while less productive firms sell only in the domestic market. Empirically, many studies confirm that exporting firms have higher productivity and wages than non-exporting firms. An analysis I conducted focusing on trade in services shows that service-exporting firms are more productive than firms that export goods. Although there is a causal relationship between exporting and higher productivity, the dominant relationship is that firms that are more productive to begin with are exporting services. However, an increase in services exports increases the production share of highly productive firms, which makes a positive contribution to the average productivity of the industry as a whole.

The resource reallocation effect also involves government policy. Although some small and medium-sized enterprises (SMEs) are highly productive, an international comparison shows that Japan has a high share of SMEs and many of them have been in business for a long time. This is not to say that policies should actively promote corporate mergers, but if productivity improvement is the goal, policies that preserve inefficient companies should be curtailed or eliminated. The difference in corporate tax rates between large corporations and SMEs is another factor that contributes to the oversupply of SMEs. The Ministry of Economy, Trade, and Industry (METI) is currently trying to implement policies that support medium-sized firms, which are larger than small firms. However, setting policy differences based on size itself creates bias, so it is desirable to create a system that does not set a size threshold in order to increase productivity for the country as a whole.

Policies that support firms during recessions may also weaken the resource reallocation function. In general, recessions have a "cleansing effect" that raises productivity in the economy as a whole through the exit of less efficient firms. During the Covid-19 pandemic, various support measures were implemented, including financial support, subsidies to sustain businesses, and employment adjustment subsidies. While policies that provide temporary support to firms whose business conditions have deteriorated due to unexpected shocks are justified, such policies, if too generous or too prolonged, can prolong the lives of so-called zombie firms and make resource allocation inefficient. Comparing the productivity of firms that used supportive policies during the pandemic and those that did not before the Covid-19 pandemic, firms that used supportive policies had labor productivity and TFP before the pandemic more than 10% lower than those that did not. In other words, firms that were less productive to begin with were more likely to use support measures.

In times of emergency, when many companies are in distress, it is easy for politically generous support measures to be instituted and continued over the long term. It is advisable to discuss appropriate institutional design in normal times, for example, to exclude from policy support companies with continuous losses that have not paid corporate taxes for the past several years.

Regulation & Compliance

Public rules and regulations are one of the factors driving down productivity, and since around 1980, major countries, including Japan, have actively conducted deregulation in the field of finance, energy, and transportation. However, social regulations such as safety, labor, environmental, and consumer protection regulations have increased, and in the United States the total amount of federal regulations has increased at an annual rate of 3.5%. And several studies suggest that this has pushed down the economic growth rate by 1 to 2 percentage points per year. In Japan, according to the "Current Status of Licenses and Permits" (Ministry of Internal Affairs and Communications), the total number of licenses and permits has been increasing at an annual rate of 2.5% since 2000. By ministry, the Financial Services Agency, the Ministry of Health, Labour and Welfare, and the Ministry of the Environment have contributed significantly to the increase. In addition, administrative guidance, industry associations' rules, and companies' internal rules that are not based on laws are also increasing. The manufacturing industry is also subject to various regulations, but there are many regulations in the service industry, including transportation services, financial services, and medical services. In particular, when there is an incident or accident that attracts media attention, regulations are easily tightened, and it is difficult to relax regulations once they have been introduced.

Since there is a trade-off between these social regulations protecting values, such as "safety and security", and productivity, it is necessary to understand the cost and effectiveness of these rules and regulations and evaluate their cost-effectiveness.

The effects of regulations on productivity include (1) increased direct compliance costs, such as documentation, inspection costs, and the assignment of qualified personnel; (2) negative effects on productivity-enhancing reallocation, such as entry, exit, and redistribution of market share; and (3) a stifling effect on risk-taking and innovation by firms. In the following, I would like to document the main results of my survey of Japanese firms and workers regarding direct compliance costs.

Labor market regulations (67%) and environmental regulations (34%) were cited by many firms as the policies with the highest compliance costs, far exceeding business licensing (17%). This suggests that these cross-industry social regulations are costly regulations for many firms. The question is to quantify their negative impact on productivity. I surveyed workers to analyze how many hours they spend to comply with regulations. Since this is a labor input that does not directly lead to output, it is possible to roughly estimate the productivity effect of deregulation. The amount of labor input required to comply with rules and regulations was weighted by wages of workers and was calculated to be 23% of total hours worked. This means that about one-quarter of working time is spent in compliance. There are differences by industry, with the figures tending to be higher in service industries such as finance/insurance, transportation, and health care/welfare. This is a mechanical calculation, but if these labor hours could be cut in half and used for productive work, TFP would increase by about 8%. Since the annual rate of increase in TFP in Japan is currently 0.6-0.7%, the effect would be equivalent to more than 10 years of TFP increase. It is desirable to reduce compliance costs through streamlining rules and regulations and digitizing various legal procedures.

Responding to the Simultaneity of Production & Consumption

I have discussed issues common across manufacturing and service industries, I will now discuss service-specific issues. As mentioned at the beginning, many service industries are characterized by "simultaneity of production and consumption". For this reason, capacity utilization rates, such as room occupancy rates in hotels, seat occupancy rates in the air transportation industry, and actual vehicle utilization rates in cabs, significantly affect productivity.

Traditionally, in empirical studies of productivity, it has been considered appropriate to measure productivity by correcting for the capacity utilization rate. For example, if one is trying to ascertain the rate of productivity growth in a sense similar to the rate of technological progress for the manufacturing industry, it is desirable to correct for the capacity utilization rate. In the service industry, however, increasing the capacity utilization rate is the key to improving productivity, and for this purpose, companies are utilizing information and communication technology (ICT) and, more recently, introducing big data and AI. Productivity corrected for utilization rate would ignore a critically important factor for the service industry.

I have analyzed the distribution of occupancy rates and productivity in the lodging industry using data from the "Lodging Travel Statistics Survey" (Japan Tourism Agency). According to this analysis, the distribution of occupancy rates for *ryokan* inns has a peculiar shape, with a very large number of inns having occupancy rates of less than 10%. And, although not surprising, inns with low occupancy rates have low measured productivity. In contrast, city hotels and business hotels in the same lodging industry have the highest occupancy rates of 80% or higher.

While the number of foreign visitors to Japan is increasing and overtourism is becoming a serious issue, the increase in foreign visitors contributes to higher occupancy rates in the lodging service industry. This is not only due to the effect of an increase in the total number of overnight visitors, but also to the demand leveling effect. Comparing the lodging patterns of Japanese and foreigners, Japanese tourists have an extremely large peak in August, the month of summer vacations and *Obon*, while foreigners have several small peaks in months when the number of Japanese tourists staying overnight is low. In addition, in the case of accommodations in tourist areas, Japanese tend to concentrate on weekends and three-day weekends, while foreigners fill in the periods when the number of Japanese guests is low, which consequently contributes to the productivity improvement of accommodation services when averaged over the year.

The results of the analysis for the entertainment personal services industry (movie theaters, golf courses, and driving ranges) also show that when comparing establishments with high and low volatility of demand, productivity is higher for establishments with low volatility, i.e., those that receive a relatively even number of users. In other words, demand leveling leads to higher productivity in the service industry.

Dynamic pricing (variable pricing), in which prices are changed according to demand conditions, has recently been attracting attention as a method for demand leveling. In addition to changing the price itself, changing the discount rate or giving points in response to demand conditions can also be considered a type of dynamic pricing. This is potentially a very effective means of improving capacity utilization rates, and there is significant room for the use of big data and AI. According to the results of a survey of Japanese consumers, the majority of respondents are positive about dynamic pricing for services, with the exception of medical services. And although there are large individual differences, the mean figure is that a 10-20% price difference would change the timing of service demand. In other words, substitution between different points in time of demand due to price differences is potentially quite large.

The "simultaneity of production and consumption" is also related to national land and urban structure. For personal services and retail trade, the higher the population density of the municipality in which they are located, the higher the productivity. In the case of the business service industry, since companies are the customers, the higher the employment density in the municipality where the company is located, the higher the productivity. These "economies of agglomeration" are also observed in the manufacturing industry, where knowledge spillovers and good matching of firms and workers are the underlying factors, but in the service industry, the effect of the density of demand is added. The implication is that as Japan's total population declines, maintaining the concentration of population in large cities and forming compact cities is important for the productivity of the service industry.

It has become a common belief that it is desirable to reduce the concentration of people in Tokyo, and although political factors such as the electoral district system make it difficult to make effective policy, it is an issue that cannot be avoided when considering productivity in Japan under a declining population. Further mergers of municipalities, as well as the introduction of a *doshu* system that promotes administration covering large areas composed of several prefectures, may have a certain effect in expanding the geographical area that can be directly controlled by the local government.

The rapid expansion of teleworking in the wake of the pandemic is a topic of great interest to researchers, who are interested in its impact on national land and urban structure and productivity. The "2022 Employment Status Survey" (Ministry of Internal Affairs and Communications) provides detailed statistics of teleworking in Japan. It shows that only about 3% of teleworkers work at or near "full telework" (80% frequency), and that the majority of teleworking is a hybrid style, combining workplace and home (Morikawa, 2024b). Thus, while the increase in teleworkers may affect their choice of residence within metropolitan areas, it is unlikely to significantly change the distribution of the country's population as a whole. In addition, both at the industry and occupation level, the highest percentage of teleworkers are in the IT sector, with few teleworkers in retail, food and beverage/accommodation services, and medical services. The occupational subcategory data from the "Employment Status Survey" shows, for example, that there are no teleworkers in the occupation of bartender. Perhaps teleworking has little to do with productivity in many service industries.

Conclusion

In order to increase the potential growth rate of the Japanese economy, improving the productivity of the service industry has been considered an important policy issue in recent years. In this paper, I have given an overview of what can be done to improve the productivity of the service industry, dividing the issues into those common to all industries and those specific to the service industry. Finally, to summarize the main points, the following issues must be addressed: (1) expanding the use of new technologies, including AI; (2) enhancing human capital investment, including schooling and vocational training; (3) improving the efficiency of resource allocation; (4) reducing compliance costs by streamlining social rules and regulations; and (5) reducing demand volatility and keeping agglomeration of population, which is constrained by the "simultaneity of production and consumption", are necessary.

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Article translated from the original Japanese by Naoyuki Haraoka, editor-in-chief of Japan SPOTLIGHT *& executive managing director of the Japan Economic Foundation (JEF).* JS

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