

Sogo Shosha's reform of business model and functions, and handling of AI and IoT

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Abstract

After World War II, *Sogo Shosha* (general trading company)⁽¹⁾ have flexibly changed and expanded their role and services to be provided while assessing market needs in the drastic changes of the external environment. In the past, the future and *raison d'être* of *Sogo Shosha* were discussed but they reformed their business model and functions, and developed each time.

In some researches, the greatest strengths of *Sogo Shosha* are considered to be the “comprehensive power” and the “adaptability”, such as the development of business markets in many fields, the development and management of new business, and the abundant funds, etc.

It is expected that AI and IoT revolution will accelerate more and more from now on, therefore it is important to discuss *Sogo Shosha*'s handling of AI and IoT.

Sogo Shosha have turned many changes of business environment into opportunities by making good use of their strengths. I believe that this time *Sogo Shosha* will again improve their functions and achieve great development by powerful tools, AI and IoT.

Keyword : *Sogo Shosha*'s reform of business model and functions, AI and IoT, traditional trade of merchandises, business investment/management

1. Introduction

After World War II, the *raison d'être* of *Sogo Shosha* has been denied many times due to rapid economic growth, the collapse of the bubble economy, the appreciation of the yen, the problem of bad loans and the end of the resource boom, but *Sogo Shosha* overcame all the crises by providing services that matched market needs and working integrally with manufacturers. Many research results show clearly that the strength of trading company is its comprehensive power, business creation and business model to make profit in the form of commerce as a compensation for an activity of getting commercial rights or investments by taking risks.

However, in the past theory of *Sogo Shosha* they focused mainly on business models, such as trade and business investment/management. On the other hand, we have not gone deep into the approach of *Sogo Shosha* towards the new business, such as the changes in the functions of *Sogo Shosha*, the adaptability to the new business, the development and management of the new business.

The primary reason why *Sogo Shosha* could overcome the crises and survive is that they simply developed a management strategy with a foresight of an “industrial resolver for the needs of the time”. The second reason is that they evolved their business models and functions according to the needs and changes of the time, and the third one is that they strengthened risk management according to the changes in the business models and supported the development of new business areas by reducing risks.

Based on the reform of the business model and the function of *Sogo Shosha*, I believe that for the further development of the theory of *Sogo Shosha*, it's necessary to study how they display their strength in terms of Artificial Intelligence (AI) and Internet of Things (IoT), which will start evolving rapidly from now on and become the core of business, to develop a new business.

2. Purpose and Characteristics of This Research

Many people don't know what *Sogo Shosha* are doing, and the reason of it is that they deal with many kinds of businesses and their contents have been changing with the time. *Sogo Shosha* is Japanese unique institution that attracted the attention of managers and researchers inside and outside of the country. Before World War II, they promoted the establishment of capitalism, e. g. Zaibatsu trading company, and after the war they led the rapid economic growth and the international management of corporate activities. Although the *raison d'être* was denied many times and they experienced hard times in business, they could develop through collaboration with manufacturers, and thanks to the judgement ability to grasp market needs rapidly and the adaptability, and they continue being prosperous till now.

In 1990's, even though the net profit of the largest *Sogo Shosha*, Mitsubishi Corporation, was only 30-40 billion yen, Mitsubishi enhanced its competitiveness through industry realignment as well as selection and concentration of business, and shifted focus of business model from trade business of big volume of low-margin products to high-value business investment.

Besides, Mitsubishi's interests also generated huge profit with the rise of price of resources, such as oil, copper and iron ore, therefore its net profit increased nearly tenfold. For the first time Mitsubishi Corporation and Mitsui & Co., Ltd. incurred deficit after the war due to the stall of the Chinese economy and the surge of resource prices during 2014-2015.

As the resource business had a large proportion in both companies, the declines of resource prices caused lower sales, lower operating income and lower dividend, and pushed down the final profit income with impairment loss on fixed assets. Under these circumstances, ITOCHU Corporation has actively expanded food, textiles and machinery businesses with the motto "No. 1 non-resource *Sogo Shosha*"

and, as a result, the company got the first place in the net profit of 2016 fiscal year (ending in March). In 2017 fiscal year (ending in March) all the profit and loss of each company's resource businesses improved, and Mitsubishi Corporation got ahead of the ITOCHU Corporation and became the top company again in terms of net profit. Even though ITOCHU Corporation lost the lead to Mitsubishi Corporation, the company has maintained the second place as its food business expanded mainly in the fruit and vegetable sectors and increased the profit.

Sogo Shosha have survived by changing their business contents flexibly in spite of hard times they experienced often, but it is time to change business model again. Chart 1 shows the ranking of the net profit of *Sogo Shosha* in recent years. As it shows, it is the key to differentiate one company from another by making use of the uniqueness (strength) in "non-resource business".

In the research on *Sogo Shosha*, there are many excellent researches regarding the growth strategy, *raison d'être*, business model, and marketing function etc. However, there are very few researches targeting management strategy for AI and IoT. In the following paper, I would like to clarify the management strategy of *Sogo Shosha* in AI and IoT era by describing the past research results and analyzing the changes of the business model and functions of *Sogo Shosha*, such as traditional trade of merchandises (hereinafter referred to as "trade"), business investment and business management, etc.

As shown in Chart 1, the performances of major *Sogo Shosha* in 2018 fiscal year (ending in March) are good thanks to the recovery of coal and other resource prices, as well as the steady growth of non-resource business, such as food and real estate development.

Total consolidated profit of the top five companies is expected to increase for 18% from the previous term, with the record of the highest profit of 1.682 trillion yen.

Chart 1 【Ranking of the net profit of five *Sogo Shosha*】 Unit : 100 million yen

	Fiscal year ending in March of 2010	Fiscal year ending in March of 2013	Fiscal year ending in March of 2015	Fiscal year ending in March of 2016	Fiscal year ending in March of 2017	Fiscal year ending in March of 2018
1	Mitsubishi	Mitsubishi	Mitsubishi	Itochu	Mitsubishi	Mitsubishi
	2, 731	3, 600	4, 006	2, 404	4, 402	5, 400
2	Mitsui	Mitsui	Mitsui	Sumitomo	Itochu	Mitsui
	1, 497	3, 079	3, 065	745	3, 522	4, 400
3	Sumitomo	Itochu	Itochu	Marubeni	Mitsui	Itochu
	1, 552	2, 800	3, 006	623	3, 061	4, 000
4	Itochu	Sumitomo	Marubeni	Mitsui	Sumitomo	Sumitomo
	1, 282	2, 325	1, 056	▲834	1, 708	3, 000
5	Marubeni	Marubeni	Sumitomo	Mitsubishi	Marubeni	Marubeni
	953	1, 300	▲732	▲1, 494	1, 553	2, 000

Source : Annual securities report of each *Sogo Shosha*.

Data of the Fiscal year ending in March of 2018 are forecasted.

3. Literature Review

Although *Sogo Shosha* have been criticized saying that they are unnecessary or will collapse, they are still developing and recognized as Japanese specific business category in overseas. I would like to consider why *Sogo Shosha* could develop in Japan.

Takayuki Tanaka (2017) mentioned that there are four conditions making the “prototype” of the *Sogo Shosha*, namely 1) Necessity for national policy, 2) Difficulty for manufacturers to export directly, 3) Rapid expansion of the economy, 4) Deep involvement with domestic industry. However, he said that all the four conditions are becoming vague.

He explained the conditions more specifically as below. 1) The necessity for national policy does not exist in Japan as Japanese economy has already caught up with that of Western countries in 1980's. 2) It was difficult for the manufacturers

to export directly because it was hard to differentiate between export products, and the business practices and languages of export destinations were obstacles. But now the environment has improved and manufacturers can export directly to Europe and China. 3) The rapid expansion of the economy was almost lost in Japan. 4) The deep involvement with the domestic industry is gradually becoming faint, and it is expected to further decrease in future.⁽²⁾

Regarding the *raison d'être* of *Sogo Shosha*, Taomoto (2015) pointed out that the distributional approach based on the attitude that “trading company can be established by commercial rights” developed the most meaningful discussion. As for the theory of trading company by *Sogo Shosha* itself, he described the *raison d'être* clearly saying the future role of the *Sogo Shosha* will be that of “global business creator” or “business creator”.

Regarding the *raison d'être* of *Sogo Shosha*, Asano (2014) mentioned the three tasks as follows : Maintaining traditional trade function ; Conducting management to drive the growth of Japanese economy ; and Maintaining the relationship with the domestic industry. He pointed out that *Sogo Shosha* that could fulfill the tasks and establish new functions would become excellent companies after 2010.

When discussing the “conditions for existence” and the “*raison d'être*”, as seen above, *Sogo Shosha* have survived and become increasingly prominent with the development of new markets, new technologies and new product materials since 2000's. It's based on their ability to build a new advantage as a result of the reform of business model and functions of *Sogo Shosha* for survival.

4. Reform of Business Model

Sogo Shosha's business model can be roughly divided into two types : trade and business investment/management. Trade is a business that connects sellers and buyers, and *Sogo Shosha* get commission and margin by mediating in the

transaction. On the other hand, the trading companies bear transaction costs, such as the information cost for the buyer and the seller to look for each other and the monitoring cost to evaluate financial and business condition of the counterparty, etc. on behalf of the transaction parties.

Business investment/management is a business model when *Sogo Shosha* fully utilize their comprehensive functions, such as information, raw material procurement, product sales and fund procurement, etc. through investment to develop businesses and improve performance of investees. Improvement of corporate value of investee companies has advantages, such as expansion of their profits, increase of dividend income and interest income, stock price rise and expansion of trade with investee companies.

Sogo Shosha regard business investment/management in energy resources such as oil and natural gas, and mineral resources such as coal, iron ore and copper, etc. as a “resource business”. On the other hand, they regard trade and business investment/management other than the resource business as a “non-resource business”.

I would like to examine how the *Sogo Shosha* could achieve sustainable growth by reforming the business model of trade, business investment/management according to the changes of the time.

(1) 1960's - the early 1970's

Looking back at the changes of the business model of *Sogo Shosha* in time series, there were concerns about traditional trade, i. e. sales transactions of merchandises. Japan Foreign Trade Council (2017) pointed out that “Declining trading company theory” was raised as an issue. The theory says that the manufacturer will become powerful and cover the activities of *Sogo Shosha*, therefore they won't be necessary.

Together with the Declining trading company theory, distribution revolution

was suggested and the theory of “Wholesaler is unnecessary” was developed. One of the reasons why it was said that most of the wholesalers and wholesale traders would disappear was that supermarkets made a big leap. As large retailers like supermarkets appeared, direct transactions between producers and retailers increased, and then it was said that the wholesaler of the distribution route would not be necessary. However, *Sogo Shosha* in the rapid economic growth period procured the raw materials required by the manufacturer and cooperated with manufacturer to develop the export market, thereby expanding the business with commission and margin derived from trade.

Besides, Takayuki Tanaka (2012) mentioned that until 1960’s trading company’s business was mainly importing metal resources and energy from overseas and selling them to domestic manufacturers, but in 1970’s *Sogo Shosha* dealt with development of iron ore, copper ore, liquefied natural gas (LNG), etc. as stable supply by develop-and-import formula was required because of the rise of resource nationalism in exporting countries. And he said that the profit from the development project in that period was mainly the commission and margin derived from trade, on the other hand the profit relating to business investment/management was secondary.⁽³⁾

(2) Late 1970’s - early 1980’s

According to Japan Foreign Trade Council (2017), after entering the stable growth period from the latter half of 1970’s to the early 1980’s, the performance of *Sogo Shosha* got poor and it was said to be a “Hard time for trading company”. Regarding the backgrounds of the fact, the council pointed out 1) Delay in adapting to changes of Japanese industrial structure shifting from heavy industry to tertiary industry, 2) Increase of country risk and foreign exchange risk for overseas investment projects, 3) separation of manufacturers from the *Sogo Shosha* by constructing network in overseas, 4) the organization grew bloated.

During this period, *Sogo Shosha* overcame the hard times in business by means of exports to oil-producing countries that started to play a major role in the global economy after the oil shock, overseas investment and approach to new business areas, and they started shifting the focus of business model from trade to business management/investment in manufacturing/service industries.

(3) Late 1980's - late 1990's

Since the middle of 1990's "collapse of trading companies" has been repeatedly featured in economic magazines etc. due to the long-term recession as a result of the collapse of the bubble economy.

At this time, it was discussed that the function of trading company would become unnecessary by IT revolution, but *Sogo Shosha* focused on business investment to find a way out, and developed actively in the resource/energy sectors and the emerging countries including China with focusing on downstream domestic business.

As for the business model of this period, Takayuki Tanaka (2017) stated that *Sogo Shosha* shifted the focus to business management/investment in the manufacturing and service industries in order to break away from traditional trade.

However, he mentioned that low-ranking trading companies recorded huge losses and were reorganized due to bankruptcy and merger because risk management methods for foreign exchange risks and country risks were not well developed at that time. At the same time he pointed out that *Sogo Shosha* started to pay attention to the downstream sectors of industry such as foods, retailing and service, etc. which had smaller lots compared with the upstream sectors with large lots, like resource business, and the companies gave importance to business management through consolidated subsidiaries in those sectors.⁽²⁾

(4) 2000's - the present

Within 13 years since 2000's, *Sogo Shosha* shifted focus of business model from trade of big volume of low-margin products to high-value business, like resource/energy sectors, investment/management in new business areas. And their performance achieved rapid growth thanks to the economic growth of China and emerging countries and the rise in resource prices. It was the so called "Prosperous time for trading company".

Mitsubishi Corporation (2015) classifies the methods and mechanisms of business investment/management into three categories: 1) Utilization of affiliated companies, 2) Value chain, and 3) Replacement of assets.

Specifically, 1) Utilization of affiliated companies means transfer of business from headquarters to operating company, such as consolidated subsidiaries and affiliated companies accounted for using the equity method, establishment of a new operating company and making investment in operating company and management of it. 2) Value chain is a mechanism to make profit throughout the process from upstream to downstream with complexly combining functions, such as investment, financial function, information function, logistics function and marketing function, etc. in addition to sales transaction. 3) The replacement of assets is the replacement of investees in a timely manner, such as acquiring, selling or withdrawing affiliates.⁽⁴⁾

In addition to acquiring capital gains and dividend income from business investment, *Sogo Shosha* earn profits from business management by developing businesses themselves with various functions added to utilization of affiliated companies and sales transactions, and fostering synergy between expansion of trade and other businesses.

The net profits of the top three companies in the fiscal year ending in March, 1991 were the following: Mitsubishi Corporation: 43 billion yen, Mitsui & Co.,

Ltd : 22.2 billion yen and ITOCHU Corporation : 19.1 billion yen. Average net profits for the period from March 2008 to March 2015 were as follows : Mitsubishi Corporation : 390 billion yen, Mitsui & Co., Ltd : 304 billion yen, ITOCHU Corporation : 222.2 billion yen. They made a big leap due to the high price of resources, and the effect of management reform and restructuring. Sumitomo Corporation incurred deficit in the fiscal year ending in March, 2015 and Mitsubishi Corporation and Mitsui & Co., Ltd incurred deficit in the fiscal year ending in March, 2016 due to the stagnation of economic growth of China and emerging economies and the end of the rise of price for resources from 2014 to 2015.

During this period, ITOCHU Corporation has actively expanded food, textiles and machinery businesses with the motto “No. 1 non-resource trading company”, and, as a result, the company got the first place in the net profit of the fiscal year ending in March, 2016 and 2nd place in 2017.

Like ITOCHU Corporation, other *Sogo Shosha* are facing a turning point to focus on strengthening the non-resource business. In the fiscal year ending in March of 2017, each *Sogo Shosha* recovered to the same level of the net profit as in the period of the high price of resources thanks to the recovery of resource prices. What they have in common is a movement of “selection and concentration” that selects weak sectors and develops strong ones, but it should be mentioned that the reason why they could overcome the crisis of the end of the resource boom is the unique flexibility of *Sogo Shosha*, such as “comprehensive power” in dealing with multidisciplinary businesses and “adaptability” that matches market needs.

Although the *raison d’être* of *Sogo Shosha* has been denied many times so far, they have survived by changing the business contents each time. Any of *Sogo Shosha* is facing a turning point to build a profit model by taking advantage of uniqueness and strong sectors while maintaining a balance between the resource business and non-resource business.

Akira Tanaka (2016) summarized the business model of “*Sogo Shosha* of the 21st century” into the following three types. 1) “Comprehensive business management/business investment company” with business investment and trade being the main parts. In that sense the resource boom is just one business sector. 2) For example, in case of Australian iron ore and coal business of Mitsui & Co., Ltd and Brunei LNG business of Mitsubishi Corporation, huge profits of *Sogo Shosha* were secured by the earlier investment rather than the investment made after the resource boom. 3) The origin of organizational reform of “*Sogo Shosha* of the 21st century” is risk assets management and business portfolio management. There is no need to abandon them fundamentally, but regarding the resource business with large investment scale, it tends to be decided by top management’s judgement which deviates from normal investment discipline.

We will reach the era of AI and IoT in the future. I would like to consider what kind of management strategy *Sogo Shosha* need to survive in the next generation. I would like to consider the reform of function of *Sogo Shosha* and handling of AI and IoT.

5. Reform of Functions of *Sogo Shosha*

As shown in Chart 2, Japan Foreign Trade Council (2017) points out eight functions as those of *Sogo Shosha* based on accumulation of the past research data.

It is assumed that currently these eight functions are concentrated in three functions.

The first one is a set of business promotion, logistics, and financial functions. This function is considered to be the foundation of trading companies traditionally, and it is indispensable in dealing with foreign countries, even though its importance is decreasing. Besides, the financial function secures the profit fundamentals with financial management and stabilizes the business fundamentals separately from the

Chart 2 8 functions of *Sogo Shosha*

Business promotion	Core functions of trading company to stimulate their global business
Research and information	Collect and analyze a wide range of information to utilize in daily business
Market development	Analyze supply-demand trends and develop global markets
Business incubation and management	Utilize a variety of management resources to develop and nurture new business and improve the management of group companies
Risk management	Use a wide range of know-how and management resources to minimize various risks in business
Logistics	Involve in the logistics business and implement optimum logistics
Finance	Provide trading company's unique financial facilities and deepen/broaden capabilities
Project organization	Combine various capabilities to promote large-scale projects

Source : Japan Foreign Trade Council HP

conventional trade business.

The second is a set of organization, market development and research/information functions. This is the function to gather worldwide needs by making use of research/information and market development functions, and promote large-scale project by combining various functions with organization function.

The third is a set which integrates business incubation/management and risk management functions. This function focuses on business capabilities with business incubation/management and organization functions and secures the success of big projects by avoiding risk by means of risk management function. This third function is the most important for the current *Sogo Shosha*.

Various mega trends, such as urbanization, aging, shifting economic center point of gravity and climate change, are expected, but technological change/digitalization is indispensable when talking about the influence over the next ten years. New businesses are created increasingly now as it's become possible to deliver services that were technically difficult or too costly to be realized due to advance in technology. Technology makes it not only easier for new entrants to

participate in business, but also can drive existing large business operators out by changing the market structure and the framework of competition largely.

I would like to analyze the influence of mega trends, including technological innovation, on *Sogo Shosha's* functions based on the following classification of the mentioned functions : (1) business promotion, logistics, and financial functions, (2) research/information, organization and market development functions, (3) business incubation/management and risk management functions.

(1) Influence on business promotion, logistics, and financial functions

<u>Mega trend</u>	<u>Influence</u>
① Technology innovation ⇒ Decrease of information asymmetry	① Profits from trade using information asymmetry and simple trade will decrease gradually.
② From demand for standardized mass to diversification of demand	② It will become difficult to earn profits in business based on the idea of the supply side, when the buyer decides by products on hand.
③ Reduction of fundraising cost by monetary easing, diversification of fundraising, such as Fintech	③ Profits from finance that relies on balance sheet for its functions and business assuming low interest in Japan will decrease.

While the information asymmetry has been decreasing due to technological innovation in recent years, business opportunities and profitability of trade and commerce that places value on information gap are decreasing. It's also important to change the idea of the supply side, "How many of this product we can sell" to customer, i. e. demand side, "What kind of demand the customers have", as the demand for mass is subdivided as a result of advance in technology.

(2) Influence on organization, research/information and market development function

<u>Mega trend</u>	<u>Influence</u>
① Advance in technology ⇒ Market structure changes and new entrants participate	① Coordinators for Japanese companies (supply side) will be unnecessary.
② Technological innovation that diversifies and subdivides demand from mass ⇒ Increase of information volume	② Trading companies that have grown along with the growth of Japanese market have poor skill to grasp market needs, so it will be difficult for them to do business without knowledge if the market diversifies or subdivides.

The volume of information available increases explosively and the cost of access information decreases drastically. It is very likely that the ability to seize useful information, in other words, the ability to know what kind of information is necessary for the trading company will become the key in the era where everyone can access a lot of information in a moment.

(3) Influence on business incubation/management and risk management functions

<u>Mega trend</u>	<u>Influence</u>
① Advances in technology ⇒ Increase in technology to improve the value of assets	① Value generated by business management to possess assets without additional value will decrease.
② Advances in technology, diffusion of AI	② Mere credit management will be replaced by AI, and risk management that only relies on local experts will lose value.

One of the reasons why *Sogo Shosha* can globally do many kinds of businesses is that they have improved risk management function by accumulating various know-how based on information gathering ability and experience. However, it is natural to think that mere credit management will be replaced by AI, therefore risk management function in the future will need to set issues in the uncertain world.

6. Handling of AI and IoT in *Sogo Shosha*

6.1 Examples of *Sogo Shosha* making use of AI and IoT

Meng (2008) pointed out that *Sogo Shosha* actively conduct investments for research and development in leading edge technology field, including IT, biotechnology and nanotechnology, thereby allocating management resources to projects that will become the primary sources of profit in the next generation for sustainable growth of profit. Besides, he mentioned that *Sogo Shosha* participate in such leading edge technology field in order to organically combine various underlying technologies and create new industries. And he explained that their judgment ability and comprehensive power accumulated through their business experiences over the years were the source of competitiveness to participate in new knowledge/capital-intensive industrial fields.

Sogo Shosha have the profit model to get commission and brokerage fee from sale transactions. However, automatic trading and automatic settlement using AI will be common, therefore “cutting trading company out” will accelerate. The global credit management function of *Sogo Shosha* has been evaluated highly, but it is expected that AI will be able to judge risk based on big data in the future. How to survive in the AI and IoT era is a big issue for *Sogo Shosha*.

Examples of *Sogo Shosha* making use of AI and IoT are shown below.

(1) Case of Mitsubishi Corporation (IoT agriculture)

Mitsubishi Corporation stated the growth of business, by combination with advanced technology (AI and IoT), from business management to business investment of “Midterm Corporate Strategy 2018 – Evolving Our Business Model from Investing to Managing”.

Specifically, it is a business to provide automatic spraying service of

agricultural chemicals to farmers and municipalities through SkymatiX, joint venture with Hitachi. A large drone equipped with a 10-liter tank flies and sprinkles agricultural chemicals in about 10 minutes per hectare. The registration of the field and planning of where and what kind of agricultural chemicals to spray, etc. can be done through the tablet device. They have also started a service to analyze the color of leaves of vegetables with the camera of the drone.

The aim is to get early registration of thousands of people by leaf color analysis and agricultural chemicals spraying services and consider the delivery of new services utilizing the accumulated data.

(2) Case of Mitsui & Co., Ltd. (IoT agriculture, AI call center)

In May 2017, Mitsui created an environment to utilize AI and IoT for the entire group, “Chief Digital Officer (CDO)”. CDO’s role is to lead the productivity improvement and start up a new business by digital technology.

Specifically, it is an advisory service for farmers in North America that will enable them to increase yields through Canadian group company that Mitsui invested in. They offer advice for reduction of producer cost and increase of yields by making effective fertilization plans based on meteorological data collected from satellites and soil analysis. Mitsui invested 3 billion yen in 2016 to consolidate Canadian agricultural consulting firm, Farmer’s Edge, with an intention of deployment in Japan.

In addition, Mitsui has also started a service of making call center operation efficient by AI. AI anticipates customer’s inquiry and responds automatically using the technology of the US leading company. The cost can be reduced for about 20% with the service.

Currently, they are working on language localization for Japanese market, and they will advance AI studying the trends of Japanese consumers while providing some services during this year. And in 3 to 5 years, they will introduce the

services to more than 50 companies for sales of 2-3 billion yen.

(3) Case of Marubeni Corporation (IoT power plant, IoT forestry)

Marubeni established “IoT-Big Data Strategy Department” in April 2017. The department in corporate staff (CS) group promotes improvement of profitability and operational efficiency by using digital technology for existing business and operation, such as support for digital strategy of each sales group and CS department. The department has in total 12 people and consists of 6 full-time staffs and 6 concurrent staffs. Most of full-time staffs are from the sales group, so they tend to “create projects that are likely to become business from the perspective of sales”. It is expected that the projects using digital technology will be implemented in each sales group and each CS department by work of the department. In April 2018, “IoT-Big Data Strategy Department” will be closed and then “Digital Innovation Department” will be newly established.

Specifically, they will deploy “Predix”, an IoT platform for industries developed by GE Power of U. S. developed at “Nakasode Clean Power”, natural gas fired combined cycle power plant (in Sodegaura city, Chiba prefecture) in March 2018.

Marubeni is planning to deploy Predix at its domestic and overseas power plants in order to improve the efficiency of maintenance and operation of power generation equipment by predictive detection, optimize the overall plant management and reduce cost in the future.

In addition, they will start checking the growth conditions of trees based on aerial photographs in their tree planting project for paper manufacturing materials in Indonesia.

The method can improve the efficiency of work greatly compared to visual checking as the tree planting areas are very wide with 120,000 hectares in total.

6.2 Positioning of AI and IoT

In a transition period like the coming AI and IoT revolution, new management strategy is important for *Sogo Shosha*. Currently, the assumed management strategies are as follows. 1) AI and IoT service development strategy in strong business fields of each *Sogo Shosha*, 2) active technical alliance strategy with foreign companies making full use of the global network, 3) coordination strategy to develop successful AI and IoT services for other departments and domestic/overseas group companies.

On the other hand, at present, each *Sogo Shosha* mostly utilizes AI and IoT in its current business. Regarding AI and IoT, I summarized the current approach and new business development of each trading company in Chart 3. As shown in the Chart, the main aim is “Cost reduction, Efficiency improvement, Service

Chart 3 AI and IoT utilization by *Sogo Shosha*

Aim	Cost reduction, Efficiency Improvement, Service improvement	New Business Development
AI	<ul style="list-style-type: none"> · Automation of routine work ⇒ Utilization of Robotic Process Automation · Analysis of in-store video (analysis of customer flow, etc.) · Business partner check · Market forecast (analysis of market report and prediction of market prices etc.) · Improvement of distribution efficiency (automatic order etc.) 	<ul style="list-style-type: none"> · Medical, Health Care · Automobile (EV, vehicular automation)
IoT	<ul style="list-style-type: none"> · Monitor operating conditions of major modules of equipment ⇒ Power generation equipment, various plant equipment etc. · Gather sensor information via internet · Monitor growth conditions of crops ⇒ Utilization of drone · Monitor operation conditions and locations of refrigerated containers etc. · Gather surveillance videos 	<ul style="list-style-type: none"> · Manufacturing solution for Smart-Factory (precision machine) ⇒ Interface of 3D equipment and Edge-Computing line · Level matching of medical examination equipment

Source : Author

improvement”, and new business development is still on the way. The key issue is how to develop a new business mainly by *Sogo Shosha* in the future.

7. Conclusion

Sogo Shosha are in a hurry to expand non-resource business. Especially the demand for food is expected to increase in the mid to long term by the population increase on the global scale, that’s why they are strengthening the transaction. At the same time, they are also working on the creation of a new business utilizing IoT and trying to expand new business opportunities by connecting agriculture, forestry and fisheries, medical, chemical, electric power fields with IoT.

It should be noted that the reason why *Sogo Shosha* could survive is that they have been playing the role of “industrial resolver for the needs of the time” and the *raison d’être* of *Sogo Shosha* can be realized when they adapt the market needs changing with the time.

It’s expected that future mega trends will be urbanization, aging, shifting economic center point of gravity and climate change etc. Each *Sogo Shosha* needs to display its strength and pursue economic value, social value and environmental value in the mega trends.

Currently, each *Sogo Shosha* conducts strict portfolio management by grasping quantitatively the risk assets as part of risk management. However, this indicator is based on the past cases, so it is difficult for them to deal with unexpected risks. In order to deal with unexpected risks, it is also necessary to accumulate big data and utilize AI and IoT for cost reduction and loss prevention.

The result of this research reveals that in order to survive in this AI and IoT revolution era, *Sogo Shosha* need comprehensive power for market, such as ability to exactly figure out new business of human resources which are essential for the

company, the adaptability beyond business boundaries, global information network and abundant funds.

Notes

- (1) Japanese terms 'sogo' and 'shosha' mean 'general' and 'trading company' in English, respectively.
- (2) Takayuki Tanaka (2017). *Research on the strength of Sogo Shosha and the next stage of Japanese companies*, pp. 55-59, pp. 236-242.
- (3) Takayuki Tanaka (2012). *Research on Sogo Shosha : Origins, Establishment, and Development*, pp. 163-165.
- (4) Mitsubishi Corporation (2015). *Theory of New Modern Sogo Shosha*, pp. 31-34, pp. 308-311.

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