

The Recovery of SMEs and Local Society from the Great East Japan Earthquake and Tsunami

- A Case Study of the Coastal Area of Iwate Prefecture

A Thesis

by

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1. INTRODUCTION

Japan has been affected by series of catastrophic events in the past. There were, for example, Meiji-Sanriku earthquake in 1896, Great Kanto earthquake in 1923, Showa-Sanriku earthquake in 1933, Hokkaido-Nansei-Oki earthquake in 1993, Han-shin Awaji earthquake in 1995. In order for society to be sustained, ability to cope with the damage from catastrophic event is necessary. But it is questionable whether the damage is the only thing society needs to cope with after the catastrophic event. In the case of Hokkaido-Nansei-Oki earthquake, affected region was facing the trend of depopulation and socioeconomic decline. A large amount of financial support to renew the infrastructure was provided, but the region could not change the trend before the disaster. As a result, the society has been facing the trouble with repayment of the debts which were generated through the recovery (Magoshi and Nakabayashi, 1991, 2001; Minami, 2011; Ono, 2011). As the Tsunami generated by the Great East Japan earthquake damaged large regions where depopulation and socioeconomic decline has been a recent trend, how those regions can recover from catastrophic earthquakes and change the recent trend have been matters of public concern.

The author thinks there are two ways to regenerate the economy after the disaster to change the trend of socioeconomic decline; one is bringing the new industry

into the region, another is redeveloping the exporting basic industries and increases the external demand. Iwate prefectural government, which governs the one of the regions most severely affected by the Tsunami generated by the Great East Japan earthquake, have been supporting the enterprises expected to increase the external demands¹. From the case of Han-shin Awaji earthquake, Yamaguchi (2001) pointed out the importance of exporting basic industry by using the framework “Mechanism of regional economic growth led by the external demand increase.” The development of exporting basic industry has ripple effect on other industries and creates a positive feedback loop within the society. Starting from increasing the external demand increases the net employment/income which leads to the internal demands increase and finally coming back to the industry. However, in the context of enterprise disaster recovery, where different parts of the society received damage and have been recovering, three questions for the “Mechanism of regional economic growth led by the external demand increase” may be raised; (1) how “where and how enterprise resume their work-place” affect the contribution to the local society, (2) how “changes in the society made by disaster” affect the enterprise external demands increase, and (3) how “financial support from government” affect the investment to expand the business-bases. In order to answer

¹ Iwate prefectural government has been supporting enterprises by introducing to external market business meeting opportunities to increase the external demands and business consultants to make better product/promotion.

these questions, understanding how businesses respond to and recover from a catastrophic damage is necessary.

The majority of research literatures on natural disaster recovery are either detailed descriptive overview of how recovery is carried out (Ex. Hayashi, 2012) or empirical studies measuring the impacts of natural disaster. Several researches have conducted empirical studies measuring the impacts of natural disaster to business (Zhang et al, 2008; Gabriela et al, 2010) as well as discussing the important factors of enterprise recovery (Webb et al, 1999; Suresh et al, 2011; Budy et al, 2011). However, few researches focused on how businesses respond to and recover from a catastrophic damage, other than the issue of supply-chain management which is a well researched topic (Chen and Paulraj 2004). Rodney (2006) is only an example that took a qualitative approach to research small business recovery from Hurricane Katrina, and collecting data on enterprise recovery processes and obstacles. But his research is not explaining the consequence of enterprise disaster recovery process, as he conducted interview only once to each interviewee within three months after the disaster. Therefore, we believe continuous monitoring using qualitative approach can help us to understand how businesses respond to and recover from a catastrophic damage.

The objectives of the present research are to understand the enterprises disaster

recovery process and how they can contribute to the local society. The author conduct periodical interviews to monitor the recovery process of small and medium size enterprise which has been expected to increase the external demands by Iwate prefectural government. Then the processes and consequences were analyzed in terms of the three uncertain aspects of enterprise disaster recovery and contribution to the local society mentioned earlier. The outcome may provide some implications toward solving the problem of recovery of disaster affected society which had been facing the trends of depopulation and socioeconomic decline.

This research focuses on disaster recovery and development of exporting basic enterprises which are expected to increase the external demands and make contribution to the society. The research field is Iwate prefecture, where the depopulation and socioeconomic decline was the trends of the society. The subjects of this study are exporting basic small and medium size enterprises, which have been receiving supports for increasing the external demands from prefectural government. The author uses qualitative approach for monitoring as well as continues interview surveys to the subjects and analyze from four aspects extracted from the framework proposed by Yamaguchi (2001) and modified by the author to consider their recovery process and contribution to local society. The author believes the information provided by this

research can contribute by providing practical and useful information for both enterprise owners and its supporters.

The remainder of this article is organized as follows; in Chapter 2, the author provides details about study area. Chapter 3, the author outlines the methodology and provides details about analytical framework and analytical methods for this study. In Chapter 4, the author presents the study's findings according to the analytical methods presented in previous chapter. In Chapter 5, the author discusses the some implications toward solving the problem of recovery of disaster affected society which had been facing the trends of depopulation and socioeconomic decline.

2. STUDY AREA

This research focused on the coastal area of Iwate prefecture. Figure 1 shows a map of the study area. Iwate prefecture is known for one of the three prefectures which received severe damage from the Great East Japan earthquake and tsunami, along with Miyagi and Fukushima prefecture. Table 2 shows the types of the buildings located in each municipality in the coastal area of Iwate prefecture and permeability. Especially Otsuchi town, Yamada town and Rikuzentakata city may be recognized most severely damaged municipality. In this section, the author presents the basic information of the coastal area of Iwate prefecture. Four features of the coastal area of Iwate prefecture, population decreasing, population ageing, low average income, and Iwate prefectural government supporting measures to change the population decrease and socioeconomic decline trends, would be explained.

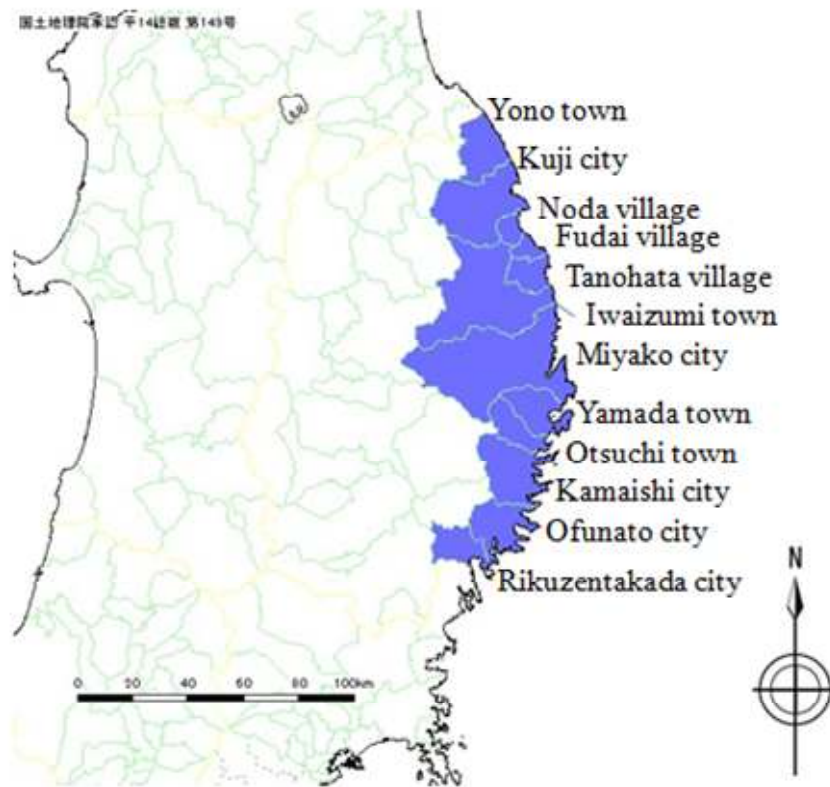


Figure 1 Map of study area: the coastal area of Iwate prefecture

The population of the coastal area of Iwate prefecture has been decreasing.

Table 2 shows the change in the population of the coastal area of Iwate prefecture

Comparing to the rate of changes in 10 years of Iwate prefecture -6.1% and Miyagi

prefecture -0.7%, it shows how fast population has been decreasing in the coastal area

of Iwate prefecture.

Table 1 Population of the coastal area of Iwate prefecture in 2005, 2010, 2000

Region	2005	2010	2000	Changes in 10 years (Number)	Changes in 10 years (%)
Miyako city	63,588	59,430	66,986	-7,556	-11.3
Ofunato city	43,331	40,737	45,160	-4,423	-9.8
Kuji city	39,141	36,872	40,178	-3,306	-8.2
Rikuzentakata city	24,709	23,300	25,676	-2,376	-9.3
Kamaishi city	42,987	39,574	46,521	-6,947	-14.9
Otsuchi town	16,516	15,274	17,480	-2,204	-12.6
Yamada town	20,142	18,617	21,214	-2,597	-12.2
Iwaizumi village	11,914	10,804	12,845	-2,041	-15.9
Tanohata village	4,241	3,843	4,529	-686	-15.1
Fudai village	3,358	3,088	3,583	-495	-13.8
Noda village	5,019	4,632	5,195	-563	-10.8
Yono village	19,524	17,913	20,465	-2,552	-12.5
Iwate Prefecture	1,385,041	1,330,147	1,416,180	-86,033	-6.1
Miyage Prefecture	2,360,218	2,348,165	2,365,320	-17,155	-0.7

Source: The national census in 2010

Table 2 Percentage of buildings affected by Tsunami

Region	Public		Tenant		Apartment		Home		Office		Other	Total	
	#	Tsunami-affected (%)	#	Tsunami-affected (%)	#	Tsunami-affected (%)	#	Tsunami-affected (%)	#	Tsunami-affected (%)	#	#	Tsunami-affected (%)
Miyako city	115	16.6	31	77.5	248	27.0	4025	22.9	1382	44.8	5199	11000	24.1
Ofunato city	109	24.8	21	75	116	33.6	2550	22.2	1366	54.1	4275	8437	26.5
Kuji city	26	6.0	0	0	31	6.6	647	5.8	272	13.2	1281	2257	7.9
Rikuzentakata city	116	31.9	8	80	106	86.1	2760	39.7	899	76.8	4806	8695	39.8
Kamaishi city	105	25.4	40	62.5	140	25.1	2933	23.9	961	44.7	3274	7453	26.4
Otsuchi town	68	47.2	3	100	85	92.3	3420	66.0	602	79.1	3144	7322	61.9
Yamada town	42	26.4	4	66.6	47	56.6	2612	43.8	587	64.1	2765	6057	41.5
Iwaizumi village	7	3.4	0	0	2	2.7	152	3.8	56	8.1	283	500	4.4
Tanohata village	9	11.2	0	0	2	25	218	17.2	84	33.7	272	585	15.3
Fudai village	2	4.2	0	0	0	0	8	0.9	15	8.8	132	157	6.7
Noda village	17	28.8	0	0	5	50	422	29.8	133	57.8	549	1126	29.3
Yono village	2	0.8	0	0	0	0	10	0.1	24	2.1	151	187	1.1

Source: Ministry of Land, Infrastructure and Transport

Another demographical problem which the coastal area of Iwate prefecture has is the increasing rate of population ageing. Table 3 shows the age composition of population in the coastal area of Iwate prefecture in 2010. Comparing the percentage above 65 years old with the average of national 23.1% and Iwate prefecture 27.2%, it shows the degree of population ageing in the coastal area of Iwate prefecture.

Table 3 Age composition of population in the coastal area of Iwate prefecture in 2010

Region	Total Population	Under 15	15 - 64	Above 65	% of Under 15	% of 15 - 64	% of Above 65
Miyako city	59,430	7,230	33,792	18,363	12.2	56.9	30.9
Ofunato city	40,737	4,834	23,259	12,552	11.9	57.2	30.9
Kuji city	36,872	5,211	21,943	9,718	14.1	59.5	26.4
Rikuzentakata city	23,300	2,732	12,441	8,125	11.7	53.4	34.9
Kamaishi city	39,574	4,436	21,359	13,772	11.2	54	34.8
Otuschi town	15,274	1,749	8,579	4,948	11.4	56.2	32.4
Yamada town	18,617	2,329	10,361	5,927	12.5	55.7	31.8
Iwaizumi village	10,804	1,121	5,599	4,084	10.4	51.8	37.8
Tanohata village	3,843	455	2,087	1,301	11.8	54.3	33.9
Fudai village	3,088	356	1,759	973	11.5	57	31.5
Noda village	4,632	526	2,713	1,393	11.4	58.6	30.1
Yono village	17,913	2,292	10,154	5,467	12.8	56.7	30.5
Iwate Prefecture	1,330,147	168,804	795,780	360,498	12.7	60.1	27.2
National	128,056,000	16,797,600	80,730,200	80,730,200	13.2	63.7	23.1

Source: The national census in 2010

The industrial structure of the coastal area of Iwate prefecture is shown in Table

3. Fishery in Ofunato city is 7%, Rikuzentakata city is 6.9%, Kamaishi city is 5.2%,

Otsuchi town is 4.9%, Yamada town is 13.5% and they are relatively high comparing to national average of 0.3%. Also the manufacturing in Ofunato city is 18.9%, Rikuzentakata city is 18.4%, Kamaishi city is 20.7%, Otsuchi town is 23.7%, Yamada town is 23.7%.

The coastal area of Iwate prefecture has been facing the decline in income. The Figure 1 shows the changes in average income in the coastal area of Iwate prefecture from 1996 to 2009. In 1996, the average income in the coastal area of Iwate prefecture was 2,138,000yen/person. In 2009, the average income in the coastal area of Iwate prefecture dropped to 1,906,000yen/person. Also Table 4 shows the average income of municipalities in the coastal area of Iwate prefecture in 2008 and 2009. The averages income varies in different municipalities. The average income of Rikuzentakata city and Ohtsuchi town, Yamada town, are even lower than the average income of the coastal area of Iwate prefecture.

Table 4 Industrial structure of the coastal area of Iwate prefecture in 2010

(%)

Region	Agriculture	Fishery	Construction	Manufacturing	Transport	Whole Retail sales	Restaurant Service	Medical Welfare	Others
Miyako city	4.3	4.6	8.4	16.6	4.8	16	5.4	13.5	26.3
Ofunato city	3	7	9.9	18.9	4.6	16	4.7	11	24.8
Kuji city	6.3	2.1	12.9	14.7	4.8	15	4.6	12.5	27.1
Rikuzentakata city	7.3	6.9	9.7	18.4	4	15	4.4	11.5	22.9
Kamaishi city	1.5	5.2	8.6	20.7	4.6	15.4	5	11.7	27.2
Otsuchi town	2.4	4.9	11.4	23.7	5.4	15.7	4.9	10.6	21.2
Yamada town	3.8	13.5	9.9	18.5	4	14.4	3.4	11	21.5
Iwaizumi village	20	2.3	9.5	12	4.6	11.1	4.4	8.8	27.4
Tanohata village	14.2	9.2	14.2	12.8	3.4	7.2	76	10.2	21.2
Fudai village	6.3	14	13.4	15.4	4.3	9.3	4.1	9.6	23.6
Noda village	9.7	7	16	13.7	4.1	14.4	4.3	9	21.9
Yono village	15.5	4.8	17.1	13	4.1	12.4	3.3	10.4	19.3
Iwate Prefecture	10.5	1.4	8.5	14.7	5.3	16.3	5.2	11.9	26.2

Source: The national census in 2010



Figure 2 Average income in the coastal area of Iwate prefecture

Source: Iwate Prefecture

Iwate prefectural government has been working on socioeconomic development in the region. They have mainly working on food industry, manufacturing industry, tourism industry, and primary industry to develop the products which use the local resource as the principal raw material. Also they have been introducing enterprise owner to the business meetings and events for stimulating the external demands.

Table 5 Average income of each household in the coastal area of Iwate prefecture in 2008 and 2009

Region	2008 (1,000yen)	2009 (1,000yen)	Percentage Change in 2008 to 2009
Miyako city	2,200	1,975	-10.2
Ofunato city	1,994	2,030	1.8
Kuji city	2,103	2,074	-1.4
Rikuzentakata city	1,745	1,736	-0.5
Kamaishi city	2,336	2,165	-7.3
Otsuchi town	1,722	1,672	-2.9
Yamada town	1,663	1,605	-3.5
Iwaizumi village	1,626	1,605	-1.3
Tanohata village	1,495	1,474	-1.4
Fudai village	1,812	1,763	-2.7
Noda village	1,657	1,670	0.8
Yono village	1,599	1,583	-1.0
Iwate Prefecture	2,219	2,191	-1.3
National	2,754	2,660	-3.4

Source: The national census in 2010

3. MATERIALS AND METHODS

In the section 3-1, the author presents the analytical framework applied in this research.

The section 3-2 presents the analytical methods used to answer the three research questions. The author presents the data collection methods in the section 3-3.

3-1. Analytical Framework

In this research, the author focused on how disaster-affected enterprise can contribute to change the trends of population decrease and socioeconomic decline. This research especially focused on the basic industries which are capable of creating the cash-inflow to the society. Therefore, this research applied the framework proposed by Nakamura, Tabuchi (1996) and Yamaguchi (2001) which explains the regional economy growth led by the external demand increase by combining the Export Base Model (Porter, et al., 1980) and the Simple Keynesian Model (Keynes, 1936). According to the framework, increase in external demands, leads to increases in production of exporting basic industry, which also leads to the production increase in non-exporting industry. The ripple effect would enlarge the net production and income within the society, which leads to the internal demand increase and investment. Yamaguchi (2001) modified the framework by adding “external demand” and “Internal demand“, to discuss how the exporting basic industry could be supported in the recovery from Han-shin Awaji

earthquake.

This research further modified the framework developed by Yamaguchi (2001), by adding the specific elements for this research, which is governmental financial support for enterprise recovery, such as the Enterprise Group Subsidies (Explain in the section 3-2-3). Specifically, this research Since Iwate prefectural government has been introducing the business meeting opportunities for increasing the market outside the local region, to the research subjects, we added the line <3>. It indicates the opportunities for the basic industry to increase the external demands. Another specific element for this research is, government has been supporting the disaster-affected enterprise by providing the financial supports. Therefore, we added the a box “Public Finance (Financial Support)” and the line <5>.

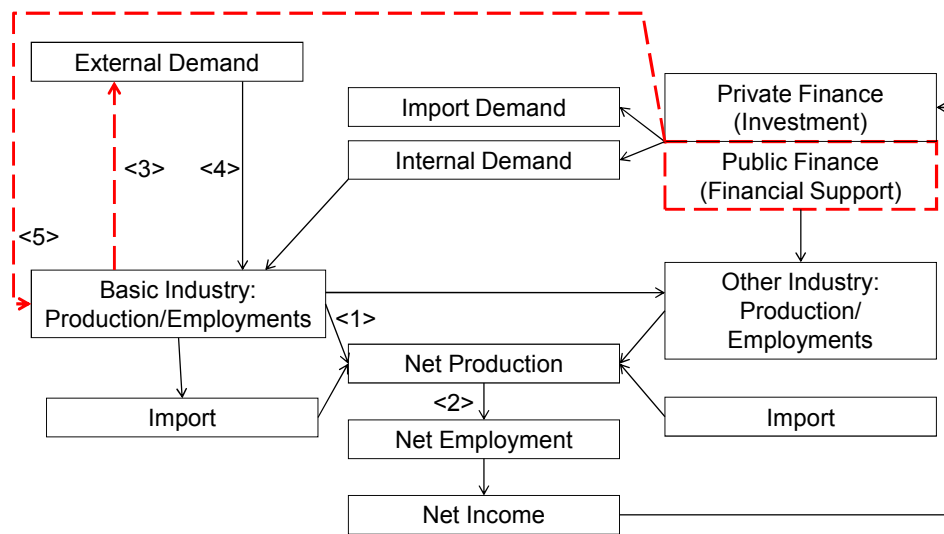


Figure 3 Mechanism of regional economic growth led by the external demand increase in the context of disaster recovery

We believe it is possible to answer the three questions based on the proposed framework. Firstly, for the research question (1) how “where and how enterprise resume their work-place” affect the contribution to the local society, can be answered by analyzing whether the consequence of the decision contribute to the society as line <1>, <2>, and <3> in the framework represents. The line <1> in the framework shows that enterprises can contribute to the society by increasing the net income in the society. In the case of disaster recovery, we think, enterprise can contribute to the society by restarting the business in the early stage of the disaster recovery. Because the damaged

enterprises stopped their business after the disaster and it leads to the increase of importing products from the outside of the local region. Many enterprises would wait to restart their business until the temporary building provided by government for their work-place. Therefore, we considered the period before the temporary building would be provided by government as the early stage of the disaster recovery. If enterprise restarted their business during the early stage of the disaster recovery and were able to replace the import, then we considered those enterprises increased the net income in the society.

The line <2> in the framework indicates that enterprises can contribute to the society by increasing the net employment in the society. In the case of disaster recovery, we think that enterprises can contribute to the society by resuming the work-place in the local town with enough production capacity to hire employees. Even enterprise restarted business; it is uncertain that enterprise could hire any employees or not. Especially many small and medium size enterprises may be operated by the owner and un-paid/part time family member. Therefore, we considered enterprises contributed to the society by increasing the net employment of the society, if enterprise hired the employee who is not un-paid/part time family member.

The line <3> in the framework does not indicate the enterprise direct

contribution to the society. But as our research subjects have been receiving supports from Iwate prefectural government to increase the external demand and create the cash-inflow, it is important for the society that those enterprises take full advantage of opportunities by restarting the business early with certain production capacity. One of the biggest business meeting in Japan was held in February 2012 and Iwate prefectural government invited some enterprises. Therefore, in this research, we consider that enterprise could take advantage of the opportunities if enterprise could restart the business with enough production capacity to export and join the events in February 2012.

Secondly, for the research question (2) how “changes in the society being made by disaster” affect the enterprise external demands increase, can be answered by analyzing the line <4>, which indicates the enterprise stimulating the external demand and creating the cash-inflow to the society. “After the disaster, business can lose customers during the disaster aftermath either because of population casualties or, more likely, short-term population dislocation. (Zhang et al, 2009)” The Table 6 shows the death and lost in the coastal area of Iwate prefecture.

Table 6 Death and Lost in the coastal area of Iwate prefecture

Region	Death	Lost	Death + Lost	Population in 2010	(Death+Lost) /Population
Miyako city	420	96	516	59,430	0.87
Ofunato city	340	81	421	40,737	1.03
Kuji city	2	2	4	36,872	0.01
Rikuzentakata city	1555	223	1778	23,300	7.63
Kamaishi city	888	153	1041	39,574	2.63
Otuschi town	803	473	1276	15,274	8.35
Yamada town	604	151	755	18,617	4.06
Iwaizumi village	7	0	7	10,804	0.06
Tanohata village	14	15	29	3,843	0.75
Fudai village	0	1	1	3,088	0.03
Noda village	38	0	38	4,632	0.82
Yono village	2	2	4	17,913	0.02
Total	4,671	1,205	5876	1,330,147	0.44

Source: Iwate prefecture and The national census in 2010

In Rikuzentakata City, 7.6% of population in 2010 lost lives and in Otsuchi Town 8.35% of population in 2010 lost lives. Considering these numbers, the market in original town would most likely to be minimized. Therefore, for some enterprise, it is necessary to change the market from inside to outside. In that case, for the enterprise which have been targeting the inside market, it is necessary for them to cover the lost market share by stimulating the external demands in outside market. In this research, we put criteria on whether they are being able to stimulate enough external demands by the judgment of owner oneself by asking about the sales after the disaster directly.

Thirdly, for the research question (3) how “financial support from government” affect the investment to expand the business-bases, can be answered by analyzing the line <5>, which indicates the governmental financial support would be provided to the enterprises for their investment to build the permanent work-place. In Iwate prefecture, total of 57.7 billion has been distributed to the 51 groups (1,008 persons) by August 31, 2012 as the Enterprise Group Subsidy². In order to receive the Enterprise Group Subsidy, the groups of the small and medium size enterprises submit their reconstruction plan which helps the local society by industrial development, community recovery, and enhancing the employment. If their plan would be accepted, then the group would receive the financial support which is 3/4 of budget to implement the submitted reconstruction plan. Also, those supported enterprises need to cover 1/4 of the budget by themselves. National government has covered 38.5 billion yen and Iwate prefecture has covered 19.2 billion yen. The author thinks it is important for those enterprises which received financial support to actually contribute to the society in terms of increasing the net income and employment. Also, if those enterprises make debt to cover their expense which is 1/4 of the total budget, then they must redevelop their business to recover those debts. On the other hand, this 3/4 financial support may help enterprises to develop their

² Chuushou Kigyo tou Guru-pu niyoru Shisetu/Setubi Hojyo Seibi Jigyo [Supporting measure for restoring the building and equipment as small and medium size enterprise group] has been implemented by national government and Iwate prefectural government.

businesses by increasing production capacity or changing the business components. In that case, those enterprises can contribute to the society by increasing the net income and employment. Therefore, the author would analyze the investment from three aspects, necessity to the production capacity increase, changing the business components, and generating the additional financial debt.

3-2. Analytical Methods

3-2-1. Categorize how enterprises resume the work-place

In order to answer the research question (1), first, we categorize the enterprise decisions on how and where enterprises resume their work-places. Then the consequence of the decision would be analyzed from three aspects explained in previous section (the section 3-1). This section presents how we categorize the enterprise decisions on where and how enterprise resumes their work-place.

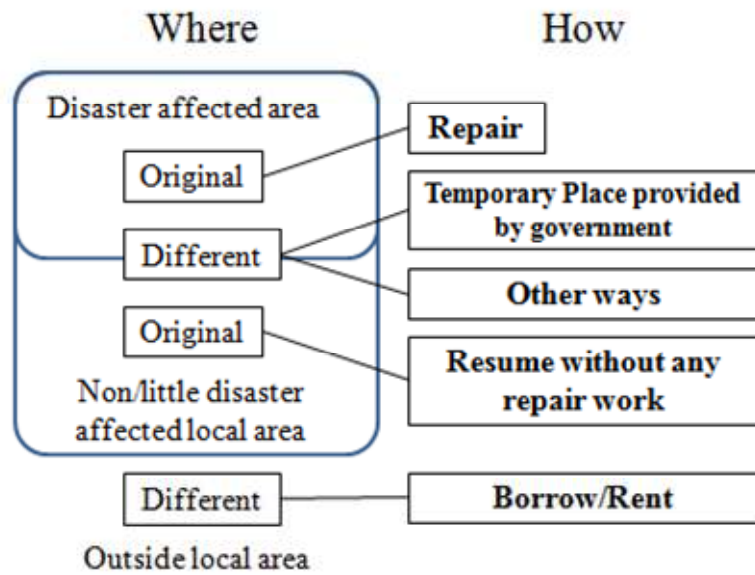


Figure 4 Where and how enterprise resume their work-place

Figure 3 presents five categories of enterprise decisions on where and how enterprises resume their work-place. The reason this research focused on “where” and “how” was those were the only decisions which enterprise owner could make. For decisions on where to resume the work-places, there are three options; disaster affected area, non or little disaster affected local area, and outside local area. The reason we separate disaster-affected area and not or little affected local area is to analyze how uncertainty, the post-disaster urban planning, would affect the enterprise recovery. Therefore, we define the disaster affected area, if tsunami completely swiped away the buildings or caused the direct damage which needs repair-work to resume the work-place. If tsunami did not cause the direct damage which needs repair work to

resume the work-place, then we considered the area as “Not or little disaster affected local area.” Also we considered local area as the original municipality which enterprise belonged before the disaster, because enterprises are expected to pay the taxation to the local municipal government.

For decisions on how enterprises resume the work-place, this research categorized into five different options; Resume the original work-place without any construction work, Repair the original work-place, Wait for the temporary building provided by government for the work-place, Move out and borrow or rent the work-place, and Find own ways to restart in local town, For resuming the original work-place, there were only two options, because local government in the coastal area of Iwate prefecture, did not allow construction of new buildings. If enterprise owner wanted to restart their businesses before the completion of temporary building provided by government for their work-place, options would be move out from the local town and rent the work place in outside the local town or find the own way to resume the work place within the local town.

3-2-2. How changing the market from inside to outside affect the enterprise trying to stimulate the external demands

This research analyzed how changing the market from inside to outside affect the enterprise trying to stimulate the external demands and how enterprises have been responded to them. The changes in the supply-side affecting the enterprises recovery following natural disaster in manufacturing and service sector have been pointed out by Suresh, et al. (2011). Also outside the natural disaster recovery, supply-chain management (SCM) is a well researched topic as Chen and Paulraj (2004) summarize over 400 articles on SCM to develop a research framework. Therefore, we focus on the changes in demand-side.

Firstly, we separate the enterprises into two groups. Ones did not change their targeting market and ones changed their targeting market after the disaster. Secondly, we focus on how each group changed their marketing strategy by analyzing seven business components known as 7P (product, price, promotion, placement, people, process, and physical evidence) (Kotler, 2002; 2004), which have been recognized as central elements of marketing strategy³. Then the consequences of two groups and process of how enterprises respond to the consequences would be analyzed.

³ Marketing Mix is a central element of marketing strategy. 4P which includes Place, Product, Price, Promotion is a element of Marketing Mix proposed by Jerome McCarthy. Then, Philip Kotler added three elements, Physical Evidence, Personnel, and Process, and developed 7P.

3-2-3. How financial support from government affect the investment of the enterprises

This research analyzed how enterprises have been planning to make decision on the investment to resume their permanent work-place. If enterprise have been planning to make investment to increase the production capacity accordingly to the demand increase, then enterprise may contribute to the society by increasing the net income and employment. But as the framework developed in this study author shows, enterprises would be receiving the financial support from the government. Therefore, enterprises are capable of making the decision on investment based on their future expected demand increase. In this research, we categorized enterprises by how enterprise owners have been trying to make the decision on future investment using the financial support from government. Then how each enterprise owner reached to make the decision on investment is analyzed by looking back at the enterprise recovery process.

3-3. Data collection

3-3-1. Interview survey

This research conducted interview to gather the data of enterprise recovery process from the catastrophic damage. This research has chosen the interview subjects from the small and medium size enterprises, which are capable of stimulating the external demands and create the cash-inflow to the society. The enterprises are chosen from the ones which have been recognized as potential leading enterprise in the coastal area of Iwate prefecture by the prefectural government. Iwate prefectural government has been supporting them by introducing to food consultants/advisor and business meetings with business traders outside the region for stimulating the external demands. Figure 5 shows the location of interview subjects. Table 6 shows characteristics of the SMEs in terms of their business type, work place, main products, and main targeting market.

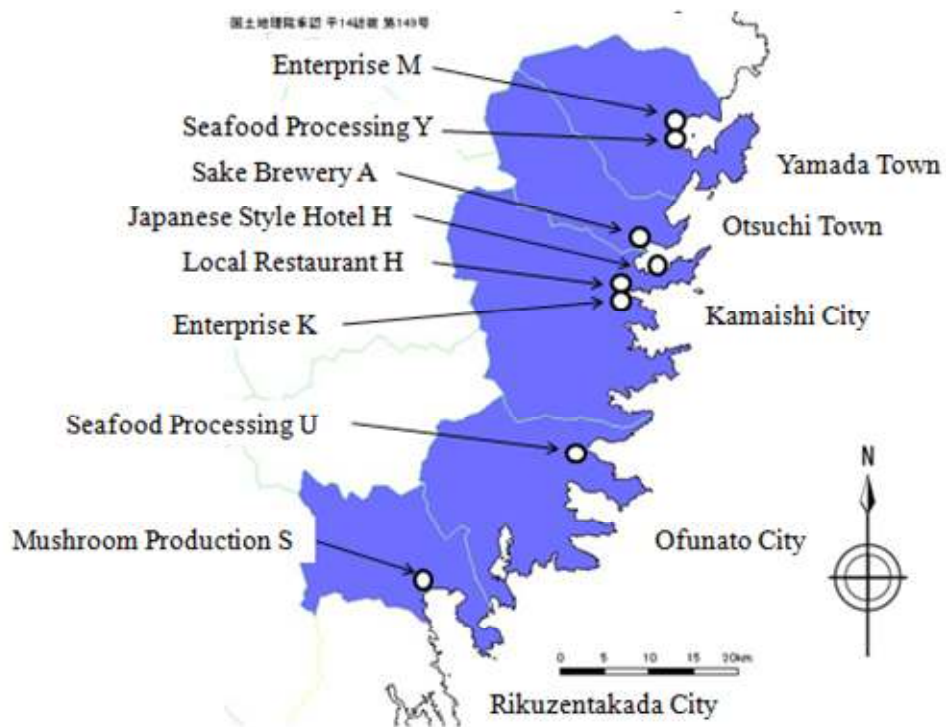


Figure 5 Location of Enterprise

Table. 7 Characteristics of Enterprises

Name	Business type	Work Place	Main Products	Main Targeting Market	Note
Enterprise K	Retail Shops	Two shops	“Aramaki salmon” produced from salmons from local market	Local People	The owner send out the direct mail to about 3,000 consumer both inside and outside the local area, before the season of the End of Year gifts and Bon Festival gifts for the promotion.
	Seafood Processing	Factory			
Enterprise M	Local Restaurant	Restaurant	Local typical dishes	Local People	The owner developed a product used Sargassum which is a type of a sea weed but it has not been used for anything. As owner developed the product of Sargassum, food consultants introduced by Iwate prefectural government, supported him. Although shipping of the Sargassum products had been scheduled on March 14, 2011, everything was swiped away by the Tsunami on March 11.
	Lunch Delivery	Kitchen inside the Home	Local typical dishes	Local People	
	Seafood Processing		Sargassum boiled down in soy	People Outside the Local Town	
Saki Brewery A	Sake Brewing	Factory	"Japanese Sake" "Liquor Sweets"	Local People	As population of Otsuchi Town have been decreasing, the sake factory operating ratio went down to about 30%. The owner developed another type of products named Liquor Sweets, which is mix of fruits juice and shochua clear liquor. They were trying to expand the consumer to the outside the Otsuchi Town until Tsunami happened.
Local Restaurant H	Local Restaurant	Restaurant	Local typical dishes	Local People	Owner started the Kitchen car project after the disaster, by receiving the supports from the private company. Kitchen car is a car which has the Kitchen inside. The projects have been using the kitchen cars to help enterprise owners restart their businesses before the temporary building provided by the government.
	Mobiel Restaurant	Kitchen Car	Local typical dishes	Local People	
Japanese Style Hotel H	Hotel Business	Two Hotels	Seafood from the fish market	Tourists	Japanese Style Hotel H is a symbolic hotel in this region. The loadlady has been actively involved in promotion of the local society. The hotel played a role as evacuation shelter after the disaster. Also the loadlady have been appearing on the TV after the disaster.
Seafood Processing U	Seafood Processing	Factory	"Smoked Fish" produced by order-made smoking device	People Outside the Local Town	The owner developed a seafood products name “Smoked Fish” by using the order-made smoking device. After, his product was introduced in TV-show, The orders came from all over the Japan. The share of the market outside the local town was increasing and just after the owner renovates his factory to increase the production capacity, the Tsunami swiped away his factory.
Mushroom Production S	Agricultural Food Manufacturing	15 Mushroom Greenhouses	Shiitake Mushroom	People Outside the Local Town	The owner researched and developed the process of cultivating the high quality mushrooms. The products gathered attention of Japanese media as the mushroom from China gathered attention by having trouble with agricultural chemical. Then the sales of the products increased.

The author started first interview to six enterprises in July 2011. In order to continuously monitor the enterprise disaster recovery process and consequence, the author repeatedly interviewed the same six enterprises every two to three months. The author added another enterprise in December 2011, and two more enterprise in June. The interview schedule is shown in Table 7.

Table 8 Interview Schedule

	2011			2012					
	July	September	December	February	March	June	August	September	November
Enterprise K	○	○	○	○	○	○	-	○	○
Enterprise M	○	○	○	○	○	○	-	○	○
Sake Brewery A	○	○	○	○	○	○	-	○	○
Kitchen Car Project (Local Restaurant H)	○	○	○	○	○	○	-	○	○
Japanese Style Hotel H	-	-	○	○	○	○	-	○	○
Seafood Processing Y	○	○	○	○	○	○	-	-	○
Seafood Processing U	-	-	-	-	-	-	○	○	○
Mushroom Production S	-	-	-	-	-	-	○	○	○

In the first interview, the author asked questions to know the enterprise situations in before the disaster, during the disaster, and after the disaster. From the second interview, the author asked questions to follow up what enterprise did since the previous interview and plans for the future.

4. Results

4-1. Categorizing into different enterprise recovery processes

This research categorized the decisions on where and how enterprise resumes the work-place. The result showed that the possible options were different for each enterprise owner.

Table 9 Where and how enterprises resume their work-places

Category	Damage		Name	Enterprise	Resuming the Working Place
	Original work-place damage	Home		Place	How
A	Fully	Fully	Sake Brewery A	Outside	Borrow/Rent
	Fully	Fully	Seafood Processing Y		
B	Non	Non	Seafood Retail Shops K	Non or little disaster affected area	Resume the original work-place without construction work
	Non	Non	Mushroom Production S		
C	Fully	Non	Enterprise M (Lunch Delivery and Seafood Processing)	Disaster affected area	Find own ways, such as rebuilding home, use the kitchen-car
	Partially	Fully	Kitchen Car Project		
D	Partially	Fully	Seafood Processing Factory K	Disaster affected area	Repair
	Partially	Fully	Japanese Style Hotel H		
E	Fully	No	Seafood Processing U	Disaster affected area	Wait for land use permission
	Fully	No	Enterprise M (Local Restaurant)		

*Fully: means fully destroyed or swiped away by the Tsunami

**Partially: means partially destroyed by the Tsunami and the framework of building remained

***Non: means did not receive direct damage to the building which are needs repair work.

4-1-1. Category B: Resume the original work-place without any construction work

Seafood Retail Shops K and Mushroom Production S could restart their business

without any construction works, because their work-place received non-little damages.

Two pictures show their work-place locations and Tsunami affected areas which are covered in red color.



Figure 6 Location of Seafood Retail Shops K

Seafood Retail Shops K Owner said about Tsunami damage to Seafood Retail Shops K, "Tsunami came into the shop but water was only 80cm high above the ground". Seafood Processing Factory K could restart their business in April 1, 2011 after cleaning up rubbles and mud.



Figure 7 Location of Mushroom Production S

Mushroom Production S lost 8 of their mushroom greenhouses, but 7 other mushroom greenhouses were undamaged.

4-1-2. Category C: Repair the damaged work place in disaster affected area

Seafood Processing Factory K and Japanese Style Hotel H made decision to partially repair their damaged original work-places. Local government in Kamaishi-city, allowed repairing the damaged buildings, if the Tsunami did not completely swiped away the building and at least the frame of the building remained. Local government did not allow construction of new buildings in disaster-affected area, because the post-disaster

urban planning was undetermined. These enterprises owners could make decision to repair their original work-place, because their original work-places were not completely swiped away.

4-1-3. Category D: Move out from the original town and restart business

Sake Brewery A and Seafood Processing Y made decision to move out from the original town and restart business in inner part of Iwate prefecture. Both enterprises original work-places were completely swiped away by the Tsunami. Local government of both enterprises prohibited to rebuild a new work-place in disaster affected area.

The owner of Sake Brewery A owner made decision to move out from the original town and started living in inner part of Iwate prefecture, because more than 60% of buildings were destroyed in his original town. Since the owner of Sake Brewery A owner have lost his home, he was able to receive financial support for the new residence. Sake Brewery A restarted the business after owner found the work-place where he could rent for the liquor production in July 2011.

Seafood Processing Y owner also made decision to move out from the original town and started living in inner part of Iwate prefecture. Seafood Processing Y owner also lost his home, therefore he was able to receive the financial support for the new residence. Seafood Processing Y restarted production in August 2011, after the owner

found the work-place where he could rent for the seafood processing.

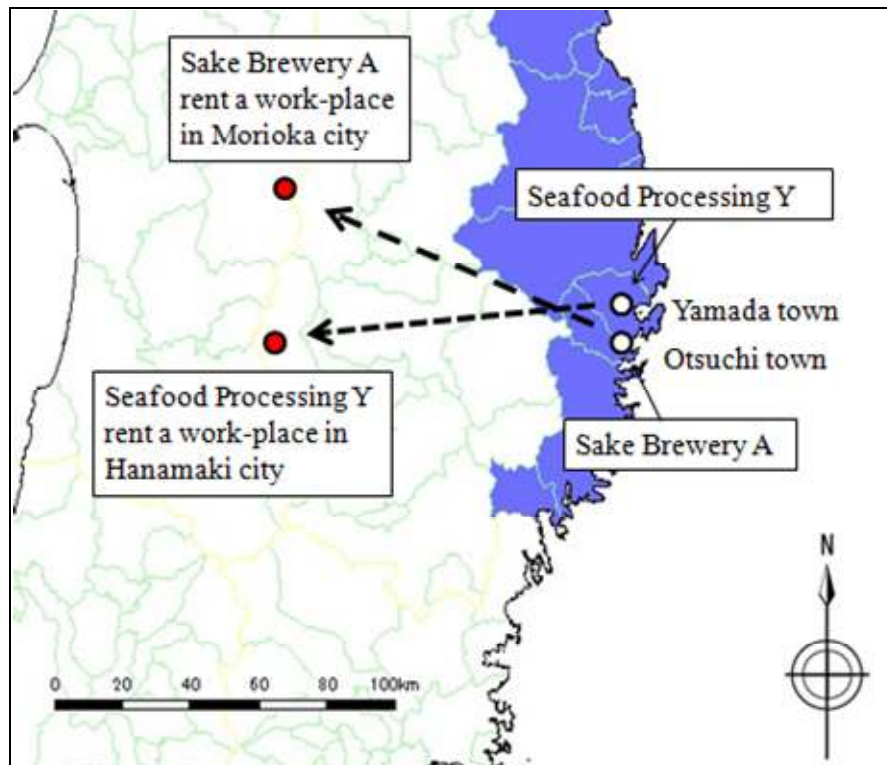


Figure 8 Location of original work-place and new work-place where owners rent

4-1-4. Category E: Wait for the temporary work-place provided by government in the local town

Enterprise E (Local Restaurant), Seafood Processing U, owners made decision to wait for the temporary building provided by government for their work-place. Both enterprises original work-places were completely swiped away by the Tsunami. The owner of Seafood Processing U said "I also considered moving out from local area, but I thought connection with other local enterprise owners are something I did not want to

lose.”

Enterprise E (Local Restaurant) owner’s home did not receive Tsunami damage. Owner said in July 2011, “Since our home did not receive any damage and I am the owner of my own company, I was not subject to receive any financial supports for the disaster victims. Now I don’t have any revenue but still have to pay the loans. I need to start working again as soon as possible.” The owner acted to rebuild the same building at the place but he was stopped by local government. Local government did not allow construction of new building in disaster-affected area before post-disaster urban planning become more specified. Therefore, the owner made decision to wait for the temporary building provided by government for their work-place to restart his restaurant.

4-1-5. Category C: Find own way to resume the work-place in the local town

Kitchen Car Project and Enterprise M (Lunch Delivery and Seafood Processing) made decision to resume the work-place by their own ways in the local town. Enterprise M (Lunch Delivery and Seafood Processing) owner made decision to renovate his home to the kitchen. Kitchen Car Project owner made decision to use kitchen-car as temporary work-place in order to restart business in disaster-affected area. Local government did

not allow building any new buildings but they allowed the use of kitchen car.

4-2. The Research Question 1: How “Decisions on where and how enterprise resume their work-place” affect the contribution to the local society

In this section, author describes how decisions on where and how enterprises resume their work-place affected the enterprise contribution to the local society. The overall results were summarized in the table below.

Table 10 How “Decisions on where and how enterprise resume their work-place” affect the contribution to the local society

	Place	How	Net Income Increase	Net Employment Increase	Opportunity for increasing the external demand	Category
			Restarting in local town			
			Resuming early stage of recovery	Resuming with enough production capacity to hire employees	Resuming with enough production capacity in early stage of recovery	
Sake Brewery A	Outside	Borrow/Rent	×	×	○	A
Seafood Processing Y						
Seafood Retail Shops K	Non or little disaster affected area	No construction work	○	○	○	B
Mushroom Production S						
Kitchen and Seafood Processing M	Disaster affected area	Find own way	○	×	△	C
Kitchen Car Project				○	-	
Seafood Processing Factory K		Repair	○	×	×	
Japanese Style Hotel H	○			-		
Seafood Processing U	Wait for land use permission	×	○	△	D	
Local Restaurant M			○	-		

- indicate that enterprise could contribute to the society.
 - △ indicate that enterprise could contribute to the society but also had some trouble
 - ×
- ×
- ×

4-2-1. Category B: Resume the original work-place without any construction work

The consequence of resuming the work-place in non or little disaster-affected area without any construction work was being able to continue their business in the same town and have enough production capacity to hire employee. Also the enterprise could have opportunity for stimulating the external demands.

Seafood Retail Shops K could contribute to the society by increasing net income (the line<1> in the Figure 3) and employment (the line<2> in the Figure 3) in the society. Seafood Retail Shops K restarted the business in April 2011. Since the work-place only received little damage, some products were also safe. After distribution system recovered, Seafood Retail Shops K started selling the products of other enterprises. The owner said, “Since we restarted business when other shops were still close, the products were sold very quickly.” Seafood Processing Factory K could continue to hire four employees with assistance of the earthquake insurance.

Mushroom Production S also contributed to the society by increasing the net income (line1-1) and employment (line1-2) in the society. Mushroom Production S restarted selling the dried mushroom to the local shop in July 2011, when the gasoline became available for them. Mushroom Production S could rehire 12 employees and hire

18 new employees with assistance of the governmental financial support for employment.

After Mushroom Production S receive approval of usage of the land in disaster-affected area in September 2012, hired additional 10 employees for increasing the production and building the additional mushroom greenhouses.

On the other hand, Mushroom Production S could have opportunities for stimulating the external demands by participating to the business meeting and events for supporting the disaster from June 2011, including Super Market Trade Show in February. Mushroom Production S took some time to increase their production capacity as the owner said “Until November 2011, we could not fully make the use of the opportunity. Because we could not import the mushroom logs and were unable to increase the production capacity.”

4-2-2. Category C: Find own way to resume the work-place in the local town

The consequence of decision to resume the work-place in local town was able to restart the business in the specific timings and before the completion of temporary building provided by government for enterprises’ work place. Enterprises were planning to expand the production capacity after restarting the business with limited production

capacity, but the possibility of increasing it was uncertain.

Enterprise M (Lunch Delivery and Seafood Processing) contributed to the society by increasing net income (the line<1> in the Figure 3) in the society. Enterprise M could take the job of delivering lunch box to the evacuation place from August 22nd to September 6th 2011, after renovating first floor of his home to kitchen in August 2011 and restarted their business. Since the enterprise outside the region have been delivering the lunch box to the disaster-affected area, Enterprise M could replaced the services coming into the town and stopped the outflow of the money, which led to the increase of the net income

Enterprise M also restarted the sea food processing in September 2011. This gave Enterprise M more opportunity for stimulating the external demand by participating to the business meetings and events for supporting the disaster, including Super Market Trade Show 2012.

Enterprise M could not hire any employees in the early stage of recovery. For the lunch box delivery, it was job for just a short period of time. For the sea food processing, the amount of principal row material, Sargassum, were limited until the next harvesting season in April 2012. Owner could only hire an additional employee after the harvest of Sargassum.

Enterprise M faced problem with production capacity after receiving the certain amount of orders from a company in June 2012. Owner said, “Unfortunately, in our current situation, the production capacity determines the amount of demand we may increase.” Owner was planning to increase the production capacity by using the financial support and buy the additional equipment which can increase the efficiency in February. But the owner was not able to get the financial support. Kitchen Car Project contributed to the society by increasing net income (the line<1> in the Figure 3) and employment (the line<2> in the Figure 3). Kitchen Car Project started project which provides the temporary work-place for disaster-affected enterprise owners. The temporary work-places Kitchen Car Project provided were six kitchen-cars. Those six kitchen-cars and other financial support were provided from a private company, which have been involving in this project from the beginning.

4-2-3. Category D: Repair the work-place in disaster affected area

The consequence of decision to resume the work-place in local town was able to restart the business in the specific timings and before the completion of temporary building provided by government for enterprises work place. Enterprises were planning to expand the production capacity after restarting the business with limited production

capacity, but the possibility of increasing it was uncertain.

Enterprise K (Seafood Processing Factory) contributed to the society by increasing net income (the line<1> in the Figure 3) in the society. Enterprise K could restart the sea food processing in November 2011, because the work-place was resumed during the salmon season which was September 2011 to January 2012, for producing their original products made by salmon “Aramaki Salmon”. Seafood Processing Factory K needs to process the fresh salmon before storing in the refrigerator cabinet. Therefore, the owner made decision to repair a part of the factory so that Seafood Processing Factory K would be able to resume the work-place earlier than January 2012.

Enterprise K (Seafood Processing Factory) could not contribute to the society by hiring the employees or taking advantages of opportunities to increase the external demand. Because enterprise was affected by the post-disaster urban planning and owner made decision to delay the additional repair-work. Owner said, “I need to find out whether we really need to relocate our factory or not, before I make my decision on the additional repair-work.” As the consequence, the production capacity of the factory was remained to be limited until November 2012.

Seafood Processing Factory K were told by local government, that they need to relocate the factory within two to three years. The relocation cost, the cost of the factory

excluding the depreciation cost, would be covered by the government.

Japanese Style Hotel H contributed to the society by increasing net income (the line<1> in the Figure 3) and employment (the line<2> in the Figure 3). Japanese Style Hotel H finished repairing the most parts of the Japanese style hotel and restarted business in January 2012. Japanese Style Hotel H was one of a few hotel restarted business in local town at that time. Japanese Style Hotel H re-hired 25 employees after repairing the rest of the hotel. Japanese Style Hotel H was located in disaster affected area, but the landlady took risk of being affected by the post-disaster urban planning, and start repairing the Japanese style hotel. But unlike, Enterprise K which had to relocate their factory because of the post-disaster urban planning, the Japanese Style Hotel H was not affected by the post-disaster urban planning.

4-2-4. Category A: Move out from the original town and resume the work-place in the outside local town

The consequence of decision to wait for the temporary work-place provided by government, was being able to have enough production capacity to hire additional employment/export and have the work-place in the local town. When would be the completion of the temporary work-place was the uncertain part of problem and it

depends on the reconstruction speed of the local town and availability of construction workers.

Seafood Processing U contributed to the society by increasing net employment (the line<2> in the Figure 3) and also was able to have some opportunities for stimulating the external demands. Seafood Processing U fired all the employees after the disaster. Seafood Processing U was able to hire 2 original employees and 1 new employee from August 2011, by using the governmental supporting measure for employment..

Seafood Processing U restarted the sea food processing in February 2012, as owner waited the completion of temporary work-place provided by government. Therefore, Seafood Processing U could not bring the product to the business meeting events held in February. But production capacity was large enough for Seafood Processing U to hire additional 5 more employees.

Enterprises M (Local Restaurant) restarted restaurant business in April 2012. Originally, the completion date of temporary building provided by government was in February 2012. But the construction delayed due to the availability of construction workers. After Enterprises M (Local Restaurant) restarted business in the temporary building provided by government for the work-place, the owner hired two employees.

Seafood Processing Factory K also considered the decision to wait for the temporary work-place provided by government, but the completion time delayed due to the delay of post-disaster urban planning. The completion date was originally in December 2011, but the owner was told that the estimated completion date was extended to March 2012. Then, owner made decision to not wait for temporary work-place provided by government anymore.

4-2-5. Category E: Wait for the temporary work-place provided by government in the local town

The consequence of decision to move out from the original town and restart business outside local town was being able to have enough production capacity to hire the employees and take advantage of opportunities to increase the external demands. Also they were able to restart their business in the early stage of recovery. However these enterprises could not make any contribution to the local society, as their work-place located in outside of the local town. If they can come back to the original town in the future, then they can contribute to the original town, but the possibility is uncertain.

Sake Brewery Aand Seafood Processing Y could not contribute to the society by increasing net income(line 1-1) and employment(line 2-2), because they move out

from the original town and restarted business at outside the local town. Sake Brewery A could restart the production of Liquor Sweets, which is one of their main products, in July 2011 after finding a temporary work-place to rent in inner part of Iwate-prefecture. Sake Brewery A restarted sake production in November 2011, after finding the sake company which allow Sake Brewery A to use a part of the sake factory. Sake Brewery A hired three employees and participated in business meeting and events for supporting the disaster recovery after restarting the production in July 2011.

Sake Brewery A looked for the available land in the original town but was not able to find them in February 2012. Since government financial support was only applied for the construction work which have been done before March 2013, the owner made decision to build the new factory in inner part of Iwate prefecture.

Seafood Processing Y could also restart the production in September 2011, after finding the temporary work-place to rent in inner part of Iwate-prefecture. Seafood Processing Y hired two original employees and start participating the business meetings and events for supporting the disaster recovery after restarting the production in September 2011. Seafood Processing Y owner was able to find the land which can beused and have been planning to come back to the original town in summer of 2013.

4-3. The Research Question 2: How “changes in the society being made by disaster” affect the enterprises trying to increase the external demands

4-3-1. Enterprises did not change the targeting market and strategy

Seafood Processing Y, Seafood Processing U, Mushroom Production S did not change place of targeting market, because they have been targeting the external market before the disaster. Those enterprise owners made decision of not changing their strategy, meaning not changing the business components for marketing. Because they had been increasing the external market until the disaster happened. Seafood Processing U owner said “Our product was starting to increase the external demand after the appearance on TV show in beginning of the year 2011. But soon after, disaster happened.” Seafood Processing Y received Tsunami damage, just after the owner renovated the factory to expand the production capacity, as external demand had been increasing. Mushroom Production S owner said “In the mushroom industry, there is nobody who doesn’t know me. We were about to expand the market share.”

After the disaster, Seafood Processing Y and Seafood Processing U owner approached the company which they bought their machinery before the disaster. This allowed them to keep the original process of producing their products. Seafood Processing Y owner said “I did not have enough money to buy the same machinery, but

I knew it was essential for me to use the same machinery. So, I contacted the company and explained my situation. Then they offer me to use their machine.” Seafood Processing U owner said, “My machinery was order made and I had no other option in my mind except to use the same machinery.”

For the promotion, these enterprises have been participating the business meetings and events for supporting the disaster recovery. Mainly, events are held outside their local town. Some events including the “Supermarket tradeshow 2012” were introduced from Iwate prefectural government.

As the consequence of not changing their strategies, these enterprises increased the external demand. Seafood Processing Y owner said “I have been receiving the orders endlessly. Since number of employees and production capacity in this temporary work-place is limited, I need to increase the production capacity as I move into the permanent work-place in my original town.” Seafood Processing U owner said, “I have been increasing the orders even comparing with the amount of orders before the disaster. At same time, I have been facing the problem of production capacity. I am planning to increase the production capacity and waiting for the financial support from the local government to be determined.” Mushroom Production S owner said “After the disaster, we double the number of restaurants/consumers. Most of the restaurant owners visited

this place, ordered our products even the price is higher than others. Many of them decided to order after they go back to their places. We were able take advantage of disaster, and we are planning to increase the production capacity and employments more.”

4-3-2. Enterprises changed the targeting market and adjusting the strategy

Sake Brewery A、 Enterprise M (Seafood Processing) changed targeting market after the disaster. Even though these enterprises received similar opportunity with Group B to increase the external demands, the consequences were different. The consequence of enterprises changed their strategy was, enterprises had to go through the process of receiving the feedback from the market and adjusting their strategy.

Sake Brewery A was mainly targeting the local market mainly before the disaster. Owner decided to change the targeting market to outside his original town, considering the damage that his original town received.

For the promotion, Sake Brewery A had opportunity to participate in the business meetings and events for supporting the disaster recovery, including the “Supermarket tradeshow 2012”. For the place to sell the product, Sake Brewery A tried to sell the product to stores in original town and liquor stores in new town.

As the consequence, Sake Brewery A struggled to sell their products after the disaster. After participating to the Super Market Trade Show 2012, the owner said “It was severe. I felt the strong necessity of producing the better product in order to expand the external demands.” There were many original business accounts bought the products from Sake Brewery A, but owner mentioned “Original business accounts are also affected by both direct and indirect damage of disaster, and amount of sales to them has been decreasing.” For the liquor store in outside of the town, owner said “there has been already strong bond exist between the liquor store and local sake production companies, therefore it is very tough to sell the sake to them.”

After receiving the feedback from the market, Sake Brewery A owner has been changing the strategy for increasing the external market. For the place to sell the products, the owner started selling the products to local restaurant and wholesalers. For the promotion, along with the business meeting, the owner organizing the small dinner party with less than 20 people to spread out about his products. Also the owner recognized the importance of the quality standard such as ISO and HACCP, and has been planning to build the factory suitable for high quality control by using the government support for disaster recovery.

The consequence of changing the place to sell the products has shown some

sign of external demand increase. Owner said, “I am start receiving the business deals from restaurants and wholesalers.” But whether Sake Brewery A can increase the external demand by building the high quality control factory is uncertain.

Enterprise M also changed targeting market after the disaster. The owner had been developing the product which use the local unused resource Sargassum for several years. The product was produced to be targeting the external market for increasing the external demand. Just three days before start selling the product, Enterprise M received Tsunami damage. Since original business of Enterprise M, restaurant, was targeting the internal market, owners had no experience of targeting the external market.

For the promotion, Enterprise M had opportunity to participate the business meetings and events for supporting the disaster recovery, including the “Supermarket tradeshow 2012”, which was the first business meeting experience for owner of Enterprise M.

As the consequence, the owner received no business deal out of the Super Market Trade show. Also owner did not get the approval for financial support to renovate the kitchen for sea food processing to increase the production efficiency. Owner said, ”I need to double the demand of sea food processing product in order to hire some additional employees.” Also owner realized that the price of the product was

too low to maintain the employees, but could not raise the price of the product.

As owner receives the feedback from market, owner developed new strategy to sell the products, increase the kinds of product and sell them by package of three products with higher price. In order to realize his new strategy, owner gained business history and received approval from different financial support. Then owner hired another worker for the research and development of his new product. But whether the new strategy would be able to increase the external demand is uncertain.

4-4. The Research Question 3: How “financial support from government and private affect the investment to expand the business-base”

4-4-1. Investments to respond to the necessity of the production capacity increase

Seafood Processing Y, Mushroom Production S, Seafood Processing U have been planning to increase the production capacity. Seafood Processing Y have received temporary work-place provided by government in the original town. Owner is planning to use it as permanent work-place for some years. Also owner has been planning to increase the number of employees to increase the production.

Mushroom Production S has been planning to increase the number of mushroom greenhouses up to 50 before end of March 2015. Owner received both government and private financial support. Male employees are also for the construction of mushroom greenhouses. After the disaster, first mushroom greenhouse was completed in November 2012, as the place of mushroom greenhouse had changed for four times.

Seafood Processing U has been planning to expand the production capacity of his current factory. Seafood Processing U moved into permanent factory in June 2012, and owner has been facing the necessity of increasing the production capacity from September 2012. The owner has been waiting for the financial support from the local

government to be decided (November 2012).

4-4-2. Investments to change the business components to adjust marketing strategy

Sake Brewery A and Enterprise M (Lunch Delivery and Seafood Processing) have been planning to build the new factory for changing the business components to adjust to their new strategy to increase the production capacity.

Sake Brewery A has been planning to use financial support and a loan to build the new factory. The owner has been planning to pay back the loan in 15 to 20 years, considering the future increase in external demands. Owner wanted to limit the self-finance as financial support were $\frac{3}{4}$ of total costs of building and $\frac{1}{4}$ needs to be paid by the owner. But despite the self-finance increase, owner did not want to change the idea of building the factory which is suitable for the quality control. Also Enterprise M (Seafood Processing) has been planning to expand the production capacity of seafood processing to increase the production capacity and efficiency to produce additional products (Explained in).

4-4-3. Investments to pay-back the additional financial debt generated through the disaster recovery process

Japanese Style Hotel H and Enterprise M (Local restaurant) have been increasing the debt after the disaster and facing the necessity to expand their business-base capacity in order to pay-back the increased debt.

Japanese Style Hotel H owner had to increase the debt in order to restart the hotel business by repairing the damage Japanese style hotel. And in order for owner to pay-back the increased debt, owner has to borrow more finance and use them for the construction work to increase the capacity of Japanese style hotel. Japanese Style Hotel H owner wanted to restart the hotel business with limited capacity, just enough for the construction workers working in local area to stay. But in order to officially start the business, there were many standards which needed to be passed for guest room, toilet, kitchen, waste water treatment, etc. Therefore the estimated costs of resuming those places were more than 10 billion yen. The owner said, “Even though, I wanted to restart the business small, the amount of the minimum repair-work cost was not small.”

Japanese Style Hotel H owner has been planning to build the annex. The amount of revenue is determined by the number of rooms and prices. Japanese Style Hotel H owner increased price, but with just under 30 rooms, it was not enough to

generate enough revenue. Japanese Style Hotel H owner said, “I need to build annex, to pay back the debt.” In order to build annex, owner needs to borrow the finance in addition to the financial support provided by government, which again leads to the increase of financial debt.

The case of Enterprise E (Local Restaurant) is similar. Owner had debt for renovating the restaurant in 2009. And after the disaster, owner borrowed finance to restart the business by renovating the home. In order to pay-back those debts, owner planned to build two restaurants in the local town by using the financial support from government. Owner said, “I need to expand the capacity of restaurant, to pay back the debt.” But owner had to change the plan as financial support was not approved. Currently, owner has been searching the way to increase the financial revenue to pay back the borrowed finance. (November 2012)

5. Discussions

5-1. Contribution to the society by increasing net income and employment from the early stage of recovery

This research demonstrated the three decisions which led to the net income increase from the early stage of recovery; resume the work-place in non-or little disaster affected area without any construction work (The section 4-2-1), find the own way to resume the work-place in local town (The section 4-2-2), repair the original work-place (The section 4-2-3). Author argues that resuming the work-place in the early stage of recovery may risky because unexpected event may happen, such as being affected by the post-disaster urban planning (The section 4-2-3, the case of Seafood Processing Factory K). But for some enterprise it was necessary to resume the work-place in specific timings. Those timings were, before the salmon season ends (The section 4-2-3, the case of Seafood Processing Factory K), before people move out from the evacuation place(The section 4-2-2, the case of Enterprise M (Lunch Delivery and Seafood Processing), and before the completion of temporary work-place of government (The section 4-2-2, the case of Kitchen Car Project). This research also demonstrated how uncertainties affect the enterprise to limit their production capacity and made them unable to hire employments. Uncertainties affected enterprises were, post-disaster urban

planning (The section 4-2-3, the case of Seafood Processing Factory K) and approval of financial support (The section 4-2-2, the case of Enterprise M (Lunch Delivery and Seafood Processing)).

From the governmental point of view, the author argues that allowing enterprises to repair their work-places or restart their business in their own ways in disaster affected areas, had positive and negative impact on the society. The positive impacts were that enterprises having restarted business in disaster affected area contributed to the local society by replacing the products or services coming into the town and stopped the outflow of the money, which led to the increase of the net income and employment before the completion of temporary building provided by government for disaster-affected enterprises (The section 4-2-3, the case of Japanese Style Hotel H, and The section 4-2-2, the case of Kitchen Car Project). The negative impact was that local government had to cover the relocation costs of enterprise which had to change the work-place accordingly to the post-disaster urban planning. The relocation costs would be paid to enterprises, which resumed work-place by repairing the most of building (The section 4-2-3, the case of Seafood Processing Factory K). Author thinks it is important to see the both positive and negative sides of allowing enterprises to repair their work-places or restart their business in their own ways in the early stage of disaster

recovery.

5.2 Contributing to the society by stimulating the external demand

This section analyzed enterprise disaster recovery process and external demand increase in two ways; one is focusing on where and how enterprise resume the business-base affect the amount of opportunities for increasing the external demands, and second is focusing on how enterprise stimulating the external demands by adapting to the changes caused by the disaster

5-2-1. Opportunities for stimulating the external demands

This research demonstrated the two decisions which led enterprises to have more opportunities for stimulating the external demands than other decisions; resume the work-place in non-or little disaster affected area without any construction work (The section 4-2-1), move out from the original town(The section 4-2-4). Author argued not only the timing of restarting the business but also the production capacity affected the amount of opportunities for stimulating the external demand. This research demonstrated the enterprises, which resumed the work-place in the early stage of recovery, but being affected by uncertainties and could not have the opportunities to

stimulate the external demands (The section 4-2-3, the case of Seafood Processing Factory K), or could not increase the production capacity as owner planned (The section 4-2-2, the case of Enterprise M (Lunch Delivery and Seafood Processing)). Therefore, decisions that allow enterprises to resume their work-place without risking the impact from the unexpected events, may let enterprise have most opportunities for stimulating the external demands (The section 4-2-1, and The section 4-2-4).

5.2.2. Stimulate the external demands by adapting to the changes caused by the disaster

This research demonstrated the difference between two groups in how changes in the society made by the disaster affected the enterprises; one have been stimulating the external demand and creating the cash-inflow, another have been going through the process of receiving the feedback and establishing their strategies to stimulate the external demand. The enterprises which have been stimulating the external demand, by not changing their strategies, have two things in common; targeting the external market before the disaster and were increasing the external demand until disaster happened. Author thinks that they had already established their strategy for stimulating the external demand before the disaster. There were enterprise owners who were being particular about using same machinery and recovered original production process (The

section 4-3-1, case of Seafood Processing Y、 Seafood Processing U). The consequence of not changing their strategy, were being able to take advantage of opportunities they received after the disaster and stimulating the external demand. There were some enterprises which struggled to stimulate the external market, even though the same business meeting opportunities were given to them (The section 4-3-2). Therefore, this research can confirm that business meeting opportunities were not only the reason those enterprise could increase the external demands.

The author thinks, enterprises which were not targeting external market before the disaster, have been going through the process of receiving the feedback from the market and establishing their strategies for stimulating the external demands (Explained in the section 4-3-2). After realizing the needs of changing the strategy, the owner changed the place to sell the product and was able to stimulate the external demands (The section 4-3-2, the case of Sake Brewery A). Also, the owners have been planning to change the production process, after they obtain adequate finance (The section 4-3-2). Therefore, this research may confirm that, for stimulating the external demand after the disaster, having the strategy which can stimulate the external demand and adequate finance to recover or change the business components are also essential elements along with opportunities.

5.2.3 Enterprise recovery process and stimulating the external demand

This research demonstrated two decisions on where and how enterprise resume their work-place (The section 5.2.1) and two types of enterprises which have been adapting to the situation after the disaster (The section 5.2.2). From these findings, author discusses the enterprise recovery process and stimulating the external demand. For the enterprises, which have been stimulating the external demand until disaster happened, not changing their strategy (The section 4-3-1) and having enough production capacity(The section 4-2) are two important factors. Therefore, moving out from the original town and coming back to the original town would be a preferable choice if we just consider about external demands increase (The section 4-1-4, the case of Seafood Processing Y). But if we consider about net employment and income increase of society, waiting for the temporary work-place provided by government would be another preferable decision because by staying in the local town, these enterprises may also contribute to the net employment increase (The section 4-1-5, the case of Seafood Processing U). Therefore, this research may confirm that providing these enterprises the adequate land when they make decision on where to resume their work-places or where to build their new work-place, would be important for the society.

5-3. Contributing to the society by expanding the business-base

This research demonstrated three reasons behind the investment for the new work-places. Those reasons are facing the necessity to increase the production capacity (The section 4-4-1), changing the strategy for stimulating the external demands (The section 4-4-2), facing the necessity to pay back the additional loan (The section 4-4-3).

For the enterprises, which have been facing the necessity to increase the production capacity, the author argues that adequate financial support and usable land should be given to them, as they will be the ones which can increase the net income and employment in the society. But in reality, those enterprises have been facing the small issues, such as finding the usable land (The section 4-4-1, the case of Mushroom Production S) and waiting for the financial support approval (The section 4-4-1, the case of Seafood Processing U). Therefore, the author thinks, local government needs to recognize that these enterprises have been boosting the external demand and supporting their recovery would benefit the society, as these enterprises are the key enterprises for changing the depopulation and socioeconomic decline trends.

For the enterprises, which have been changing the strategy for stimulating the external demand, the author argues that following up their consequence and provides additional support to redevelop the strategy and change the business components would

be important. Because whether the new strategy would stimulate the external demand or not is uncertain (The section 4-3-2). If the strategy would not stimulate the external demand, then enterprise needs to go through another process of receiving feedback and establishing the strategy, as some enterprise have been going through (The section 4-3-2). Providing additional knowledge is also a way to support these enterprise owners, since there has already been a successful case on following the advice of consultants and established the strategy to stimulate the external demand (The section 4-3-1, the case of Seafood Processing Y). Author thinks that government and enterprise need to have spare finance for providing additional support to enterprises for establishing the strategy to stimulate the external demand. The author also thinks these enterprises being able to establish the strategy for stimulating the external demand as they have expected, would be the key for changing the depopulation and socioeconomic decline trend of the society.

This research also demonstrated the process of increasing the debt through the recovery process (Section 4-4-3). Author argued that this is the core problem of enterprise recovery from the disaster. Also author thinks there is no quick solution for this problem. Establish the strategy to stimulate the external demands and increasing the production capacity to respond to the demand increase may take time but may be the

way that the disaster affected society needs to take.

6. Conclusion

This research analyzed the enterprise disaster recovery from the view point of development of the society to change the depopulation and socioeconomic decline trends. First, this research demonstrated the consequence of different decisions on how and where enterprises resume their work-places. Then, the author summarized both positive and negative impact of governmental decision on allowing the enterprises to resume their work-places in disaster affected area, before the completion of temporary work-place provided by government. The positive impacts on the society were, by restarting the business in the early stage of recovery, enterprise could replace the import and increased the net income and employment. The negative impact was the government ended up covering the cost of relocating the work-place accordingly to the post-disaster urban planning.

Second, the author demonstrated how the disaster affected the enterprises which were trying to solve the original problem of population decrease and socioeconomic decline by increasing the external demands and create cash-inflow. Enterprises were categorized into two types; one which already have established their strategy to increase the external demand before the disaster, and another which have been adjusting and establishing their strategy to increase the external demand. Then the

author stated his opinion on how government needs to support them differently. For the enterprises which have already established their strategy to increase the external demand, supporting them with the adequate finance and land would increase the net income and employments in the society. For the enterprises which have been going through the process of receiving the feedback from the market and redeveloping their strategy for increasing the external demand, additional financial and personnel support may be required. The reason is the whether the new strategy would increase the external demand or not is uncertain. Therefore, government and enterprises need to have spare finance for supporting those enterprises in the future. The author considered these enterprises being able to establish the strategy to increase the external demand as they have been expected, would be the key for changing the depopulation and socioeconomic decline trend of the society.

At last, the author demonstrated how the debt of disaster-affected enterprises increased through the disaster recovery process. But this research could not cover how enterprises respond to the issue of increased debt and the consequence after.

For the future research, the author thinks it is important to continuously monitor these enterprises for two reasons. One, how relocation of enterprises work-places in disaster affected area would be taken place and how it affect the

enterprises and society needs to be analyzed. Second, the author thinks the issue of increased debt through the disaster recovery process is the main issue of enterprise disaster recovery and how enterprises and government respond to this issue also needs to be analyzed.

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8. Appendix

Sample of the Interview Content in the case of Enterprise K

<Tsunami Damage>

Enterprise K received Tsunami damage in March 2011. After the earthquake, owner went back to home. Just before owner left home with car, Tsunami had drawn the car. Owner broke the rear window of the car and swam to the surface. Fortunately, owner was able to climb up the building. Owner was rescued after the level of water decreased. Owner said, "I was just fortune". All the employees of Enterprise could survive the Tsunami damage. But one employee lost his wife. Enterprise factory was damaged severely but the framework remained. But two shops received only small damage. The high of the flood was about 80 cm, when it reached two shops. Owner said "We have our employees and shop, so we need to fight back." (Interviewed in July 2011)

<Life after the Tsunami>

Owner started live in the relatives home since the Tsunami completely swiped away the home. No electricity and gas were available, so oil heater was used instead. Owner said "Just cleaning my body with hot wet towel made me feel so satisfied." In the super market, owner had to wait in the line for more than two hours. Because of black out, the products were placed outside. During the black out, they get electricity back, owner and relative family finished eating dinner by 7 pm and went to bed soon after.

Three days after the Tsunami, owner visited the coastal area where home and factory were located. There were bricks everywhere and ambulance and cars were flipped. There were small path wide enough for just one person. In the place where owner's home was located, there were nothing which belong to the owner. There were dish washer at some distance away, and dishes which owners used in the morning of 3.11 were placed inside. Owner could find a truck which was parked at behind home, but light truck and passenger car were completely gone. Then owner moved to see the factory. 1st floor was completely gone, and second floor were filled with mud. (Interviewed in July 2011)

<Encouragement>

Owner said "We received lots of encouragement from family, friends and consumers." After the disaster, owner's brother drove 17 hours to see the owner. Owner said, "When we see each other for the first time after the Tsunami, we cried and cheered at same time." Soon after, the older brother visited owner with a car for the owner to use.

Also after the telephone lines were recovered, owner received many calls from friends and customer. There were some customer visited owner's shop from outside disaster affected area and

send the food and goods. Owner said “I wanted to return their encouragement by restarting business, but in order for us to produce own brand product, we need factory.” (Interviewed in July 2011)

<Uncertainty>

Owner said, “I am not really sure, whether we should repair our factory or not.” Local government ordered local people to not to build the new buildings in disaster affected area, because the post-disaster urban planning has not been determined. To repair was allowed but even owner repair the factory, there are some possibilities of being affected post-disaster urban planning and need to relocate the factory. Owner considered to borrow the temporary factory provided by government, but then owner needed to pay for the waste water treatment plant for the temporary factory. Owner said, “Our finance is limited, so it is very important how to use them.” (Interviewed in September 2011)

<Fish won't wait>

Owner said, “We need to resume the factory before the salmon season, because if we can't make this year, we have to wait until next year to restart one of our main products. If we miss the opportunity to sell our products this year, it will hurt us next year.” Owner wanted to resume the work-place temporary even if it is very small. (Interviewed in September 2011)

<Factory Repair>

The owner made decision to repair the factory in September 2011. The owner did not have enough finance to repair all the parts of factory. Therefore, the owner made decision to repair some parts of factory, which would be enough to produce the Aramaki salmon. Aramaki salmon is one of the original brand products. In order to produce the Aramaki salmon, the owner needed to process the fresh fish. The post-disaster urban planning was undecided at that time, but the owner could not wait anymore. Owner said “We can afford to miss the salmon season.” Before financial support was approved, owner started to repair the factory. Soon after, owner received approval of financial support but since the financial support does not cover everything, owner had to borrow the money from the bank. (Interviewed in September 2011)

<Finish First Repair-Work>

The repair-work was finished in October 2011. The repair-work was delayed because the demand for the contraction work has been increased because of the disaster. Also the lack of building materials was the reason for the repair work to be delayed. Owner had to buy the equipment which was necessary for the seafood processing. Each equipment was costly so the owner had to buy the used equipment to less. The owner said, “There are many sea food processing enterprises which

were unable to restart their businesses.” (Interviewed in December 2011)

<Buying salmon>

The owner bought the salmon from November 9th to 25th. The amount of salmon was around 750. But soon after, the price of the salmon increased. Owner said “the amount of salmon catch in Hokkaido was very little and many buyers came into my town to buy the salmon.” Since the owner could not raise the price of the product anymore, owner waited for the price to go down.

After the owner bought salmon, the owner had to put extra work because the salmon was not separated in the fish market like it used to be. The owner started producing the Aramaki salmon in November 2011 and restarted selling the original brand products. The owner said, “We took extra care on the temperature management, since the refrigerating cabinet bought was old and there were leaks of the cold air. Therefore, the owner had to go to the factory and put rubber band on the spot. Us going to the factory at night was something we have been doing before the disaster, but putting the rubber band is something new. We have to put our effort and time into it, to produce the good products.” (Interviewed in December 2011)

<No more Salmon>

In the middle of December, 750 salmons the owner bought was processed and sold out. Usually, the owner sends the direct mail to the familiar consumers but since owner did not have enough own brand products, the owner decided not to send them. The owner said, “I didn’t want to miss the opportunity to sell the product in the end of the year. Because it is one of the time in the year which products can be sold well. At same time, I wanted to send our products to the consumer who supported us to restart.” (Interviewed in December 2011)

<Salmon price goes down>

In the end of December, the price of salmon went down. The owner continued to work through the last and first day of a year and started selling the products from January 2nd. The owner said, “our consumer were happy with the taste. I was told that our products are the best around here. Off course the favor of taste depends on people but it is nice to hear those feedbacks. At same time I received some negative feedback such as salmon was little smaller than before the disaster.” The owner had to use the different type of salmon as the owner could not buy the salmon during the December. Owner said, “Usually, we don’t buy the salmon in January. Because it is different type of salmon.” The amount of salmon the owner could buy was less than a year before. Owner said, “I am not sure this amount would be enough for one year.” (Interviewed in February 2012)

<Relocation of the factory>

The owner was told by the local government that they might have to relocate their factory due to the post-disaster urban planning. The government has been planning to put green belt which would be the wall against the ocean water. The owner could refuse to relocate the factory but since other buildings around the factory were completely wiped away, the owner agreed to relocate their factory. The costs of relocation would be covered by the local government. The problem is the relocation would be 2 or 3 years after, and what the owner would do until then. The owner repaired some part of the factory, and repair additional part or make best use of current factory would be another choice. But the financial support which the owner received has limitations which the finance needed to be spent before the end of fiscal year 2013. Therefore the owner had to choose whether to repair some additional part or not. And if the owner chose to repair additional part, the owner also needed to pay self-finance. Since the financial support is only covered 3/4 of the cost and 1/4 needed to be paid by oneself.

<Other original brand Product>

The owner restarted producing another original brand product. Since the factory is only partially repaired for the production of Aramaki salmon, the owner restarted production in the shop. But the owner could not buy the same ingredients; therefore the owner sold the product as different products by changing the product's name. Even though, some consumers were happy with the products. The owner said, "We could not produce our products in ordinary way but we received many positive feedbacks. I am satisfied with the results of our effort."