SUCCESSFUL TURNAROUND STRATEGIES

IN MATURED INDUSTRIES

ANALYSIS OF THE JAPANESE SHIPBUILDING INDUSTRY

by

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DECLARATION OF ORIGINALITY

I, Takahiro Hoshino, hereby declare that this research thesis is of my own original work, that all reference sources have been accurately reported and acknowledged, and that this document has not previously, in its entirety or in part, been submitted to any university to gain academic qualification.

Takahiro Hoshino September 2013

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ABSTRACT

In this research, the turnaround model named as "3R-ACAP" was proposed, which is applicable to the Japanese shipbuilding industry that has currently entered the largest recession period as ever. Shipbuilding is a cyclic industry having huge fluctuations and therefore, its "Ability to change" in response to the environment is essential. As Charles Darwin mentioned, "It is not the strongest of the species that survives, nor the most intelligent, but the one who are most responsive to change".

The 3R-ACAP model was developed by integrating the concept of ACAP (Absorptive Capacity) into the strategic 3R model in order to complement the missing part of the 3R model. The missing function is in fact the process of assimilating and utilizing information to create strategies. Although the "Ability to change" is recognized as an essential factor to survive, the process of how firms assimilate and utilize valuable information in order to change was not included in any of the turnaround models. And therefore the concept of ACAP was integrated into the 3R model. The 3R on the other hand, stands for three categories of strategies including "Retrenchment" for reductions in scope or size of organizations, "Reorganization" for any changes in management or organization", and "Realignment" for strategic changes for growth.

The keyword derived from the analysis of Shipbuilding Industry by the 3R-ACAP model is "Energy related moves" suggesting Japan the two major strategies to turnaround from the current crisis. That is at first, differentiation by further development of "Energy saving ships" for its recovery and second, diversification into other "Energy related" for its renewal.

The 3R-ACAP model also provided an important lesson from the Europeans that achieved turnaround from the oil crisis. At the time, Europeans utilized its advanced technologies not only for "Product" oriented moves but also for "Market" oriented moves while Japan utilized its advanced technologies only for "Product" oriented moves. As a result, Europeans succeeded to create competitive advantage in particular segments. What is recommended for current Japan is to create competitive advantages by combination of the two different types of moves that are not easily taken away by competitors. Shipyards could move into various other non-marine products by different combination of its key technologies.

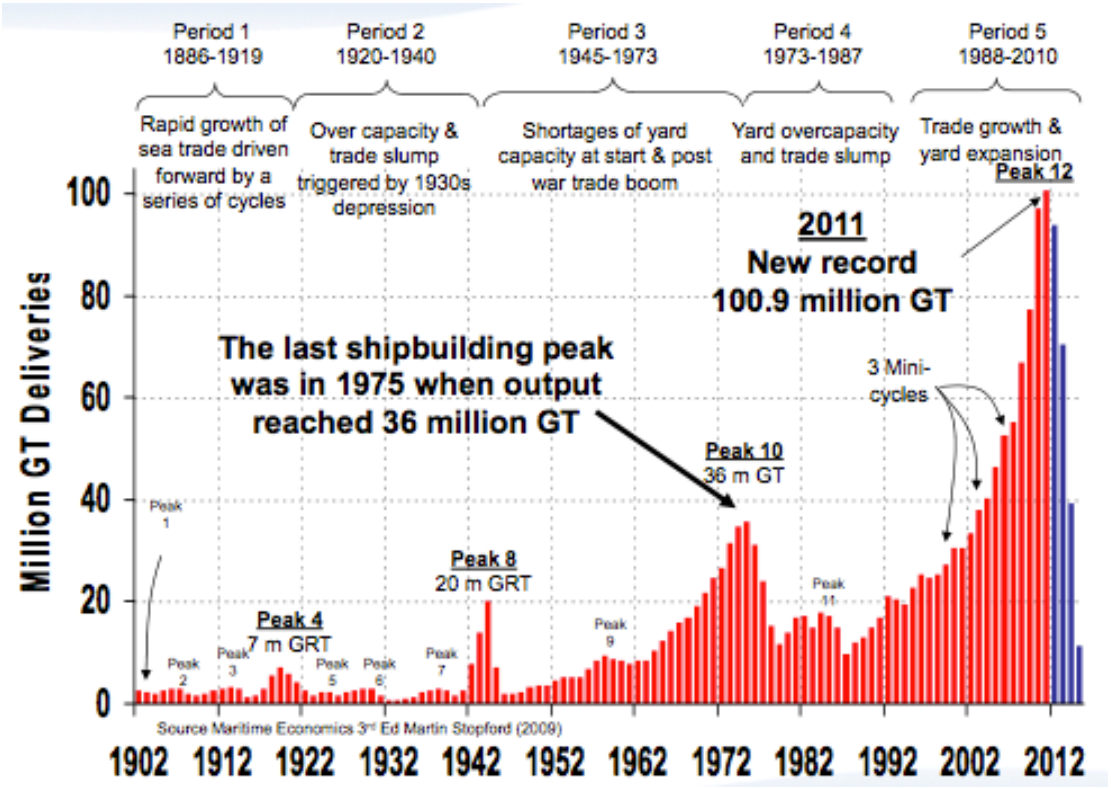
Keywords:
Turnaround, Shipbuilding, Retrenchment, Reorganization, Realignment, Absorptive Capacity, Energy, Differentiation, Diversification, Key technologies

Chapter 1 Introduction

The world's shipbuilding industry currently entered its largest recession period after it experienced the largest peak as ever. What triggered the recession was the world's economic crisis lead by the failure of Lehman Brothers in 2008. It caused sudden decline in various industries including the shipbuilding industry. Due to huge overcapacity in the world shipping fleet, new orders for shipyards suddenly dropped and a severe price competition among shipbuilders have started.

However, this was not in fact the first nor the second crisis in its history since shipbuilding is truly a cyclic industry having huge fluctuation of growth and decline as its nature. According to Dr. Martin Stopford the President of Clarkson Research, there were 12 peaks since 1902 including 4 major peaks that appeared in 35 years cycle. The four major peaks are the fourth peak in the 1910s, the eighth peak in the 1940s, the tenth peak in the 1970s, and the twelfth peak in the 2010s. The fourth and the eight peaks were both lead by wartime construction and ended with the end of the wars. The tenth peak was lead by growth of the world's economy by abundant energy sources and ended with the oil crisis in 1973 and 1979. And currently, the twelfth peak, which was the largest as ever, ended with the economic crisis in 2008. Rapid growth, which was lead by economic growth of developing countries have ended and the recession period have now started.

Table 1.1 - History of the world shipbuilding and its cycle



Source: SMM Advance Press Conference 23th May 2012 "World Shipbuilding"
Dr Martin Stopford, President, Clarkson Research

Problem identification

Major problem of the current world's shipbuilding industry is again its huge overcapacity caused by the gap between supply and demand. While demand from ship owners dropped sharply, building capacity of shipbuilders has not changed that much. Although many shipbuilders are surviving by consuming its order backlogs, which they served before the crisis, a long recession period and severe price competition have already started. Aim of this study is to find an applicable turnaround model for Japanese shipbuilding industry that provides shipyard managers a framework to manage the process of turnaround.

Although Japan stepped down to the world's No.3 in terms of Gross tonnage output, it is still in matured stage in terms of technological development. However, working in a matured industry often makes manager's mindset conservative because of successful past experiences. In spite of environmental changes occurred, managers tend to stick onto previous business models, which

gradually widen the gap between firm's activity and demand from the market. Changing routine is always a challenge for managers especially in a matured industry. The goal of this study is to provide a framework for managers to utilize its internal and external sources efficiently to assimilate valuable information from its changing environment and to utilize it to create turnaround strategies.

Research design and methodology

In chapter two, background of the shipbuilding industry is studied in order to acquire basic understanding of the industry. At first, the history of development by leading countries and the nature of shipbuilding are studied. And second, the major countries and players representing each country are studied.

In chapter three, literature surveys to create theoretical foundations of this research are conducted. It includes surveys of turnaround definitions, turnaround processes, and major turnaround models. Survey of major Absorptive Capacity (ACAP) models is also done, which is the most significant part of this research. Through the study of shipbuilding industry in chapter two, it is found that its "Ability to respond to change" is an essential ability for shipbuilders' survival. However, although importance of this ability was recognized by researchers, process of how firms assimilate and utilize valuable information to create strategies to respond with its environmental change are not included in any turnaround model. On the other hand, Zahra and George (2002) define ACAP as "Firm's ability to recognize value of information, assimilate it and apply it to commercial ends". And therefore, it is hypothesized that the concept of ACAP could complement the missing part of the turnaround models.

In chapter four, the original turnaround model named 3R-ACAP model is developed by integrating "Zahra and George's ACAP model" (2002) into "George A. Boyne's 3R turnaround model" (2006). Feasibility of the model is confirmed by examination of the three practical cases including turnaround of the U.S. copper industry, the British steel industry, and the Brazilian aircraft industry.

Chapter five includes examination of the shipbuilding industry in the 1970s oil crisis to confirm feasibility of the 3R-ACAP model in shipbuilding industry. Examination is done in both Japanese and European shipbuilding industry and the result of examination will become the conclusion of the entire research since the purpose of this research is to create an applicable turnaround model for Japanese shipbuilding industry.

In chapter six, analysis of the three Japanese shipbuilders in current crisis is done by using the 3R-ACAP model. Recommendations are also given by considering the result of studies in chapter five. And chapter seven includes the summary, conclusion for the whole research, and limitation of this study.

Chapter 2 Background of the Shipbuilding Industry

2-1 History

2-1-1 Development of The World's Shipbuilding and Leading Countries

As it is widely argued by researchers, shipbuilding industry is a cyclic industry having periodical upward and downward cycle. There had been in fact several fluctuations related to wars, economical events, crisis etc. in its history. And interestingly, leaders of the world shipbuilding shifted among countries following these cycles. Developing countries enter the market with low-cost strategy when market grows, and then take over previous leader's market share when market declines and overcapacity occurs. The world shipbuilding's history is a cyclic fluctuation followed by change of leaders.

What is noticeable here is that although leaders shifted among countries, former leaders are still surviving by changing its strategies. In this chapter, the history of world's shipbuilding will be studied by major development stages lead by different leaders.

Figure 2.1 - Worlds shipbuilding by leading countries

	~Mid 19C	Mid 19C ~WW2	WW2 ~1950s	1950s ~2000	2002 ~2010	2010 ~Current
China						
Korea						
Japan						
W.Europe						
UK						
USA						

Source: The Author's original

The book selected here to acquire fundamental knowledge of shipbuilding is "Changing Global Industry Leadership: The case of Shipbuilding" written by Dong Sung Cho and Michael E. Porter. The reason why this book was selected is that they describe facts in a neutral position, not viewing from a specific country, which is important to study the whole shipbuilding industry from a broad view.

Development of the world shipbuilding and shift of leaders

From the United States to the Great Britain

Until the mid nineteenth century, the United States was the leader of the world's shipbuilding dominating 90% of the commercial ship's market. At the time, ships were made of wood and U.S. had strong advantage due to abundant and cheap timber provided within the country.

However, in the early nineteenth century, two destructive technologies had emerged. One is the steam engine and the other is use of iron and steel as a new material for ship's hull. The steam engine was first applied to an American ship named "Clermont" in 1807 and became widely used by 1830s. The first iron ship named "Great Britain" was built in 1843. Application of these technologies started from the England's Navy ships in 1860s and gradually spread among the commercial shipbuilding and finally in 1914, 96.5 percent of the world's fleet had been replaced with steam ships and 90 percent became steel ships.

Demand for wartime construction contributed greatly to increase the worlds' vessel tonnage and thus shipbuilders increased its building capacity to deal with growing demand. However, when the World War One ended, they suddenly went into recession caused by the 1920s great depression and suffered with overcapacity of shipbuilders. The output between 1930 and 1933 dropped by 83% and many shipyards exit the market or halt construction. However, even in a crisis, England was able to maintain higher share than the U.S. since they had advanced background of industrialization and efficient facilities to produce low-cost and high-quality vessels. As a result, England became the new leader of the world's shipbuilding by taking up the U.S. position.

From the Great Britain to Western Europe

During the 1950s, global economy was recovering from damage of the World War II and most Western European countries except the United Kingdom was making effort to expand its fleet. The UK was still competitive by production efficiency and reliance of machineries at the beginning but gradually lost its share against Western Europe countries because of its high wage.

During this period, Western European countries had experienced rapid growth, took over the UK's position soon and captured 70 to 80 percent of the world's share. They had advantage in producing low-cost ships based on its low-wage and also they had highly advanced onboard machineries supplied within the region. At the same time, Japan started to grow rapidly because Japanese government implemented the "Keikaku Zosen", a government lead program to re-build its merchant fleet, which was almost completely destroyed by the end of the World War Two.

From Western Europe to Japan

Until the late 1950s, Japan rapidly expanded its share in the market. From 1955 through 1956, Japan's share grown from 15.6 percent to 26.2 percent and grown further.

According to Dong Sung Cho and Michael Porter (1986, Changing Global Industry Leadership: The Case of Shipbuilding, Competition in Global Industries), there had been mainly three factors contributed to the growth of Japan. First, the government lead "Keikaku Zozen" provided Japan's shipbuilders not only with stable job but also with advantage to lower its marginal costs. Second, nationalization of the Suez Canal in 1956 brought a boom for new orders. Japan succeeded to take huge amount of orders from customers looking for early delivery. Western European shipyards were in fact not able to take this opportunity since its order backlogs was already occupied for ships ordered during the Korean War boom through 1950 and 1951.

Third, series of financial subsidies by the government, such as the "Temporary measures pertaining to the reduction of cost in shipbuilding", and the "System link ship exports with imports of crude sugar" had been executed. Japanese shipbuilders utilized subsidies to modernize its production facilities and to develop innovating construction processes. "Block construction" method was one of the most innovative construction method contributed to lower its cost. Investment in production facilities later contributed to build larger ship, which was the new trend to transport cargos efficiently and during the 1960s, Japan built the world's largest tankers: "Nisho Maru" in 1962, "Tokyo Maru" in 1965, and "Idemitsu Maru" in 1966.

Until the early 1970s, low-price and abundant energy accelerated the industrialization of the world economy and Japan rapidly expanded its share by low-cost startegies. In 1965, Japan's market share rose to 41.4 percent and later in 1970, surpassed Europe and became the world's No.1. And thus, Western European countries started to change its products towards high-value added ships to avoid direct competition with Japan.

Energy crisis and the global recession

The energy crisis started in 1973 had a serious impact on triggering the shrinkage of world's shipbuilding. The output peaked in 1975 because of order backlogs and dropped by 60 percent through 1979. Overcapacity accelerated by the entry of South Korea made the situation worse for incumbents.

The two key issues to survive were to "Improve productivity" and to "Produce eco ships". The first issue was to lower production cost by improving productivity. Nowadays, shipbuilding is still considered as a labor-intensive industry but during this period, it was more labor intensive and many processes had been automated. The second issue was to produce "Eco ship" to reduce operation cost. By producing energy efficient engines etc., shipyards succeeded to reduce fuel consumption by 60 percent at the time.

According to Dong Sung Cho and Michael Porter (1986), the global recession lead by the energy crisis had three major impacts to the world shipbuilding. The first impact was decline of Western European shipbuilders. Its high labor cost and old production facilities were no more competitive. The second impact was growth of the Japanese shipbuilders. Its labor cost was already high but it was compensated by production efficiency.

In addition, they had advanced technologies to produce "Eco ships " with advanced fuel consumption, which could be sold at higher price. And thus, Japan maintained its position as the world's No.1. The third impact was entrance of South Korea as a low-cost leader. Although they initially did not have modern technology, Western European Shipyards contributed to provide them with technologies and as a result, they rapidly grown and soon became the major competitor of Japan.

From Japan to South Korea

In the early 1970s, South Korea entered the market as a low-cost leader and then gradually took over other player's share just as Japan did in the 1950s. Korean government considered shipbuilding industry as an important industry to its economic growth and support the industry with many programs. They focused on the export market from its beginning to accumulate foreign currency and experienced a rapid growth in 1980s. In the middle of 1990s, its world share increased jumped up to 25 percent and in 2002 it surpassed Japan and became the world's No.1. At the same time, growth of Chinese shipyards started following its economic growth.

Economic crisis and the global recession

The economic crisis in 2008 is seriously affecting the world shipbuilding currently. Due to sudden decline in world's economy, decline in sea transport occurred, and due to overcapacity in world's fleet and decline in sea freight, ship owners stopped placing new orders and/or canceled its orders. What made the overcapacity serous is mainly China's massive investment to double its building capacity before the crisis.

From South Korea to China

China experienced a rapid growth increasing its market share and surpassed Japan in 2002, surpassed South Korea in 2009 and now has become the world's No.1 in terms of gross tonnage output.

2-1-2 Nature of The Shipbuilding Industry

Four major characters to define the nature of shipbuilding industry were identified through the study of shipbuilding's history. At first, it was found that change is essential to secure its position in global competitions. And second, there are cyclical fluctuations and shift of leaders occurs following the cycles. And third, supply by shipyards are inelastic and therefore, market price is highly volatile. And fourth, shipbuilding is an industry, which is heavily affected by change of currency rate often caused by political issues.

An important lesson here is that "Ability to adopt itself to changing environment" is essential for shipbuilders to survive. As Charles Darwin mentioned, ***"It's not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change"***. Ability to respond to change is essential not only for animals but also for shipbuilders.

Change is essential to secure its position in global competitions

Although it has improved in many aspects, shipbuilding is still a labor intensive industry compared with other industries such as automobiles and consumer electric products. Incumbents are often challenged by developing countries having low cost advantage and therefore strategic changes are always required for incumbents to secure its position in global competitions.

As shown in Table 2.1, numbers of previous leaders are surviving by changing strategies mainly by moving toward more sophisticated ships.

Table 2.1 - Global strategies & position of shipbuilding countries

	Europe	Japan	South Korea	China
1945-1955	Low cost leader			
1955-1975	Specialization	Low cost leader		
1975-1985	Specialization	Differentiation	Low cost leader	
1985-1995	Specialization	Differentiation	Low cost leader & Segmentation	
1995-2005	Specialization	Low cost	Low cost leader & Ambidexterity	Low cost leader
2005-2010	Specialization	Low cost & Differentiation	Ambidexterity	Low cost leader
Current	Specialization	Differentiation	Ambidexterity	Low cost leader
Specialization (or segmentation) (niche market) strategy is used in specialized markets in which firms gain more advantage through innovation rather than efficiency				
Differentiation strategy aims for a broad market in which customers are willing to pay a premium for the brand or technology				
Low cost strategy aims for standardized mass products with large economies of scale				
Ambidexterity strategy combines both differentiation and low cost strategy to have efficient products for current customers and innovate to serve future customers				

Source: Modified chart by the Author based on Sung Cho Don and Michael Porter's chart in "Changing global industry leadership: the case of shipbuilding"

Cyclical fluctuation and shift of leaders

As already mentioned by numbers of researchers, shipbuilding is a cyclic industry having major fluctuation within approximately 35 years. If we look back into the history, there had been four major peaks. The first and the second peak was lead by the wartime constructions, the third peak was lead by the world's industrialization by abundant energy resources, and the fourth peak was lead by the growth of world economy especially in developing countries.

After the four peaks, leaders of the world's shipbuilding industry shifted among countries in the recession period. This is why market entry by developing countries is especially strong when market is in growth stage. And later when recession period starts, developing countries increases its share by taking

previous leader's share. In a recession period, developing countries with lo wage but low technology has advantage in taking low-end users from the market, which consists the large portion of the market.

Inelastic supply and highly volatile price

Shipbuilding is a long-term project requiring years of time, huge production facilities, material to build, manpower, and financial resources and usually takes three to five years from order to delivery of ships. Ship owners therefore rush to take the earliest slots when market booms. However, shipyards are not able to increase its capacity immediately to respond to steep increase and therefore, price of ships jumps up even to double.

What happens in an opposite case is that shipyards are not able to reduce its capacity immediately to sudden decrease and therefore, price of ships drops even to half. Due to inelastic supply of ships, price of ships are therefore highly volatile and widely fluctuated by the balance of demand and supply.

Political issues affecting currency rate

Shipbuilding is an export-oriented business and therefore change in currency rate by political issues and economical events has a significant impact to determine the net value of ships. Although currency rate is not a manageable factor by shipyards, shipyards sometimes utilize forward-exchange contract with banks according to its forecast to minimize the risk of loss.

2-2 Major Players in The World

Leader of the world shipbuilding industry have changed several times since the middle of the nineteenth century when the United States was the leader. The major players in the world as of today are Japan, South Korea and China, which dominate the world shipbuilding market of 18.3 percent, 32.9 percent, and 40.9 percent. In this section, the three countries will be introduced in order to acquire basic knowledge of the major players. In addition to the three countries, Europeans, which was previously the leader of world shipbuilding are to be

introduced. Europeans are in fact having relatively small share in terms of tonnage output. However, they are still dominating particular segments in the market such as cruise ships and dredger boats.

Table 2.2 - World completions

Year / Country	2006			2007			2008			2009			2010			2011			2012		
	No.	'000GT	share(%)	No.	'000GT	share(%)	No.	'000GT	share(%)	No.	'000GT	share(%)	No.	'000GT	share(%)	No.	'000GT	share(%)	No.	'000GT	share(%)
Japan	534	18,176	34.9	543	17,525	30.6	562	18,656	27.6	576	18,972	24.6	580	20,218	21.0	593	19,367	19.0	586	17,428	18.3
S. Korea	377	18,717	35.9	430	20,593	35.9	520	26,379	39.0	524	28,849	37.4	526	31,698	32.9	572	35,850	35.2	472	31,383	32.9
China	493	7,665	14.7	661	10,553	18.4	861	13,956	20.6	1086	21,969	28.5	1413	36,437	37.8	1425	39,609	38.9	1436	38,924	40.9
Belgium	0	0	0.0	1	3	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Denmark	5	538	1.0	6	855	1.5	7	566	0.8	8	449	0.6	8	432	0.4	5	89	0.1	7	32	0.0
France	6	241	0.5	8	191	0.3	4	232	0.3	8	146	0.2	8	258	0.3	6	2	0.0	8	144	0.2
Germany	59	1,257	2.4	70	1,362	2.4	70	1,350	2.0	50	781	1.0	36	932	1.0	21	418	0.4	19	448	0.5
Greece	1	2	0.0	1	16	0.0	3	2	0.0	8	11	0.0	7	4	0.0	7	6	0.0	1	1	0.0
Italy	22	519	1.0	26	716	1.2	24	700	1.0	22	554	0.7	34	634	0.7	15	382	0.4	11	327	0.3
Netherlands	91	187	0.4	56	194	0.3	43	140	0.2	33	138	0.2	29	138	0.1	34	175	0.2	38	110	0.1
U.K.	4	3	0.0	3	1	0.0	6	2	0.0	6	1	0.0	8	1	0.0	1	0	0.0	4	4	0.0
Finland	4	227	0.4	4	288	0.5	5	308	0.5	3	304	0.4	2	225	0.2	1	48	0.0	6	74	0.1
Norway	16	24	0.0	17	60	0.1	18	71	0.1	15	44	0.1	12	21	0.0	12	13	0.0	23	42	0.0
Sweden	0	0	0.0	2	8	0.0	2	19	0.0	1	9	0.0	1	13	0.0	0	0	0.0	0	0	0.0
Spain	43	99	0.2	70	233	0.4	64	210	0.3	52	217	0.3	56	288	0.3	44	198	0.2	29	61	0.1
Portugal	5	15	0.0	5	28	0.0	2	16	0.0	6	26	0.0	1	9	0.0	2	1	0.0	2	2	0.0
Europe total	256	3,112	6.0	269	3,956	6.9	248	3,616	5.3	212	2,680	3.5	202	2,955	3.1	148	1,332	1.3	148	1,243	1.3
Brazil	11	30	0.1	16	31	0.1	24	48	0.1	25	77	0.1	21	47	0.0	32	102	0.1	25	218	0.2
Poland	57	838	1.6	60	587	1.0	63	672	1.0	60	360	0.5	52	167	0.2	37	103	0.1	40	99	0.1
Singapore	47	156	0.3	43	88	0.2	59	157	0.2	34	47	0.1	41	119	0.1	40	108	0.1	44	92	0.1
Taiwan	21	672	1.3	16	671	1.2	18	622	0.9	18	476	0.6	21	580	0.6	23	767	0.8	28	782	0.8
U.S.A.	58	283	0.5	66	162	0.3	109	165	0.2	99	292	0.4	76	238	0.2	59	122	0.1	63	138	0.1
India	18	54	0.1	31	143	0.3	25	84	0.1	41	79	0.1	37	109	0.1	42	204	0.2	12	200	0.2
Philippines	15	335	0.6	10	382	0.7	26	544	0.8	23	572	0.7	34	1,161	1.2	30	1,661	1.6	66	216	0.2
Romania	36	446	0.9	62	475	0.8	54	592	0.9	58	720	0.9	43	613	0.6	34	652	0.6	38	2,507	2.6
Turkey	74	320	0.6	112	560	1.0	132	710	1.0	127	515	0.7	94	364	0.4	87	359	0.4	45	440	0.5
Vietnam	43	123	0.2	38	228	0.4	69	235	0.3	92	351	0.5	132	560	0.6	103	659	0.6	60	190	0.2
Croatia	25	569	1.1	25	709	1.2	27	617	0.9	16	412	0.5	16	387	0.4	14	380	0.4	102	882	0.9
Others	382	623	1.2	400	656	1.1	445	636	0.9	563	700	0.9	460	781	0.8	431	570	0.6	490	529	0.6
Sub total	787	4,448	8.5	879	4,693	8.2	1,051	5,083	7.5	1,156	4,602	6.0	1,027	5,125	5.3	932	5,687	5.6	1,013	6,293	6.6
World Total	2,447	52,118	100.0	2,782	57,320	100.0	3,242	67,690	100.0	3,554	77,073	100.0	3,748	96,433	100.0	3,670	101,845	100.0	3,655	95,271	100.0

Source: Shipbuilding Statistics March 2013, The Shipbuilders' Association of Japan

Europe

Europeans are currently not listed in the top shipbuilding companies in the world. However, they are creating its competitive advantage in particular segments such as cruise ships by utilizing its highly advanced technologies and design skills. As for cruise ships, Europeans have been dominating this segment for nearly 40 years and currently has 98 percent share in this area. As for individual firms, Fincantieri (Italy) is the world's No.1 having 36.2 percent of the share. Meyer Werft (Germany) is the second with 32.5 percent and STX Europe (Finland/France) is the third with 25.7 percent. In addition to cruise ships, Europeans are active in offshore products and special purpose vessels. In these areas, Norway, Spain and Netherlands have 39 percent of the world's share as of 2009.

Fincantieri Cantieri Navali SpA

Fincantieri is an Italian shipyard founded in 1959 and is currently the largest shipyard in Europe. Its major product is cruise ship but they also have various

designs for commercial ships, offshore products and naval vessels including submarines. They are also active in ship repairs and conversion businesses. It currently has eight shipyards and has approximately 9,000 employees. (Cited from Fincantieri's web site)

Meyer Werft GmbH

Meyer Werft is a family owned German shipyard founded in 1795 in Papenburg at the time when ships were all made of wood. It started building iron ships with steam engines in 1872. Papenburg was a home of 20 shipyards but Meyer Werft was the only shipyard survived until the 21st century. During the two world wars, it concentrated on building shipping boats, pilot boats and lightships together with coastal passenger boats. And later in the 1960s, it started building gas tankers and Ro-Ro ferry ships. Meyer Werft is currently specialized in car and passenger ferries, Ro-Ro and passenger ships, gas tankers, livestock carriers and above all, luxurious cruise ships, which they are ranked in the worlds No.2. (Cited from Meyer Werft's web site)

STX Europe AS

STX Europe, which formerly named Aker Yards ASA is a subsidiary of the South Korean STX Corporation. It is an international shipbuilding group having specialized in production of cruise ships, ferries, offshore products and other special purpose ships. In addition to the nine shipyards belonging to STX OSV Holdings Limited, STX Europe has six shipyards including six shipyards in Finland, France, and Norway. STX Europe's principal shareholder is the South Korean STX Corporation, which has about 54,000 employees. STX Corporation is specialized in various businesses including shipping, trade, shipbuilding, machineries, plants, and energy. (Cited from STX Europe's web site)

Japan

Japan' shipbuilding industry experienced a rapid growth especially after the World War II and had dominated the market for decades as the world's No.1. Although Japan is gradually losing its share against South Korea and China since its emergence, Japan still rank in the world's No.3 as of 2013. In terms of Gross

tonnage output as of 2012, Mitsubishi Heavy Industry ranks in the world's fifth, Tsuneishi Zozsen is in the sixth, Oshima shipbuilding is in the seventh, and Imabari Zosen is in the ninth.

Mitsubishi Heavy Industries, Ltd.

Mitsubishi was founded in 1884 in Nagasaki. Mitsubishi currently has four shipyards including shipyards in Nagasaki, Kobe, Shimonoseki, and Yokohama. It has been producing various types of ships including cruise ships, LNG carriers, oil tankers, car carriers, battle ships, and submarines. It also has various group companies specialized in bank business, automobiles, atomic products, chemical products, power systems, and optical industry. (Cited from Mitsubishi's web site)

Tsuneishi Shipbuilding Co., Ltd.

Tsuneishi is a family owned company founded in 1917 and are specialized in bulk carriers segment. The shipbuilding division of Tsuneishi Group has four shipyards including Tsuneishi shipyard, Tadotsu shipyard, Cebu shipyard in Philippine, and Zhoushan shipyard in China. It has various designs of ships including bulk carriers, tankers, car carriers and wood chip carriers. (Cited from Tsuneishi's web site)

Oshima Shipbuilidng Co., Ltd.

Oshima is a shipbuilding company founded in 1973 by joint venture between Sumitomo Corporation, Sumitomo Heavy Industries, and the Daizo Corporation. It is specialized in building bulk carriers and has various designs in the segment. They are specialized in middle size bulk carriers such as handy-max and handy bulk carriers and have approximately 1,100 employees as of 2013. (Cited from Oshima's web site)

Imabari Shipbuilding Co., Ltd.

Imabari is a family owned company founded in 1942 and are specialized not only in new shipbuilding but also in repair of various type of ships. The Imabari group has eight shipyards concentrated in the Seto Inland Sea area

and are producing approximately 90 ships per year and has delivered more than 2,000 ships until today. (Cited from Imabari's web site)

Korea

In Korea, there are several group companies specialized not only in shipbuilding but also in other marine or non-marine products. The four largest Korean shipbuilders are Hyundai Heavy Industries, Daewoo Shipbuilding, Samsung Heavy Industry, and STX Shipbuilding. In terms of output by Gross tonnage, Hyundai, Daewoo, and Samsung dominates the worlds top 3 as of 2012.

Hyundai Heavy Industries (HHI)

HHI Shipbuilding division is the world's number one shipbuilder having 15% share of the market. HHI is producing various types of ships including three major types that are tankers, bulk carriers and container vessels. Since its foundation in 1972 it has expanded building facilities and currently has ten large drydocks including nine drydocks equipped with "Goliath Cranes" with huge lifting capacity. It has delivered more than 1,800 ships as of 2013 since its foundation in 1972. (Cited from HHI's web site)

Daewoo Shipbuilding & Marine Engineering (DSME)

DSME is the world's second largest shipbuilder with around 6 percent of the world's share. Since its foundation in 1973 at Okpo Bay, Georje Island, it has expanded building facility rapidly until 1981. DSME is currently building various types of ships including LNG carriers, LPG carriers, container vessels, crude oil carriers, ore bulk carriers, and car carriers. DSME is especially specialized in LNG carriers market, which accounts over one-third of the world's fleet. (Cited from DSME's web site)

Samsung Heavy Industries (SHI)

SHI is the world's third largest shipbuilder established in 1974. SHI delivered more than 800 ships as of June 2012 and has various types of ships including tankers, container vessels, bulk carriers, and LNG carriers. It also has a separate division of various offshore products including FPSO / FSO / FDS and

drill ships. SHI currently has world's No.1 share in drill ships, ultra large container ships, LNG carriers and FPSOs. (Cited from SHI's web site)

STX Shipbuilding (STX)

STX is the fourth largest shipbuilder in the world founded in 1967 as "Dongyang shipbuilding" at its beginning. It has various ship designs including LNG carriers, LPG carriers, container ships, tankers, ore bulk carriers, and car carriers. STX is currently reinforcing its offshore businesses including FPSO, drill ships, semi submersible rigs and LNG floaters. STX shipbuilding is a part of the large STX group. (Cited from STX's web site)

China

Shipyards in China could be divided into two groups that are China Shipbuilding Industry Corporation (CSIC) and China State Shipbuilding Corporation (CSSC). Both are state owned shipbuilding enterprises dominating the Chinese market. By individual shipyards, Dalian Shipbuilding Industry, Jiangnan Changxing, and Jiangsu Rongsheng ranks within the world top ten by tonnage outputs.

China Shipbuilding Industry Corporation (CSIC)

CSIC is one of the China's largest shipbuilding and ship repairing groups established in 1999. CSIC consists of several shipyards and institutes of former China State Shipbuilding Corporation. The group currently has seven shipyards having building capacity of five million DWT per year. It has capability not only to build products for commercial use but also for military use and are building naval ships. Although its main product is tanker it also has capability to build container ships, bulk carriers, and Ro-Ro vessels. CSIC is currently reinforcing its offshore engineering sector including FPSO and drilling platforms. (Cited from CSIC's web site)

China State Shipbuilding Corporation (CSSC)

CSSC is a state owned company established in 1999. Its main business is shipbuilding including ships for Chinese Navy. In 2005 it ranked the world's number five and in 2010 it ranked at number three. Although it's main product

is bulk carrier and tanker, it also has capability to build LNG carriers, Ro-Ro ships, container ships. CSSC is reinforcing offshore businesses as well as CSIC (Cited from CSSC's web site)

Chapter 3 Literature Review

In order to create theoretical foundation to develop an original turnaround model, literature reviews on previous researches are conducted. Literature review was initially planned in three areas including “Definition of turnaround”, “Process of turnaround”, and “Major turnaround models”.

However, during the process of research, it was found that one of the most important functions required for turnaround of the shipbuilding industry was missing. The process of how firm’s ability works to recognize external changes and how it affects creation of turnaround strategies was not shown in any turnaround model. And therefore, in order to complement the missing function of the turnaround models, Absorptive Capacity (ACAP) was added for the fourth research area.

3-1 Turnaround Process and models

3-1-1 Definition and Process of Turnaround

Definition of turnaround by Stanley J. Goodman is broad. According to his definition, turnaround could be applied to many other things besides company’s performance even for sports and diseases. An important point here is that turnaround is an improvement in performance “After decline” since improvement in performance without decline is just normal growth.

> ***“A turnaround is to produce a noticeable and endurable improvement in performance, to turnaround the trend of results from down to up, from not good enough to clearly better, from underachieving to acceptable, from losing to winning.” (Stanley J. Goodman, 1982, “How to manage a turnaround” New York, NY. Free Press.)***

Some researchers on the other hand, pointed out that the definitions by Goodman are not measureable since there are no clear indicators to recognize

"Noticeable improvement", "Endurable improvement" and "Clearly better". In such circumstances, later study by Pearce and Robbins (1992) provided a extended definition providing indicators. They added a new definition of turnaround as increasing ROI and ROS for at least continuous 2 years.

According to Pearce and Robbins…

> ***Subsequent to the decline, turnaround firms achieved the followings: (1) at least two consecutive years of absolute simultaneous increases in ROI and ROS, at a rate greater than the industry average over this 2-year period; and (2) a return to pre downturn (time 1) levels of ROI and ROS. (Pearce and Robbins, 1992, Turnaround: Retrenchment and Recovery)***

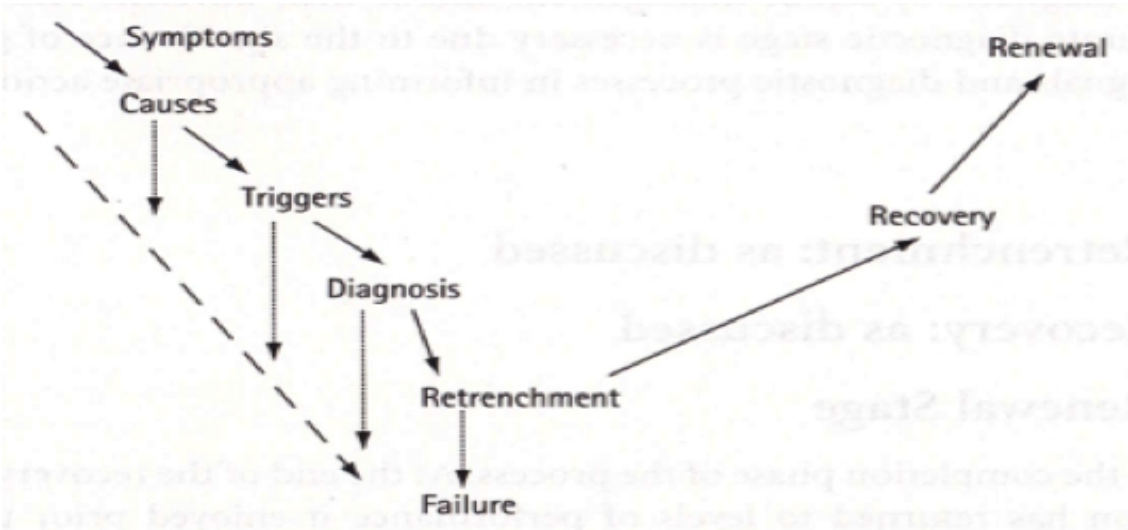
However, since ROI and ROS are probably not the only indicators to measure firm's performance, Goodman's broad definition of turnaround seems better to analyze various industrial turnarounds in this research. Since every industry could have different combination of indicators peculiar to its industry, measurement of turnaround by ROI and ROS are not applied in this research.

3-1-2 Process of Turnaround

Out of various researches on the process of turnaround, the model studied here is the "Six stage model" developed by Peter Mckiernan (Turnarounds, Peter Mckiernan, The Oxford Handbook of STRATEGY Chapter 27) because his model is an extended model based on pilot studies and widely covers the concept of previous researches.

According to Peter Mckiernan, process of corporate turnaround consists of six-stages, "Causes stage", "Triggers stage", "Diagnosis stage", "Retrenchment stage", "Recovery stage" and "Renewal stage". He explored the first three stages (Causes, Triggers and Diagnosis) and the last stage (Renewal), which is the most significant part of his model. In addition to the main two stages (Retrenchment and Recovery) that had been widely accepted, he added the four stages, which was developed by his research.

Figure 3.1 - Six stages of turnaround



Source: Turnarounds: Peter Mckiernan (The Oxford Handbook of STRATEGY)

Six stages

1. Causes stage

What firms have to do first is to identify the reason of decline. According to Peter Mckiernan, there are two types of causes that are Secondary cause and Primary cause. Secondary causes are surface problems and Primary causes are more fundamental relating to organizational problems.

2. Trigger stage

Something must happen to trigger the change. Peter Mckiernan mentions that mangers tend to hope the cause is external or decline is cyclical in its early stage. The timing of triggering is therefore important

3. Diagnostic stage

Firms have to diagnose the link between symptoms and the real causes. Peter Mckiernan points out that links are often complex and sometimes manipulated or window-dressed especially when firms are in trouble.

4. Retrenchment stage

Retrenchment is an initial response for firms in crisis to stabilize the firm's financial condition by reducing expenses, cutting costs, selling assets, and reducing debt etc.

5. Recovery stage

Recovery stage is the next stage that the firms face after they achieved successful retrenchment. Peter Mckiernan argues that there are two major strategies that are Efficiency strategies and Entrepreneurial strategies.

6. Renewal stage

Renewal is the completion of turnaround. However, according to Peter Mckiernan, it is not sufficient for good turnaround. To sustain its good performance, firms must acquire an ability to renew itself through continuous learning.

3-1-2 Major Turnaround Models

Out of various studies of conceptual turnaround models, three turnaround models are chosen here in order to acquire fundamental knowledge of turnaround models that is essential to create the original turnaround model.

The major reason for selecting these three models is that all of the three models are based on examining, updating or expanding the previous models and are representing studies in each era, the 1980s, the 1990s, and the 2000s. An important finding here is that these models are finally integrated into George A. Boyne's 3R model, which is the latest model, which is widely supported in current studies.

Turnaround Model One (1/3)
Hambrick and Schecter's Turnaround Model (1983)
"Turnaround Strategies for Mature Industrial-Product Business Units' "

Hambrick and Schecter developed their original turnaround model through study on three pilot researches by Schendel et at. (1975), Hofer (1980), and Bibeault (1982). They updated the previous model by examining their hypothesis by statistical data analysis in matured industries.

As a result of regression analysis of strategic moves and change on ROI, Hambrick and Schecter found that ***"Short-run turnaround success among mature businesses would be associated primarily with improved efficiency and retrenchment, rather than with product/market initiatives" (Hambrick and Schecter, 1983)***

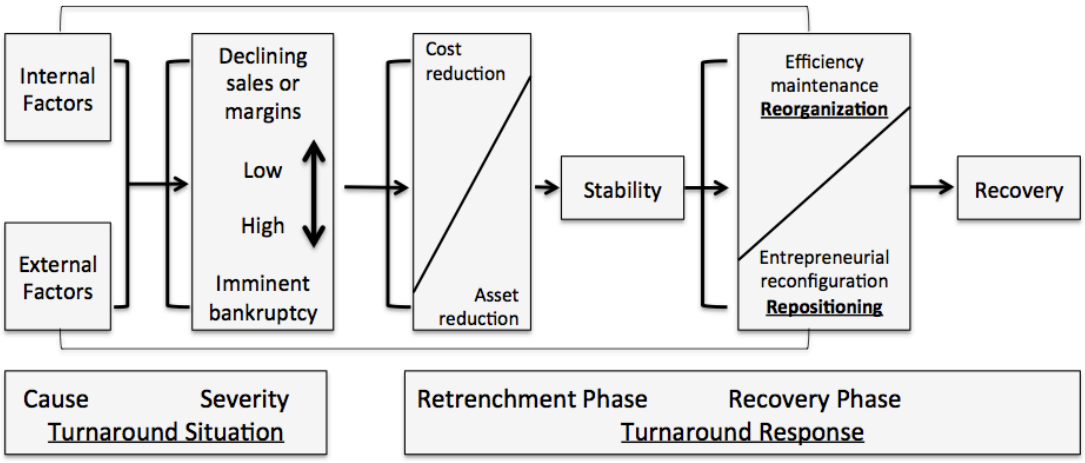
In other words, it was efficiency oriented moves, but not entrepreneurial initiatives that was associated with successful turnaround. Furthermore, they found three generic types of turnarounds that are Asset/Cost Surgery, Selective Product/Market Pruning, and Piecemeal moves. They argue that choices among these strategies are related with characteristics of the business.

Hambrick and Schecter also mention that, Asset/Cost surgery was pursued primarily by business with low levels of capacity utilization; Selective Product/Market Pruning was undertaken primarily by businesses with high levels of capacity utilization; and Piecemeal strategy was followed primarily by business with high market share.

Turnaround Model Two (2/3)
Pearce and Robbins' model (1993)
"Toward Improved Theory and Research on Business Turnaround"

The turnaround model developed by Pearce and Robbins shows the inter-relationship between causes and severity for the turnaround situation, and between retrenchment and recovery stages of the turnaround response.

Figure 3.2 - Turnaround Model by Peace and Robbins



Source: Turnaround Process Model by Pearce and Robbins (Toward improved Theory and Research on Business Turnaround, 1993)

According to Pearce and Robbins, turnaround situations exist when firms have years of financial decline. Causes of decline are combination of external and internal factors. Severity level shows the immediacy of the result whether firms are going to bankruptcy or decline in sales. There are also two stages of turnaround responses to the crisis that are "Retrenchment" and "Recovery". Retrenchment consists of a combination of cost cutting and asset reduction to stabilize the crisis and recovery consists of efficiency maintenance and entrepreneurial reconfiguration.

Furthermore, Pearce and Robbins mention that "***The primary causes of the turnaround situation have been associated with the second phase of the turnaround process".*** It means firms declined primarily by external problems could turnaround by entrepreneurial strategies while firms declined primarily by internal problems could turnaround by efficiency improvement moves.

Turnaround Model Three (3/3)

George A. Boyne's Turnaround Model (2006) "Strategies for Public Service Turnaround - Lessons from the Private Sector?"

George A. Boyne defined three major generic strategies for turnaround that are "Retrenchment", "Reorganization", and "Repositioning".

Retrenchment

According to George A. Boyne, ***"Retrenchment consists of reduction in the scope or size of an organization"*** and it is often taken in early stages of turnarounds. Boyne argues that there are two major arguments by researchers in terms of definition. One is to consider retrenchment as an initial step for turnaround while other consider it as an individual step separated from others. Boyne supports the later one since he found no empirical evidence showing the effect to the other two strategies.

Reorganization

Boyne says "***Reorganization is a broad description of any change in the internal management or organization"***. Purpose of reorganization is to support strategies of retrenchment or repositioning. It involves change in planning systems, the extent of decentralization, styles of human resources management, or organizational culture.

Repositioning

Boyne also mention that ***"Retrenchment can be viewed as an efficiency strategy while repositioning is an entrepreneurial strategy that emphasizes growth and innovation"***. The purpose of repositioning is to become more dominant in existing market or to diversify into new markets or products.

3-2 Absorptive Capacity (ACAP) Models

As mentioned at the beginning of this chapter, study of ACAP models was not initially planned for this research. However, during the research on turnaround models, it was found that an important function, which is essential for shipbuilder's survival was missing. Although its "Ability to change" is essential for shipbuilder's survival, the process of how firms recognize external changes

and how firms assimilate and utilize valuable information to create strategies was not included in any of the turnaround models.

It was also argued by George A. Boyne that ***"A performance in decline in private organizations is usually attributed to a lack of fit between an organization and its environment".*** However, the process of how firms realize the "lack of fit" are not shown in any of the turnaround models. And therefore, in order to complement the missing function of the turnaround model, study on ACAP was added to this research.

3-2-1 Definition of ACAP and Major Models

Definition of Absorptive Capacity (ACAP)

Definition of Absorptive Capacity (ACAP) by Cohen and Levinthal is ***"An ability of a firm to recognize the value of new, external information, assimilate it and apply it to commercial end, which is critical to its innovative capabilities".***

Major ACAP models

There are various studies on ACAP models and out of those, two basic models plus one additional model are chosen here to acquire fundamental knowledge of ACAP. The two basic models are at first, Cohen and Levinthal's ACAP model, which is the very basic model in the early stage of ACAP research. And the second ACAP model is Zahra and George's model, which is an extended model based on Cohen and Levinthal's model. The third model by Mark Easterby-Smith, Manuel Graca, Elena Antonacopoulou and Jason Ferdinand is an extended model of Zahra and George's model developed by empirical examinations.

ACAP Model One (1/3)
Cohen and Levinthal's ACAP model (1990) "Absorptive Capacity:
A New Perspective on Learning and Innovation"

Definition of ACAP by Cohen and Levinthal (1990) is ***"An ability of firms to recognize the value of new, external information, assimilate it, and apply it to commercial ends"***. They mention that there are two levels of ACAP, which is ACAP at "Individual level" and "Organizational level". They also mention that firm's ACAP relies on its prior related knowledge and therefore development of ACAP is associated with R&D investments.

ACAP at individual level

Cohen and Levinthal (1990) say there are two types of individual capacity related to individual ACAP that are "Learning Capacity" and "Problem Solving Capacity". And these two individual capacities are playing an important role to cumulate knowledge. They also emphasize the importance of diversity of prior knowledge because learning background increases incoming information.

ACAP at organizational level

Cohen and Levinthal (1990) also say organizational ACAP is not simply the sum of the ACAP at individual level because the organization's ability to exploit it affects the sum. What they focused on is the structure of communication between the external environment and the organization, which they call cross-functional ACAP. For example, in order to assimilate new technologies into firms, firms need an internal staff who knows about technologies, organizational routines, and procedures capabilities, which is an cross-functional ability.

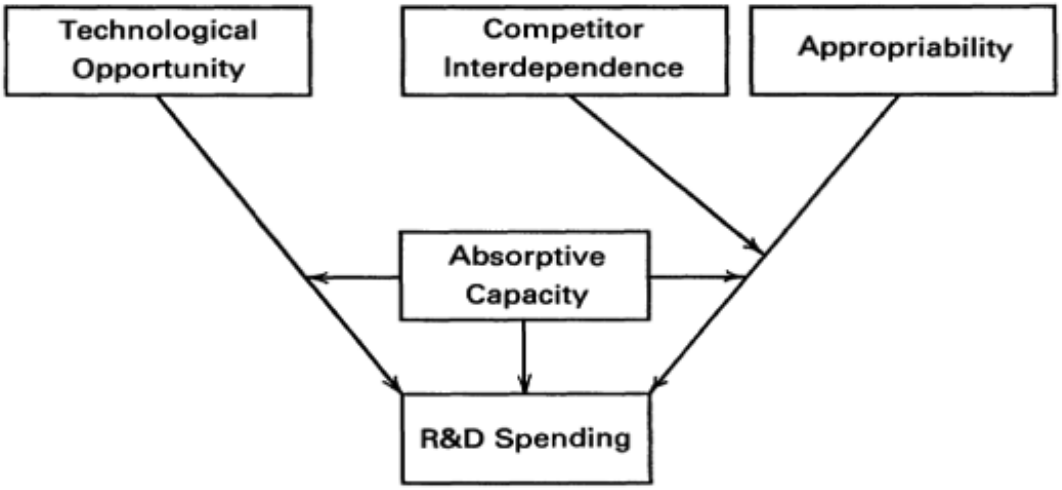
Path dependence and ACAP

According to Cohen and Levinthal (1990), ***"Accumulating ACAP in one period will permit its more efficient accumulation in the next. By having already developed some ACAP in a particular area, a firm may more readily accumulate what additional knowledge it needs in the subsequent periods in order to exploit any critical external knowledge that may become available (Cohen and Levinthal, 1990)"*** and this is what they call "Path dependence". For example, if firms cease investment in R&D in one field, it will get harder to assimilate valuable information from the same field in the future.

ACAP and R&D investment

Cohen and Levinthal (1990) emphasize the importance of continuous investment in R&D since it contributes to develop firm's ACAP. According to them, ***"Technical change within the industry is often closely related to firm's ongoing R&D activity, a firm's ability to exploit external knowledge is often generated as a byproduct of its R&D".***

Figure 3.3 - Model of Absorptive capacity and R&D incentives



Source: Cohen and Levinthal's ACAP model (Absorptive Capacity: A New Perspective on Learning and Innovation, 1990)

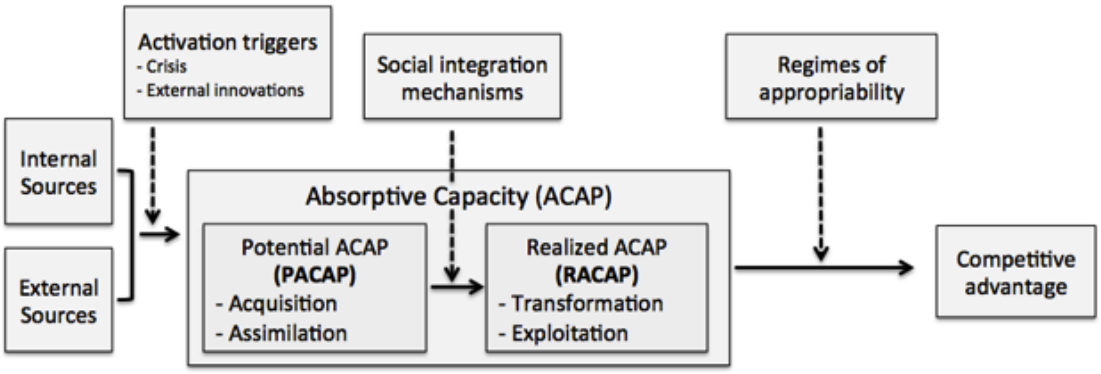
The ACAP model developed by Cohen and Levinthal's shows the role of ACAP affecting R&D spending. According to them, determinants affecting R&D spending are "Technological Opportunity" and "Appropriability" depending on firm's "Competitor Interdependence".

ACAP Model Two (2/3)
Zahra and George's Model (2002) "Absorptive Capacity: A Review, Reconceptualization, and Extension"

While Cohen and Levinthal only mentioned investments in R&D to develop ACAP, other researchers including Zahra and George explored many other fields that could develop organizational ACAP.

Definition of ACAP amended by Zahra and George's is ***"A set of organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability".*** (Zahra and George, 2002)

Figure 3.4 - A Model of ACAP by Zahra and George



Source: Zahra and George's ACAP Model (Absorptive Capacity: A Review, Reconceptualization, and Extension, 2002)

Figure 3.4 shows the process of how firms utilize its sources to "Acquire" and "Assimilate" valuable information from its sources and to how they "Transform" and "Exploit" it to create competitive advantages. According to Zahra and George, there are two type of ACAP by different capabilities that are "Potential ACAP (PACAP)" and "Realized ACAP (RACAP)". PACAP comprises knowledge acquisition and assimilation while RACAP comprises knowledge transformation and exploitation.

Definition of the four complementary capabilities by Zahra and George are as follows.

Four complementary capabilities

1. Acquisition capability

Acquisition capability is firm's capability to identify and acquire externally generated knowledge that is critical to its operations.

2. Assimilation capability

Assimilation capability is firm's routines and processes that allow it to analyze, process, interpret, and understand the information obtained from external sources.

3. Transformation capability

Transformation capability is firm's capability to develop and refine the routines that facilitate combining existing knowledge and he newly acquired and assimilated knowledge.

4. Exploitation

Exploitation is an organizational capability to incorporate acquired and transformed knowledge into its operations.

Other five factors in Zahra and George's ACAP model is as follows;

Five factors

1. External sources and knowledge complementarity

Firms acquire knowledge from various external sources and it has a significant influence to PACAP.

2. Experience

Firm's past experience has cumulativeness and it is influencing PACAP.

3. Activation triggers

Triggers are events that encourage firms to respond with. (Crises etc.)

4. Social integration mechanisms and the efficiency factor

Social integration mechanisms are to reduce the gap between PACAP and RACAP, which is an efficiency increasing factor.

5. Regimes of appropriatability

It is the institutional and industry dynamics that affect the firm's ability to protect the advantages of new products or processes.

3-2-2 Other Discussions on ACAP

In addition to the two major ACAP models studied above, another ACAP model including empirical examinations is chosen here because the two studies are both theoretical and have not included any practical examination to confirm the feasibility.

ACAP Model Three (3/3)
Mark Easterby-Smith, Manuel Graca, Elena Antonacopoulou and Jason Ferdinand's Model "Absorptive Capacity in Practice: An Empirical Examination of Zahra and George's Model"

While numbers of researches regarding ACAP focus on secondary data and literature surveys, Mark Easterby-Smith, Manuel Graca, Elena Antonacopoulou and Jason Ferdinand (later "The Authors") focused on empirical examination to confirm feasibility of the ACAP model. The Authors conducted an examination of three firms in order to confirm feasibility of the Zahra and George's ACAP model and developed an extended ACAP model.

Table 3.1 shows the five factors of ACAP in the three firms chosen by the Authors. As summarized in the Table, all factors comprising ACAP are identified and therefore feasibility of Zahra and George's ACAP model had been confirmed.

Table 3.1 - Five factors identified in the three cases

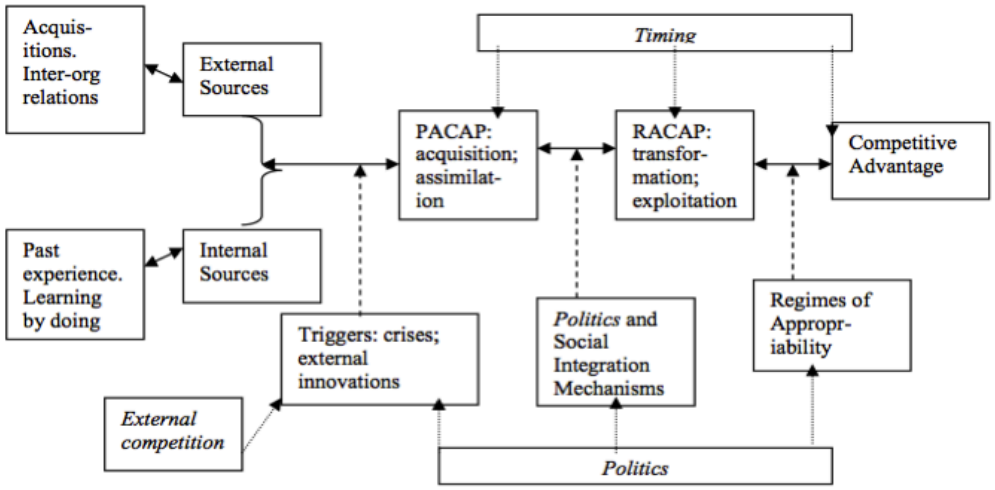
	Webco	**Healthco**	**Chemco**
External sources	External information obtained via the City contacts of the CEO (Early stage) External network created by takeovers of other IT companies (Later stage)	External network and knowledge accumulated through recruiting senior staff onto the top team	Deep network with the local community
Internal sources	Knowledge and experience cumulated to takeover other IT companies	Knowledge and experience shared through team meeting and cross	Experience of overcoming several major threats in its history

		organizational groups	Innovations in production processes
Activation triggers	Dot.com bust which people lost interest and confidence in market	Given low grade in 2002	Growing China substituting UK's production
Potential ACAP	Lack of HR because only a handful of employees came with the acquisition	Grading system od the Government giving better funding to high grade grades	JV company owned in China Dilemma between growth of Chinese JV company and threat to Parent company by product substitution
Realized ACAP	Changing purpose of acquisition from obtaining technical assets to organizational process to improve HR	Creating core competence by exerting control on relation with local media and shareholders	Response towards "Proactive management style" and continuous efforts to generate "Innovations in processes and products"
	Webco : Small but fast growing IT company located in Northern England Healthco : A Hospital Trust in a rural part of Northern England Chemco : A part of a multinational company located in Northern England		

Source: Identified by the Author in the study of "Absorptive Capacity in Practice: An Empirical Examination of Zahra and George's Model" written by Mark Easterby-Smith, Manuel Graca, Elena Antonacopoulou and Jason Ferdinand by using the ACAP model

In addition to confirm the feasibility of Zahra and George's ACAP model, the Authors developed modifications in following three points towards an emended and extended ACAP model.

Figure 3.5 - Amended and extended ACAP model



Source: ACAP Model by Mark Easterby-Smith, Manuel Graca, Elena Antonacopoulou and Jason Ferdinand

Modifications in three points

1. Timing and performance

Zahra and George in fact mention that timing is an important factor affecting ACAP but it was not really emphasized. However, the Authors found the apparent importance of time dimension and therefore added this function in its extended ACAP model.

2. Politics

The Authors mention that although political issues are not often featured in survey based researches, it should be included as one of the key issues influencing the potential of ACAP since in almost every interview held with managers and employees, political issues had been mentioned.

3. External competition

The original ACAP model of Zahra and George (2002) identified external innovation as a major trigger for ACAP. However, the Authors found from their case studies that the original definition is too narrow. Therefore in the extended model, they defined it as the external competitive factors instead of external innovations.

3-2-3 Necessity of ACAP For Turnaround

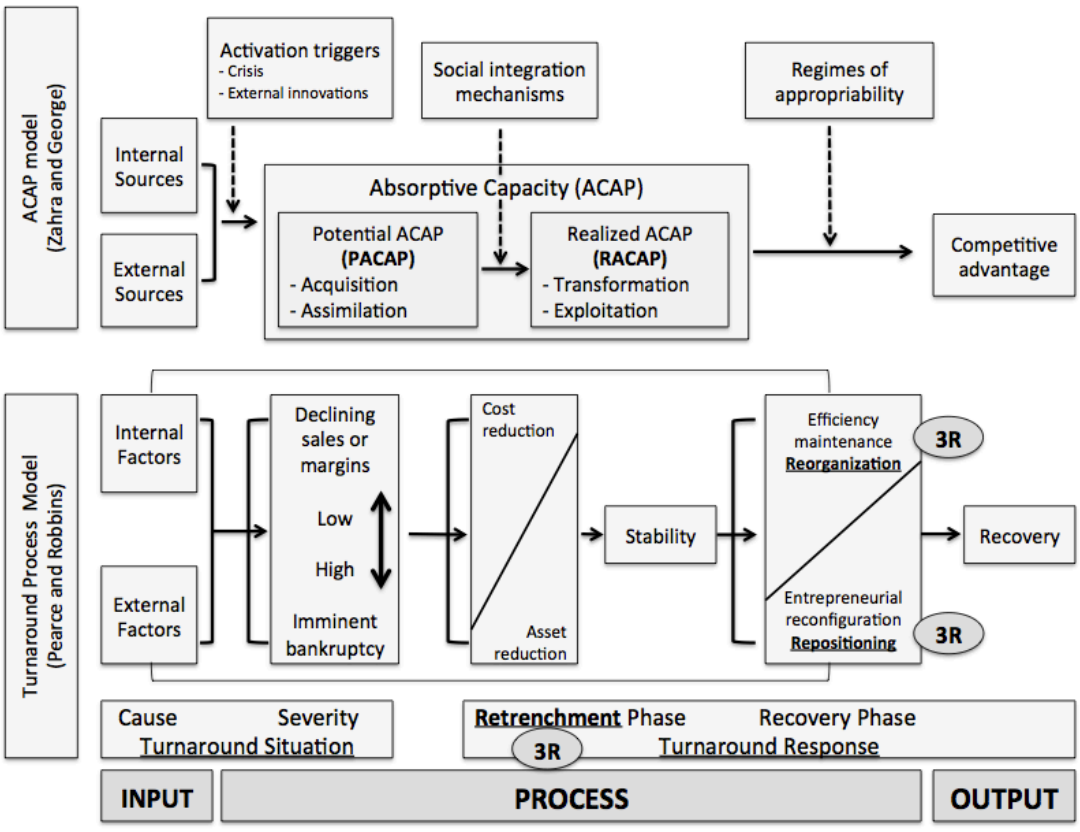
As it is already mentioned earlier in this chapter, necessity of integrating the concept of ACAP into the turnaround model is to complement the missing part of the turnaround model. It is argued by many researchers that turnaround is associated with firm's "Ability to change" itself in response to environmental change. However the process of how firm's ability works to recognize the environmental change and how they utilize information to create turnaround strategies are not shown in any model.

On the other hand, ACAP is defined as "Firm's ability to recognize value of information, assimilate it and apply it to commercial ends" (Zahra and George, 2002) and this is in fact the ability found missing in turnaround models. Thus, to complement the missing part of the turnaround models, it was considered that the concept of ACAP should be integrated into the turnaround model.

An interesting finding here is that structure of the two major models (The turnaround model by Pearce and Robbins and the ACAP model by Zahra & George) has similarity. The two models consist of mainly three components that are "Input", "Process" and "Output". For example, the turnaround model consists of Input (= Internal & External factors), Process (= Level of severity/Turnaround response), and Output (= Recovery).

In case of ACAP model, it consists of Input (= Internal & External sources) , Process (=ACAP), and Output (= Competitive Advantage). And therefore, since the two models have similar structures, it became more confident that the ACAP model could be integrated smoothly into the turnaround model.

Figure 3.6 - Structure of the two models (Input/process/output)



Source: Turnaround model by Pearce and Robbins (1993) and ACAP model by Zahra and George (2002)

Chapter 4
Integrated 3R-ACAP Model and examination by three industries

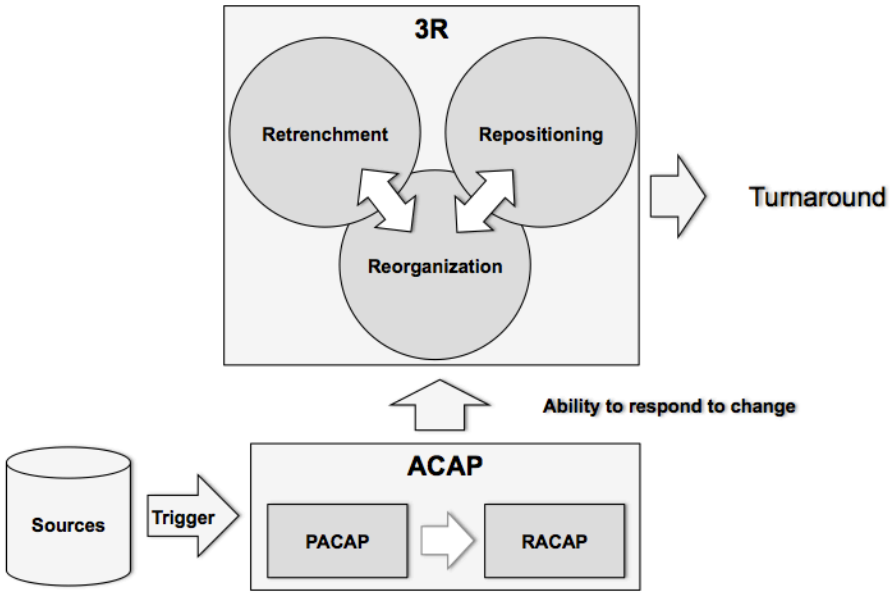
4-1 Integrated 3R-ACAP Model

Literature research in three areas including definition of turnaround, process of turnaround, and major turnaround models were conducted in chapter three to create theoretical foundations to develop an original turnaround model for this research.

As a result, it was found that an important ability required for shipbuilders' survival was missing in the turnaround models. The process of how firm's "Ability to respond to change" works to recognize environmental changes and how they utilize valuable information to create strategies was not shown in any turnaround model. The concept of ACAP model was therefore integrated into the turnaround model to complement the missing part of the turnaround model.

Following is the integrated 3R-ACAP model developed here, which is basically a combined model of the 3R turnaround model by George A. Boyne's 3R and the ACAP model by Zahra and George. The model shows the process of how firms utilize its sources to assimilate (Potential ACAP) valuable information and how firms utilize (Realized ACAP) it to create 3R strategies (Retrenchment, Reorganization, and Repositioning) to turnaround from crisis.

Figure 4.1 - Integrated 3R-ACAP Model



Source: The Author's original developed for this research

4-2 Examination of The Model

In this chapter, turnaround industries are selected in order to examine the Integrated 3R-ACAP model. The purpose is to examine whether the model works properly in empirical cases or if it needs modifications. Three industries chosen here are U.S. Copper Industry, British Steel Industry, and Brazilian Aircraft Industry and there are three reasons for selection. At first, its ability to change played an important role for its turnaround. And second, all achieved a dramatic recovery after serious decline. And third, government played an important role for development of these industries.

Fortunately, there were already numbers of researches conducted on turnaround of these three industries and therefore researches focusing especially on strategic aspects of the cases were selected for the examination.

4-2-1 Three Turnaround Industries

At first, introduction of each turnaround case including its history, crisis they faced and strategies taken for turnaround is done in order to acquire basic

knowledge of backgrounds. And then, based on the facts, examination by the integrated 3R-ACAP model is done by identifying the factors of 3R-ACAP model.

Turnaround Case One (1/3) - U.S. Copper Industry
"Innovation, Productivity Growth,
and the Survival of the U.S. Copper Industry"
John E. Tilton and Hans H. Landsberg (1997)

Brief history

According to Tilton and Landsberg, mining was widely considered as an old industry with mature and stable technologies. And therefore, those who have the best deposits are always believed to be most competitive. However, mining in the United States called into question this conventional view. After leading the market for decades, it once experienced a serious decline. However, it achieved a dramatic revival in the middle of the 1990s and the U.S. is mining more copper than the 1970s.

Crisis

Since 1970, mine output in the U.S. gradually had fallen until 1985 and its share in the world market shrunk from 30 percent to 17 percent. Following this recession, employment fell into 13 thousand, which was 70 percent decline from its 1970 level. Only few producers were covering it's full production cost. In spite of its efforts, breakeven costs did not fall as much as the price of copper. Numbers of mines therefore curtailed production or shut down completely.

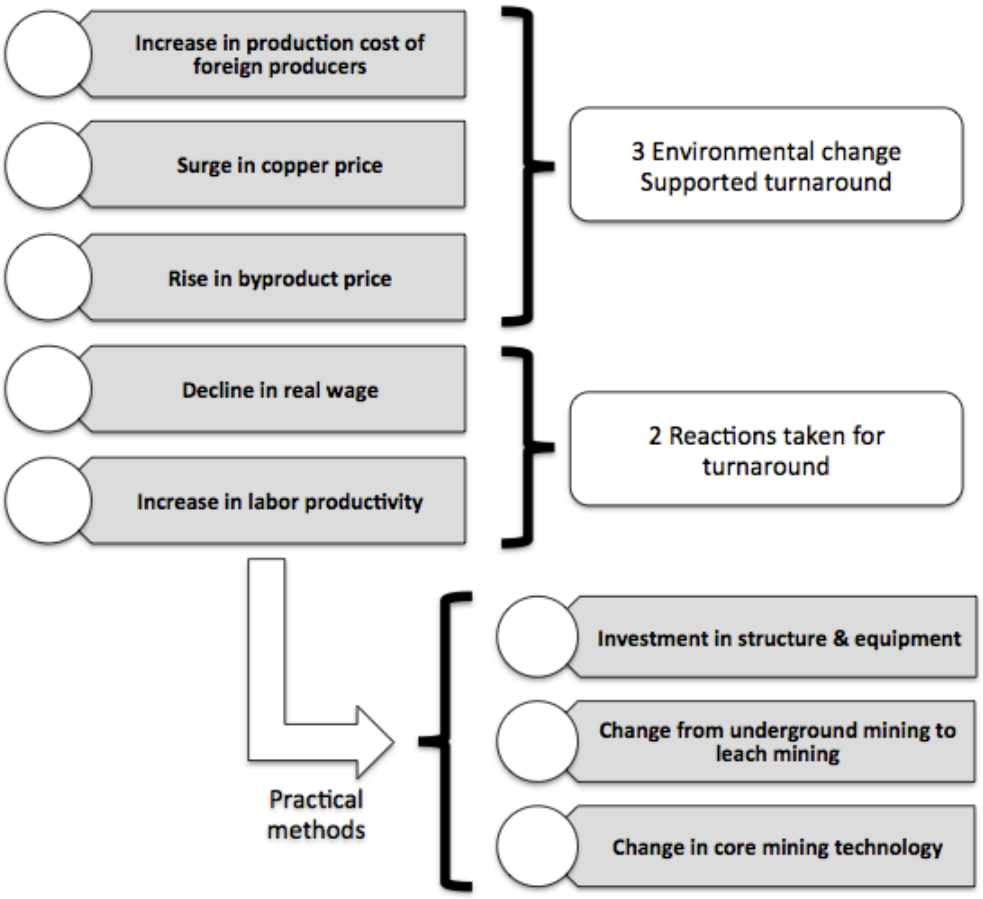
Strategies taken for turnaround

Tilton and Landsberg analyzed that there are five possible determinants, which contributed to U.S. copper industry's turnaround; first an increase in the production costs of foreign producers, second a surge in copper prices, third a rise in byproduct revenues, fourth a decline in the real wages of domestic copper workers, and fifth an increase in labor productivity. It will be able to say that the fourth and fifth determinants will be a positive reaction taken by firms while others are passive ones that are not manageable.

Turnaround

As a result of the strategies taken for turnaround, the copper mine output increased to 1.89 million tons, which amounts 21 percent above its 1970s level and 72 percent above its 1985 level. The U.S. share of western world production recovered to 23 percent that is its 1975 level. Breakeven costs and the market price had widened enough to make the U.S. copper industry once again profitable.

Figure 4.2 - Factors contributed to the U.S. Copper Industry's Turnaround



Source: The Author's original based on the case study on the "Innovation, Productivity Growth, and the Survival of the U.S. Copper Industry" written by John E. Tilton and Hans H. Landsberg (1997)

Five determinants of the turnaround

1. Increase in production cost of foreign producers

A result of sharp appreciation of dollar and it lowered U.S. coppers production cost when calculated in foreign currency.

2. Surge in copper price

Caused by cyclical fluctuation in copper price and the balance of supply and demand

3. Rise in byproduct revenues

Revenues by selling byproducts such as gold, silver, molybdenum, and others helped U.S. copper producers to lower its costs.

4. Decline in real wage of workers

Workers wage fell more than 25 percent between 1984 and 1989

5. Increase in labor productivity

Hours required to mine a ton of copper fell over 50 percent between 1980 and 1986

Tilton and Landsberg also mention that there are three factors, which affected labor productivity. At first, capital and other inputs per worker, and second, quality of copper deposits, and third innovative activity and new technology.

Three factors affected labor productivity

1. Capital and other inputs per worker

Investments in structures and equipment with new technologies and other innovative developments had a major impact on both labor and multifactor productivity since 1980.

2. Quality of copper deposits

Quality of copper deposits fell since the mid 1980s due to shift from underground mining toward leach mining. High grade associated with underground mining reflect greater cost while low grades of leach mining reflect lower cost and thus, change in grade increased labor productivity.

3. Innovative activity and new technology

Innovative activity and new technology was the most important one contributed to growth in labor productivity. New processing technology called SX-EW technology, which is highly productive and suitable to mine lower grade copper was emerged.

Turnaround Case Two (2/3) - British Steel Industry

"A Turnaround under Public Ownership"

Christopher Beauman (1996)

History

Christopher Beauman argues that the turnaround of British Steel Corporation (BSC) is one of the most successful cases of turnaround in the British history followed by subsequent privatization. BSC was established in 1967 as a nationalized company by integrating fourteen UK steel companies. Aim of nationalization was to improve competitiveness of the British steel industry in global market. In 1971 BSC had 58.5% of the domestic market share and the rest was occupied with private companies (31.3%) and imports (10.2%).

Crisis

Although BSC made a profit of £72m in 1974/75, steel consumption fell gradually through 1974 and 1975 because of the oil crisis. What made it worse was the UK's economic crisis in 1976. Due to rapid decline in UK steel-using industries, delivery of steel finally dropped 40% during 1974 and 1984. According to Christopher Beauman, the oil crisis also had another long-term effect on increasing BSC's energy cost for steel production. And therefore, BSC finally found it impossible to adjust its' fixed costs to the new commercial environment.

Strategies taken for turnaround

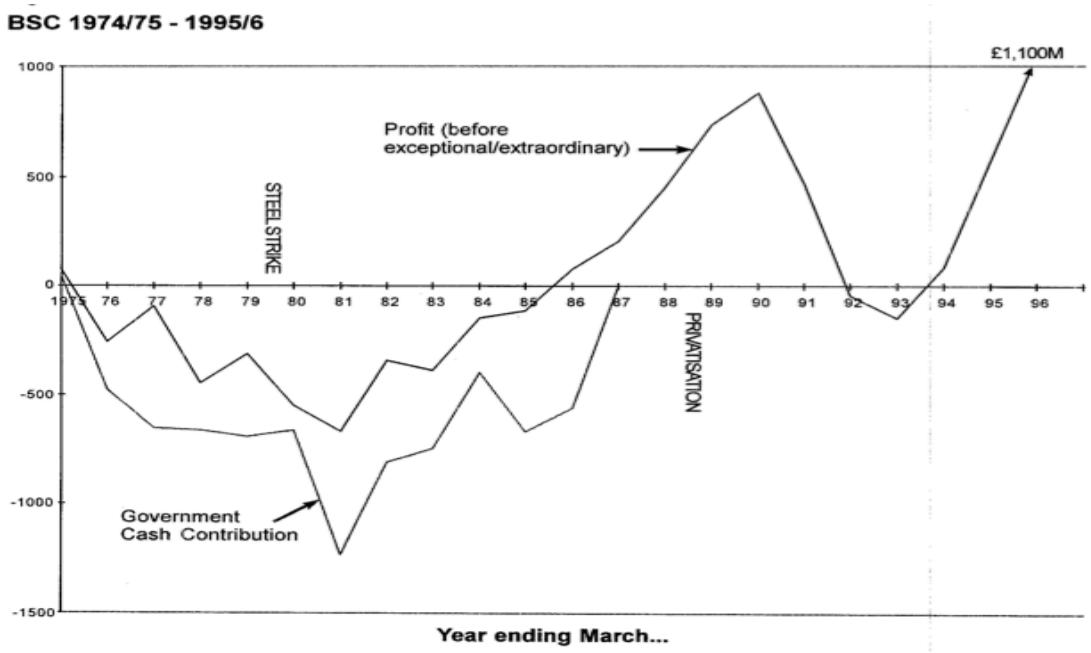
From 1977 to 1980, BSC focused on reducing manned capacity. They closed all of its open-hearth sites and reduced manned capacity from 25mt to 15mt. At the same time, BSC was considering to change its labor system fundamentally. However, the labor unions strongly opposed to the change and therefore it finally lead to a national strike. After the strike, BSC's manpower fell from 175,000 to 130,000 and as a result, reduction in capacity was achieved unexpectedly sin a very short period.

The next approach taken was the "Slim-line" approach to reduce manpower costs. For example, manning in Port Talbot was reduced from 12,000 to 5,000, while in Llanwern, it was reduced from 9,000 to 4,500. As a result of dramatic reduction, manpower costs had fallen from 30% in the late 1970s to 22.5% in the late 1980s. At the same time, BSC appointed board members from outside in order to develop fundamentally new strategies. As a result, BSC realized various hidden customer's needs that are not homogeneous. And therefore, they decided to change its strategies from achieving economic of scale to dealing with customer's needs precisely.

Turnaround

Thanking to strategies taken to improve productivity, BSC's profit changed direction from downturn to upturn in 1981. Although BSC's environment in early 1980s was not favorable due to steel crisis and high exchange rate until the mid 1980s they became profitable. Further growth from the late 1980s was pushed up by improvement in price levels thanking to low exchange rate.

Figure 4.3 - BSC's profit from the 1970s through the 1990s



Source: "A Turnaround under Public Ownership" Christopher Beauman (1996)

Turnaround Case Three (3/3) - Brazilian Aircraft Industry
"EMBRAER: From national champion to global player"
Andrea Goldstein (2002)

History

Andrea Goldstein mentions that Latin America had been considered for a long time as a region having inability to foster big firms that can compete with European, North American, and East Asians. From this point, Brazil's Embraer is a rare private company, which ranks in the worlds number three competing with its Canadian rival Bondardier.

Embraer started as a state-owned company (ex. Brazilian Aeronautical Corporation) in 1969 by having provided various advantages by the ministry. For example, support by financial backups, regulations, and international responsibilities had been provided. Production started in the 1970s in co-operation with foreign partners. As they didn't have had advanced technologies, they focused on assembling the final product rather than designing and manufacturing components by themselves. Its target segment in the market was a small-size turbo-prop plane that could operate safely in harsh weather. And in 1982, its product "Bandeirante" became the third in the U.S. market of 10-20 seat commuters.

Crisis

Andrea Goldstein says that Embraer was not affected by the 1982 economic crisis until the 1990s. Its new 30 seats commuter was successfully launched and Embraer's business looked stable. However, the Government's decision to discontinue the finance fund to Embraer brought them the crisis. Despite its efforts to diversify into services and other activities, Embraer made a loss of US$310 million in 1994 and its position in Brazil's export market fell to thirty-eighth. And finally in 1992, Embraer was listed in a list of State-owned companies that are going to be sold.

Strategies taken for turnaround

In 1994, a consortium bought a controlling 45% stake for US$ 89 million and Embraer started as a private company. The new owners hired outside executives and half of the executives became outsiders. What they first did was outsourcing of jobs and as a result they dismissed white-collar workers and engineers. Until the end of 1996, the payroll fell from 6,087 in 1994 to 3,849 in 1996. Embraer also signed a risk-sharing agreement with suppliers to develop and produce equipment together. And this deal gave Embraer's access to important technological advances in the field of new materials and design.

They restarted the project for regional jets that had been suspended for years. It was because they found an emerging demand by for "Feeder carriers" by "Hub and Spokes" relations accelerated by industrial liberalization. The market for regional jets has grown by more than 50% between 1998 and 1999. Its new "Feeder carrier" called ERJ=145 was lighter, cheaper to buy and 15% less expensive to operate than its rival. It therefore took only four years to deliver 300 jets while its rival took seven years.

Turnaround

As a result of strategies taken, Embraer returned to profitability in 1998 after 11 consecutive years in loss. Employees grown to over 10,000 in 2001 and exports accounts for 90% of total sales to lead sales in the world market for regional aircraft.

4-2-2 Examination by The Integrated 3R-ACAP Model

Introduction of the three industries are done as above and therefore the next step is to examine the integrated 3R-ACAP model in the three industries. In order to confirm feasibility of the model, the eight factors (Internal sources, External sources, Potential ACAP, Realized ACAP, Retrenchment, Reorganization, and Repositioning) of the model are identified at first. And then, modifications toward an improved 3R-ACAP model will be done if any infeasible factors were found.

Sources (Internal & external) and triggers

In case of the U.S. Copper industry, its knowledge and experience accumulated through decades as the world's largest producer of copper was identified as the internal sources. And its network within regional clusters and network among different clusters were identified as the external sources. What triggered it was global competitions with competitors not only having low cost advantage but also having abundant deposit of high-grade coppers. What made it worse was the declining grade of copper mined in the U.S. Since they mined the highest quality copper first to maximize shareholders value, quality of remaining deposits declined.

In the British Steel industry, knowledge and experience accumulated through decades as a nationalized corporation by the Labor Government was identified as its internal sources. Fourteen steel companies were merged to establish the corporation and therefore its sources had diversity. Relation with customers including shipbuilding industry and automobile industry was the external sources to develop its technological background. What triggered it was the oil crisis in 1973 and UK's economic crisis since 1976.

As for the Brazilian Aircraft Industry, knowledge and experience accumulated though decades as a state owned company was identified as its internal sources. Since the Government could not afford importing military aircrafts due to security reasons, various restrictions during this period fostered accumulation of sources. Strong relation with the Brazilian Armed Forces and Export Finance Funds (FINEX) were identified as the external sources they had. Relation and network with parts suppliers was also an external source. And finally, what triggered it are the 1982 economic crisis and industry liberalization.

PACAP and RACAP

As defined by Zahra and George, there are two types of ACAP that are "Potential ACAP" and "Realized ACAP". According to them, PACAP is defined as firms ability to "Acquire" and "Assimilate" information from its sources, while RACAP is defined as firms ability to "Transform" and "Exploit" information to create

competitive advantage. However, to make two ACAPs more visible in practical cases, it was redefined here that PACAP stands for "What was the valuable information they got" and RACAP stands for "How they understood the information and used it".

In the U.S. Copper Industry, there were three important information, which was assimilated by its PACAP. At first, the new technology called SX-EW technology that is suitable to process low-grade copper efficiently was emerged. And second, variety of needs not only requiring high-grade copper but also low and middle-grade copper was found. And third, the actual grade of copper mined in the U. S. declined. By utilizing these valuable information, what they decided to do is to change its strategy from being a high-grade copper producer to low-end copper producer, which was its RACAP.

In the British Steel Industry, there were two important information that was assimilated by its PACAP. At first, it was found that there are many plants producing not large amount of steel and it was spreading over several regions. This was in fact not efficient to achieve economic of scale. And second, rise in customer's manufacturing standard was found and therefore product for high-end customers was emphasized. What they decided to do by using these valuable information is to change its strategy from achieving economic of scale to matching customer's needs precisely, which was its RACAP.

In the Brazilian Aircraft Industry, "Hub and spokes" development by industry liberalization was the valuable information assimilated by PACAP. By using this information, they predicted the emerging market of "Feeder carriers" (small jets) between the Hub and Spokes, which was its RACAP.

3R (Retrenchment / Reorganization / Repositioning)

In the U.S. Copper industry, major retrenchment was reduction in number of employees. Numbers of mines curtailed production or closed completely and employment of the whole industry fell to almost 70 percent in 15 years since 1970. Reorganization of core mining technologies was also identified. The new

mining technology called SX-EW technology emerged and they replaced it with the existing technology. The new technology was an innovative technology that could improve productivity dramatically. However, it was not suitable to process high-grade copper but suitable to process low & middle-grade copper. What they finally decided to do is to change strategies from being a high-end producer to low & middle-end producer, which was realignment of strategy. By reorganizing one of its core technologies for production, they succeeded to reposition themselves to achieve turnaround.

In case of the British Steel Industry, the major retrenchment was reduction in number of employees. Due to serious recession by the oil crisis and the UK's economic crisis, it decided to improve manned capacity per products by productivity-linked pay system. However, the labor union opposed strongly to this change and called a national strike. The labor union finally accepted the change but in the first half of 1980, number of employees fell from 175,000 to 130,000. As a result of reduction in number of employees, retrenchment in productivity cost was achieved unexpectedly. Reorganization of the board members was also identified. The chairman decided to appoint board members from outside of the steel industry to get broader view in business management. Those who came from nuclear industries, banks, industrialist, etc. were expected to provide fundamentally new ideas. As a result, they found hidden demands in the market, which they were not able to realize before. They changed focus from achieving economic of scale to matching customer's needs precisely, which will is identified as repositioning.

In the Brazilian Aircraft Industry, major retrenchment was reduction in number of employees. Due to late impact of the 1982 economic crisis in the 1990s, its financial condition declined seriously. After privatization, they decided to cut 1,200 white-collar employees and 500 engineer and workers in 1995. As a result of reduction in number of employees, production cost dropped dramatically. Reorganization of board executives was also identified. Since it started as a private company, new owners began hiring outside executives. As well as the British Steel Industry's case, the purpose was to get broader external network

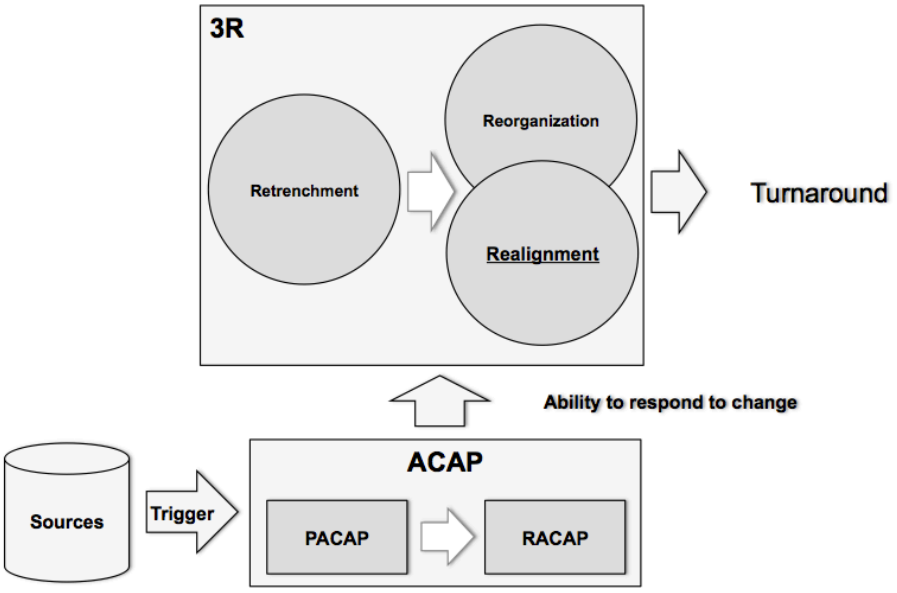
and points of views by hiring outside executives. As a result, it succeeded to change itself from being an assembler by license contract with toward a producer by risk-sharing contract. Repositioning from licenser to producer greatly contributed to its turnaround by providing the company with access to important technological backgrounds of materials and designs.

4-2-3 Findings and Modifications

It was confirmed by examinations that the 3R-ACAP model is applicable to all turnaround cases. The model worked properly to identify all of the eight factors (Internal sources, External sources, Triggers, Potential ACAP, Realized ACAP, Retrenchment, Reorganization, and Repositioning) comprising turnaround strategies. Feasibility of the 3R-ACAP model has now proved in practical cases.

There were three major findings from the examination that required modifications to the 3R-ACAP model. Modifications are at first, change in order of 3R, and second the direct relation between reorganization and repositioning, and third the word "Realignment" instead of "Repositioning" was found more appropriate word to use.

Figure 4.4 - Modified 3R-ACAP model



Source: The Author's original developed for this research

Three modifications toward an improved 3R-ACAP model

1. Change in order of 3R

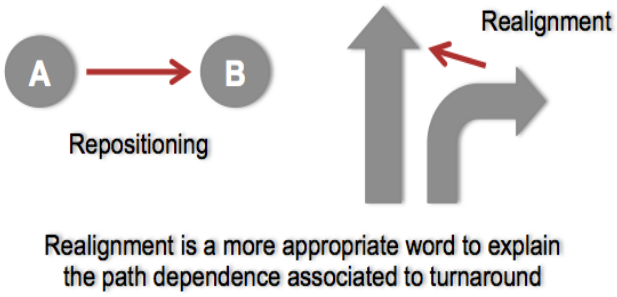
Although many researchers including Pearce and Robbins considered "Retrenchment" as an initial reaction of firms to stabilize the crisis, George A. Boyne who developed the 3R turnaround model have not support this definition. Boyne considered it as an isolated strategy because he could not confirm any empirical evidences. However, result of examinations in the three industries shows that retrenchment was in fact the initial action taken by firms to stabilize the crisis. And therefore, the order of 3R (Retrenchment comes first and Reorganization/Repositioning follows) was modified.

2. Reorganization works for repositioning (realignment)

According to George A. Boyne, the role of Reorganization is to support retrenchment and repositioning. However, it was found through the examination here that no relation exists with retrenchment but only with repositioning.

3. Realignment instead of repositioning

Figure 4.5 - Image of the words "Repositioning" and "Realignment"



Source: The Author's original

The two worlds "Repositioning" and "Realignment" are both used to show strategic changes in market position. However these two words are quite different in terms of the nuance of "Path dependence", which has a significant meaning in this research. The word "Repositioning" emphasizes the nuance of changing position to somewhere they want to move into, while "Realignment" emphasizes the nuance of changing direction based on its previous activities.

What was confirmed through the examination was that firms changed direction of strategies not into somewhere very deviated from its previous activities but into somewhere they could utilize its core strength. The word “Realignment” will be therefore considered as more appropriate word to express the nuance of “Path dependence” rather than “Repositioning”.

Chapter 5
Analysis of Shipbuilding Industry in The 1970s Oil Crisis

In this chapter, the final step to confirm whether or not the 3R-ACAP model is applicable to the shipbuilding industry is taken by examining Japan's and European's turnaround from the oil crisis in the 1970s. The result will be in fact the conclusion of this entire research since the goal of this research is to find an applicable turnaround model for Japanese shipbuilding industry.

5-1 Analytical Method

Analysis consists of two parts. In the first part, analysis of Japan in the oil crisis will be done in order to confirm the feasibility of the 3R-ACAP model. Feasibility is confirmed by identifying the eight factors for turnaround (Internal sources, External sources Triggers, Potential ACAP, Realized ACAP, Retrenchment, Reorganization, and Realignment) as well as the three industries analyzed in chapter 4.

In the second part, analysis of Europeans in the oil crisis will be done in the same method. However, the purpose here is not only to confirm feasibility of the model but also to find practical lessons from the Europeans. It was considered that strategies taken by previous leaders in the past could provide lessons to Japanese shipbuilders in current crisis.

5-2 Japan and Europe in The 1970s Oil Crisis

5-2-1 Japan After The Oil Crisis

Development of the world's economy with abundant energy sources ended with the oil crisis in 1973. It had a serious impact especially to developed countries consuming huge amount of oil to maintain its economic activities. At the time, Japan's market share in oil tankers and bulk carriers market dropped from 54 percent in 1975 to 27 percent in 1978. However, after Japan experienced a

serious decline, it achieved a remarkable recovery in market share recovering up to 45 percent in 1979, and to 65 percent in 1980.

Table 5.1 World's share in Tankers and Bulk Carrier market

World completions (Million GT		Japan's completions & Worlds share (Million GT / %)		Europe's completions & Worlds share (Million GT/ %)	
1975	3,043	1,640	53.8	998	32.7
1976	2,442	1,200	49.1	828	33.9
1977	1,602	664	41.4	566	35.3
1978	733	201	27.4	223	30.4
1979	537	242	45.0	103	19.1
1980	860	557	64.7	81	9.4
1981	1235	734	59.4	136	11.0
Source: Shipbuilding statistics handbook (The Ministry of Transport)					

In this part, a book titled (Originally written in Japanese) "How long could Japan secure its position as the world's No.1 shipbuilding country?" written by Hiroyuki Itami (1992) was studied in order to identify the eight factors by the 3R-ACAP model.

Table 5.2 - The Eight Factors in Japanese Shipbuilding Industry after the oil crisis in 1970s

The Eight factors		Japan after the oil crisis in 1970s	
Sources	Internal Sources	Ability cumulated by building high quality, low cost, and energy saving ships	
		Ability cumulated by adopting itself to environmental change including currency rate change (strong yen) and steel price change (rise in price) by cost saving	
	External Sources	Network created by development of related industries	
		Abundant human resources from Universities	
		Synergic growth lead by domestic competitors	
Trigger		The oil crisis in 1973 and 1979	
ACAP	Potential ACAP	**What was the valuable information assimilated?**	
		Government's announcement of "Curtailment of Production (work time)" in 1976	
		Government's announcement of "Curtailment of Production (facility)" in 1978	
		Emerged demand for energy saving ships after the crisis	
	Realized ACAP	**How they understood the information and used it?**	
		Big firms	Diversification to offshore and onshore products

		Middle & Small firms	Started building smaller and energy saving ships
3R	**Retrenchment**	Reduction in number of major shipbuilders from 44 to 26 Canceled investment, reduced number of subcontractors, ceased new employment, and called for voluntary retirement	
	Reorganization	Reinforced other business and allocated workers there (Reorganized business portfolio) Reorganization of major shipbuilding groups (Reduced from 21 groups to 8 groups)	
	Realignment	**Big firms**	Realignment towards comprehensive heavy industry with broader businesses
		All firms	Realignment by differentiation

Source: Identified by using the 3R-ACAP model from "How long could Japan secure its position as the world's No.1 shipbuilding country?" written by Hiroyuki Itami (1992)

Sources (Internal & external) and triggers

Japan's internal sources identified here was its knowledge and experience accumulated from its beginning as a traditional Navy. Sources accumulated enabled them to develop high quality, low cost, and energy saving ships. Ability to adopt itself to changing environment such as currency rate and steel price was also an important skill they acquired through its experiences. For example, Japan experienced sudden change toward strong Yen and sudden rise in steel price in the 1950s and it overcame the crisis by cost saving efforts.

Itami (1992, page 58) mentions that technologies and experiences cumulated during the wartime construction greatly contributed when they started producing tankers and bulk carriers in the post war era. As they already had technologies, major hurdle was to lower the cost for commercial productions. All of the knowledge and experience cumulated here contributed as its internal sources to turnaround from the oil crisis later.

There are three major external sources identified here, which provided Japan with competitive advantages. At first, development of related industries provided Japan with synergy effect to grow. According to Itami (1992, page 8), it was the steel industry at the beginning and later engines and other marine machinery suppliers that provided synergy effect to the shipbuilding industry's growth. And second, abundant human resources from Universities provided Japan competitive advantage with abundant skilled engineers. At the time, eight National Universities had shipbuilding divisions because fostering the

shipbuilding industry was the Governments' policy at the time. And third, numbers of competitors in the domestic market, gave strong motivation to shipbuilders for technological innovations even after it became the world's No.1. And finally, what triggered it was the oil crisis in 1973 and 1979, which was the end of the world's economic growth lead by abundant energy resources.

PACAP and RACAP

Although there are clear definition by Zahra and George regarding the two types of ACAP, it was redefined here that PACAP stands for "What was the valuable information they got" and RACAP stands for "How they understood the information and used it" in order to make the two ACAPs more visible in practical cases.

In Japan, there were three important information accumulated by the PACAP. At first, the Government's announcement of "Curtailment of Production (work-time)" in November 1976. Curtail of production based on reduction in work-time was announced for big firms to reduce to its 67 percent level, middle firms to reduce to its 76 percent level, and small firms to reduce to its 82 percent level from its peak. And second, the Government's announcement of "Curtailment of Production (facility)" in 1978. Curtail of production based on reduction in building facility (in total tonnage) was announced to 61 major shipyards in Japan including 7 big firms, 17 middle firms, and 16 small firms. Announcement was to reduce 40 percent of building facility for big firms, 30 percent for middle firms, and 27 percent for small firms. And third, it was the demand for energy saving ships after the oil crisis. Due to sudden rise in crude oils price, demand for energy saving ships rose sharply.

What is interesting in Japan's case is although they assimilated similar information (PACAP), how they understood and used it (RACAP) was different among firms depending on its size. Big firms mainly diversified into other offshore products or onshore products, while small and middle shipyards started building smaller ships than before. Due to Governments unequal measures to give big firms with heavier burden and smaller firms with lighter burden to

reduce building capacity, strategies taken by firms differed by its size. It was natural for big firms to move into other non-shipbuilding products while it was more efficient for small firms to build smaller ships up to its limit. And also the oil crisis requiring energy saving ships and trend of downsizing also pushed small and medium shipyards to build smaller ships.

3R (Retrenchment / Reorganization / Realignment)

The major retrenchment in whole Japanese shipbuilding industry was reduction in number of shipbuilders. Number of major shipbuilders decreased from 44 to 26 during this period. As for individuals firms, numbers of shipyards canceled investment plans, reduced number of subcontractors, ceased new employees, and called for voluntary retirement, which was all retrenchment.

For example, subcontractors amounted 43,016 persons in 1974 dropped to 25,127 in 1976. Average of total new employees in major shipyards during 1971 to 1974 was approximately 6,700 to 10,000 persons per year but it suddenly dropped to zero in 1976. Voluntary retirement was especially seen in small and middle shipyards since it was not possible to reallocate excess workers to other divisions due to narrower business portfolio compared with big shipyards.

Reorganization of business portfolio by allocating excess workers to on-shore divisions was done especially by big firms having broader business portfolio. According to Itami (1992), the share of shipbuilding division within the company dropped to almost half between 1975 and 1981. For example, shipbuilding division's share in Mitsubishi dropped from 41 percent to 21 percent, IHI dropped from 41 percent to 25 percent, Kawasaki dropped from 28 percent to 20 percent, Hitachi dropped form 70 percent to 35 percent, and Mitsui dropped from 74 percent to 35 percent during this period. Reorganization of shipbuilders' group was also identified during this period. Groups of shipbuilders, which originally comprised of 21 groups finally decreased to 8 groups by shrink of the Japanese shipbuilding market.

There were mainly two types of realignment in Japan's 1970s. The first type was realignment toward comprehensive heavy industry with broader product menus and business portfolios, which was mainly taken by big firms. The second type was realignment of strategies by differentiation. Shipyards differentiated themselves by developing smaller ships equipped with advanced energy saving technologies. The second type, which was associated with lower risk was taken by all firms especially by small and middle shipyards.

5-2-2 Europe After The Oil Crisis

In this part, the same book titled (Originally written in Japanese) "How long could Japan secure its position as the world's No.1 shipbuilding country?" written by Hiroyuki Itami (1992) was studied in order to identify the eight factors from the fact.

For the Europeans, initial impact of the 1970s oil crisis was not as big as Japan. Europeans were less affected by the crisis because they already started moving into sophisticated ships such as LNG and LPG carriers. It was to avoid direct competition with Japan in oil tankers and bulk carriers market. According to Itami (1992), Europeans had been utilizing LNG and LPG as a popular energy sources in its history and therefore demand for sea transportation within the region existed.

Although both Japan and Europeans achieved turnaround from the oil crisis, the basic concepts applied for turnaround was quite different. For example, Japan's turnaround was achieved without fundamental change in strategic direction. For example, Japan's market share in oil tankers and bulk carriers market once dropped by the crisis but it even increased later, which means they have not changed fundamental strategies. In case of Europeans, it concentrated more into sophisticated ships and also started diversifying into other energy related products. As a result, Europeans market share in oil tankers and bulk carriers dropped to one third of the level before the crisis. Europeans turnaround was therefore achieved by bigger change in direction compared with Japan.

Table 5.3 - The Eight Factors in European Shipbuilding Industry after the oil crisis in 1970s

The Eight factors		Europeans after the oil crisis in 1970s
Sources	Internal Sources	Ability cumulated by building sophisticated ships
	External Sources	Transnational network of shipbuilders and marine suppliers
Trigger		The oil crisis in 1973 and 1979 The UK's economic crisis in 1976
ACAP	Potential ACAP	**What was the valuable information assimilated?**
		Nationalization of shipyards in European region
		Development in North sea oil
	Realized ACAP	**How they understood the information and used it?**
		To build more sophisticated ships
		Diversify into new areas such as offshore products
3R	Retrenchment	Retrenchment in building capacity and workforce
	Reorganization	Reinforced other business and allocated workers there (Reorganized business portfolio)
	Realignment	Realignment of business model from project leader to vendor of parts (from shipbuilder to supplier of parts in other industry)
		Realignment towards specialized or differentiated shipbuilder

Source: Identified by using the 3R-ACAP model from "How long could Japan secure its position as the world's No.1 shipbuilding country?" written by Hiroyuki Itami (1992)

Sources (Internal & external) and triggers

Its knowledge and experience accumulated in its history to produce value added ships were identified as the Europeans internal sources. Japan's growth as a low cost leader in the 1950s made Europeans to move toward further sophisticated ships with higher value to avoid direct competition with Japan.

Transnational network among European shipyards and various suppliers producing engines and marine equipment was identified as its external sources. External network enabled European shipbuilders to achieve low cost and advanced technology at once by producing onboard machineries in developed countries with high wages and building ships in developing countries with low wages.

PACAP and RACAP

In order to make the two ACAPs more visible in practical cases, Zahra and George's definition of ACAP was redefined here that PACAP stands for "What was the valuable information they got" and RACAP stands for "How they understood the information and used it".

The major information accumulated by PACAP here was the European Governments intervention to nationalize shipyards within the European region. Through 1978 and 1983, 60 percent of the shipyards in European countries were nationalized. Under the Governments' control, facilities, and workforce had been integrated to improve efficiently. Another valuable information for them was development in the North Sea Oil, which was focused after the oil crisis. These information were accumulated by Europeans' PACAP.

How they understood and used these assimilated information (RACAP) are categorized mainly into two types. The first type is to specialize or differentiate themselves in the market by building ships with more value. Although ships produced in Europe at the time was already highly sophisticated, many shipyards were still building tankers and bulk carriers. However, in those segments, they were forced to compete directly with developing countries. Number of shipyards therefore ceased production of tankers and bulk carriers and started producing more sophisticated ships. The second type is to diversify into new areas such as offshore products including oil drilling rigs and related workboats. Numbers of Norwegian shipyards, which previously ranked in the world's number five or six in tankers segment moved into offshore oil drilling rigs and related workboats.

3R (Retrenchment / Reorganization / Realignment)

Retrenchment in building capacity was the main retrenchment of Europeans. For example, Sweden, which was once the No.1 shipbuilder in Europe reduced building capacity by 20 percent in 1978, and 50 percent in 1980. Holland also reduced its building capacity to 70 percent of its 1975 level in 1977.

There are two kinds of reorganizations identified. The first one is to reorganization of facilities and workforce to improve product efficiency. The second one is to reorganize business portfolios. In order to stable the shipbuilding business that was in crisis, other businesses were reinforced by reorganization.

Realignment for Europeans was mainly diversification into other offshore products, energy related businesses, and further specialization to build more sophisticated ships. As mentioned earlier, Europeans had been less affected by the crisis compared with Japan. It was because they were building LPG and LNG carriers that are more sophisticated. However, since competitors gradually followed the same strategy, Europeans had to move into further advanced stage. Many shipyards moved into offshore products, specialized ships such as cruise ships and other special purpose ships. Shipyards in Germany went into windmill products for which they could not take the whole project but could join the project as a supplier of the body of windmill generators. Germany's case is a change of business model from being a project leader of whole product towards a vendor of parts.

5-3 Result

Feasibility of the 3R-ACAP model

Evidence of the Japanese and European shipbuilding industry in the 1970s oil crisis confirms feasibility of the 3R-ACAP model. The model worked properly to identify the eight factors related to the turnaround of shipbuilding industry in both Japan and Europe. The model also shows the process of how they assimilated and utilized valuable information to create turnaround strategies. Since the goal of this research is to find an applicable turnaround model for Japanese shipbuilding industry, now it comes to conclusion that the 3R-ACAP model is the applicable turnaround model for them.

Further analysis of results

In the meantime, further analysis to identify the basic concepts and strategies is done and summarized in Figure 5.1. This figure is derived from the result of 3R-ACAP model analysis (Table 5.2 and Table 5.3) by focusing on its strategic aspects. The two keywords for strategies ("Recovery" and "Renewal") came from the "Six stages" of turnaround process discovered by Peter Mckiernan (The Oxford Handbook of STRATEGY Chapter 27).

Concept and strategy

The two keywords comprising Japan's basic concept are "Retrenchment" and "Product oriented" move. It includes retrenchment in scale followed by strategies focusing on "Products". The conceptual keywords for Europeans are on the other hand "Retrenchment" and "Dual moves". It includes retrenchment in scale followed by strategies focusing on both "Product" and "Market" oriented moves. An interesting finding here is that both Japan and Europeans had been considering advanced key technologies as its core competencies but while Japan utilized it mainly for "Product" oriented moves, Europeans utilized it for both "Product" and "Market" oriented moves.

Figure 5.1 also shows the basic strategies for subsequent "Recovery" and "Renewal stages based on the above mentioned concepts. In case of Japan, it created broader product and business portfolio to "Stabilize the foundation" of business. It also differentiated itself by developing further "Energy saving ships". Development of energy saving technologies pursued by "Kaizen" skill of Japanese greatly contributed for differentiation. And what is common between Japan's two strategies are "Product oriented" moves.

In case of Europeans, further specialization in particular segments such as LPG ships, LNG ships, and cruise ships market was "Product oriented" moves. Diversification into "Energy related" businesses such as offshore drilling rigs, workboats, and windmill plants was on the other hand "Market oriented" moves. Difference between Japan and Europe was therefore the combination of two

"Product" and "Market" oriented moves, while Japan had only "Product ornented" moves.

Figure 5.1 - Concepts and strategies taken by Japan and Europe for turnaround in the oil crisis

	Basic concept	Strategies taken for "Recovery"	Strategies taken for "Renewal"
Japan in 1970s	Retrenchment Product oriented	Broader product & business portfolio for "**Stable foundation**" (Product oriented)	Differentiation by **"Energy saving"** ships (Product oriented)
Europe in 1970s	Retrenchment Product & Market Oriented (Dual)	Further specialization in LNG/LPG ships and cruise ships that are **"Not easy to imitate"** (Product oriented)	Diversification into **"Energy related"** businesses (Market oriented)

Source: The Author's original developed for this research

"Path dependence" and "Governments' intervention"

What is common to both cases are at first, "Path dependence" associated with turnaround. The evidence shows that successful turnarounds are achieved by challenging something that are related to its strength, competencies or ability they have. Considering "Path dependence" is therefore inevitable while creating turnaround strategies.

And next, the "Governments' intervention" is a common factor determining the basic concepts. In Japan, the Governments' intervention was mainly reduction in building capacity while in Europe it contained fundamental change in direction. In European countries, not only downsizing in scale but also change in direction toward more value added ships and other offshore products had been implemented.

There are both positive and negative aspects while comparing the Governments measures in both cases. According to Itami (1992) unequal measures taken by the Japanese Government allocating heavier burden to big firms and lighter burden to small and middle firms weakened the basis of Japanese shipbuilding,

which was a negative aspect. However, numbers of small and middle shipyards building tankers and bulk carriers enabled to survive and therefore, Japan's total output in tonnage recovered sharply, which was a positive aspect.

In case of Europeans, it succeeded to create further competitive advantages in particular market especially in LPG/LNG carriers and cruise ships, which was a positive aspect. However, many shipyards reduced production of tankers and bulk carriers and therefore its total tonnage output declined sharply. Although Governments interventions are unmanageable factors for individual firms, shipyards' ability to assimilate valuable information and to utilize it to create strategies is an important key for turnaround.

Potential effect of synergy

Although it would require further research to find empirical evidences, it will be able to say that "Synergy effect" is a potential function increasing the outcome of strategies. For example, broader product and business portfolio could possibly provide synergy effect to R&D of energy saving technologies. Ship's fuel consumption comprises of various factors including hull design, engines, generators and various onboard machineries. And therefore, feedbacks from related manufacturers within the group or outside the group could provide synergy effect for further development.

In case of Europeans, further specialization in LPG & LNG carriers could possibly widened its network to support diversification into other energy related businesses. As a result, outcome became greater than the sum of individual strategies and therefore contributed to the turnaround.

Chapter 6
Analysis of Major Three Japanese Shipbuilders in the Current Crisis

In this chapter, further step to analyze Major Japanese shipbuilders in the current crisis is taken by the 3R-ACAP models analysis. Purpose of this step is not to confirm the feasibility of the model but to provide practical recommendations to the Japanese shipbuilders.

6-1 Analytical Method

Analysis will be done at first by identifying as much as possible the eight factors for turnaround (Internal sources, External sources, Triggers, Potential ACAP, Realized ACAP, Retrenchment, Reorganization, and Realignment) as well as the analysis in previous chapters. It is to find evidences of the eight factors from various sources including industrial reports and web sites of the firms etc.

However, results from the analysis are expected to be incomplete at the moment because shipyards are not yet affected by the crisis in real means. Shipyards are surviving by consuming its order backlogs until recent, which they served before the crisis with relatively good price. Although five years have passed since the beginning of economic crisis in 2008, shipyards are still in the early stage of recession. They are currently struggling to find strategies to survive.

In order to complement the strategies of firms that should be incomplete, lessons from the 1970s oil crisis should be considered because of cumulativeness of sources. Lessons from the 1970s crisis could help providing recommendations to shipyards in the current crisis. Beside cumulativeness of sources, considering the development path is an important point. It means that study from Europeans in the 1970s could provide lessons to countries following similar development path in the future. Europeans were in more advanced stage of development at the

time and therefore, study of previous leader's strategies in the history could provide lessons to countries following similar development path.

6-3 The Three Major Shipyards

In this part, three Japanese shipyards, Mitsubishi Heavy Industry (MHI), Japan Marine United (JMU), and Sasebo Heavy Industry (SSK) are chosen. MHI is chosen because it is one of the most historical shipyards representing Japan and has the broadest business portfolio. JMU is one of the largest shipbuilding company currently established by M&A of IHI Marine United and JFE. SSK is not as large as MHI and JMU but it has innovative corporate culture backed with the history started as traditional navy base.

Mitsubishi Heavy Industries, Ltd. (MHI)

Mitsubishi was founded in 1884 and started shipbuilding in Nagasaki by leasing the shipyard from the Government. MHI is currently producing various products including aerospace components, air conditioners, aircraft, automobile components, forklift trucks, hydraulic equipment, machine tools, missiles, power generation equipment, ships, and space launch vehicles. MHI currently has four shipyards including Nagasaki shipyard, Kobe shipyard, Shimonoseki shipyard, and Yokohama shipyard. Its shipbuilding division produces various types of ships such as cruise ships, LNG carriers, LPG carriers, oil tankers, car carriers, battle ships, and submarines. MHI also has various group companies including Mitsubishi UFJ financial group, Mitsubishi motors, Mitsubishi atomic industry, Mitsubishi Chemical, Mitsubishi power systems, and Nikon Corporation. (Cited from MHI's web site)

Japan Marine United Corporation (JMU)

JMU was established by M&A of two shipbuilding companies, IHI Marine United and JFE Holdings, which was both major and historical. The history of JMU is a history of continuous M&A having four major shipbuilding companies in its roots. IHI, Sumitomo heavy industries, Hitachi shipyard, and JFE are the four shipbuilding companies comprising JMU. Its business consists of three divisions

including “Merchant Ship and Offshore Division” building ships and offshore products, “Engineering Division” providing technology and engineering to other shipyards, and “Ship Life Cycle Division” providing repair work and conversion work including modifications related to energy saving and environmental regulation work. (Cited from JMU’s web site)

Sasebo Heavy Industries Co., Ltd. (SSK)

Sasebo heavy industries commonly called as “SSK” (Sasebo Senpaku Kogyo, its former name) was established in 1946 by purchasing shipyard and facilities from the traditional Sasebo navy base. Since the foundation, SSK has expanded its business from shipbuilding to various other fields. SSK currently comprise of four divisions including shipbuilding division, ship repairing division, machinery division, and steel structure division. Although SSK is not as big as MHI and JUM in size, its innovative corporate culture enabled SSK to produce the world’s largest crude oil carrier “Nisho Maru” (132,334 DWT) in 1962. SSK was also one of the two shipyards in Japan, which applied the “Arc welding” technology at the very beginning. (Cited from SSK’s web site)

Table 6.1 - The Eight Factors in the three Japanese Shipyards after the economic crisis in 2008

The Eight factors		Three Japanese after the economic crisis in 2008
Sources	Internal Sources	**ALL**
		Ability cumulated by building high quality, low cost, and energy saving ships
		Ability cumulated by adopting itself to environmental change including currency rate change (strong yen) and steel price change (rise in price) by cost saving
		MHI and JMU
		Ability cumulated through building military ships
		SSK
		Ability cumulated through repairing military ships
	External Sources	**ALL**
		Network with JSDF and various suppliers
		MHI and JMU
		Network with group companies
		SSK
		Network with the U.S. Navy

Trigger		**ALL**
		The economic crisis in 2008
ACAP	**Potential ACAP**	**What was the valuable information assimilated?**
		ALL
		Severe price competition with developing countries that are not possible to overcome by efforts
		Emerging demand for energy saving ships
		Demand for diverse energy sources after the Tsunami
		MHI and JMU
		Inefficient allocation of facilities and workforces
		SSK
		Geographical advantage of Kyushu for placing plants (less earthquakes)
	Realized ACAP	**How they understood the information and used it?**
		MHI
		Closed one shipyard
		Emphasizing selling design instead of building ships
		JMU
		Merged with competitor and started building different ships in each shipyard
		SSK
		Considering diversification into offshore windmill products
3R	**Retrenchment**	**ALL**
		Ceased new investment
		Stopped hiring new employees
		Stopped rehiring senior employees
		MHI
		Sold its head office
		JMU
		Integrated its head office upon M&A
		SSK
		Sold its unutilized fixed assets
		Called for voluntary retirement
	Reorganization	**ALL**
		Reorganization of business portfolio
		MHI
		Reinforcing engineering business and cruise ship business
		JMU
		Big organizational change by M&A
		Reorganization of product lines by increasing the menu
		SSK
		Reorganizing board directors
	Realignment	**MHI**
		Trying to realign core strategy from securing technology to selling technology
		JMU
		Trying to realign its position from middle-high end ship producer to high end ship producer
		SSK

		Trying to realign its position from middle-high end ship producer to high end ship producer
		Trying to diversify into other businesses by realigning themselves from being a producer to vendor
	All : All of the three shipyards JMU : Japan Marine United **MHI : Mitsubishi Heavy Industry SSK : Sasebo Heavy Industry**	

Source: Identified by using the 3R-ACAP model from "Japanese Shipbuilding Industry – How long could Japan secure its position as the world's No.1 shipbuilding country?" written by Hiroyuki Itami (1992)

Sources (Internal & external) and triggers

As mentioned in the previous chapter analyzing Japan's turnaround from the 1970s oil crisis, technologies, knowledge, and experiences cumulated through its history until then became Japan's internal sources to turnaround from the oil crisis. And now the same thing could be said here. Due to cumulativeness of sources, various technologies, knowledge, and experiences cumulated until current are the common internal sources not only for the three major shipyards but also for other Japanese shipyards.

In addition to the common internal sources, firm specific sources are also identified. MHI and JMU have internal sources cumulated through new building and repair of military ships for Japan Self Defense Force (JSDF). MHI is one of the rare shipyards, which has technologies to build Submarines. JMU is also a rare shipyard that could build Aegis ships. SSK has internal sources cumulated through repair of military ships since its background is a traditional Japanese Navy Base. SSK has repair business with both JSDF and U.S. Navy. Sources among the three major shipyards are similar in terms of its relation with military business but its core competence and specialized area is quite different and comprising firm specific sources.

Common external sources for the three firms are its network with JSDF including relation with various suppliers of onboard machineries. As for individual firms, MHI and JMU have various group companies producing onboard machineries. For example, MHI has a group company producing main engines and JMU has a group company producing turbo chargers. External network, which is specific to

SSK is the relation with U.S. Navy. SSK has network with the U.S. Navy, various suppliers and subcontractors since it is neighboring to the Navy base and is working closely with them. And finally, what is triggering it is the economic crisis since 2008, which caused the decline in worlds economy and recession of the shipbuilding industry.

PACAP and RACAP

There are mainly three information, which is assimilated by the PACAP. At first, severe price competition, which is not able to overcome by firm's effort. Due to overcapacity and severe price competition with developing countries, most Japanese shipyards are not even able to cover its cost. The second is an emerging demand for energy saving ships. Ship owners and operators are seeking for energy saving ships to save its operation cost. The third information is diverse needs for energy resources after the Tsunami. After the Tsunami disaster and explosion of Fukushima's nuclear plant, increasing demand not only for substitute energy sources but also for renewable energy sources existed.

In addition to these three common PACAP, firm specific PACAP are identified. MHI and JMU found that they are having several shipyards and workshops producing similar products, which is not efficient. SSK realized its geographical advantage that is rarely attacked by earthquakes. After the Fukushima disaster, Kyushu Island is highlighted as a place not only to relocate workshops of various manufacturing industries but also a place to build renewable energy plants.

Followings are RACAP, which means how they understood and used information assimilated by PACAP. MHI and JMU in fact assimilated similar information (have several shipyards producing similar products) but the how they understood and used it was different. MHI closed some shipyards to improve efficiency and started selling designs to competitors instead of securing it. Because MHI realized that they could not compete with developing countries without changing its business model. This is an entrepreneurial decision changing from a manufacturing to engineering. What IHI and Universal shipyard decided to do is to merge with competitor and to start building different types of ships in each

shipyard. This will be an efficiency improvement move by integrating organizations and facilities. What SSK is preparing to do is diversification into offshore windmill plants by utilizing its advanced technologies and geographical advantages located in Kyushu area.

3R (Retrenchment / Reorganization / Realignment)

There are mainly three common retrenchments taken by the three shipyards. At first, it ceased new investment in order to save costs and second, it stopped hiring new employees and third, it stopped reemploying senior workers. In addition to these common retrenchments, MHI adopted 3D design software for its design department to save cost such as fabrication costs for mock-up models etc. MHI closed its Kobe shipyard, which had been allocated for commercial shipbuilding for a long time and reallocated it for submarines production. MHI also sold its head office and changed to lease contract as a retrenchment. Head office of IHI and JFE was integrated when they merged. SSK sold its unutilized fixed assets as retrenchment, and also called for voluntary retirement in September 2013 amounting for 25 percent of its whole employees.

Reorganization commonly taken by the three firms is reallocation of workers from shipbuilding to other departments in order to reorganize business portfolios. As for individual firms, MHI is reinforcing its engineering business to provide technical support not only to domestic competitors but also to developing countries. MHI are also reinforcing its cruise ship business and at the same time, they are withdrawing from some types of commercial ships having relatively low value.

JMU not only had an organizational change by M&A but also had reorganization of product menus. Mishima, the CEO of JMU mentioned in an interview that increase in menus of products to respond with various needs in the market was one of the most important effect expected by the M&A. As a result, JMU currently has various designs including tankers, bulk carriers, and container carriers. SSK is on the other hand, reorganizing members of its board directors by appointing

directors from outside in order to get broader view, which is an advantage for reinforcing external network for turnaround.

The major realignment by MHI was a strategic change from securing technology to selling technology. MHI started selling designs to competitors not only in the domestic market but also in developing countries. JMU is trying to realign its market position to more sophisticated ships by developing energy saving technlogies. Mishima of JMU says that they are seeking for high-end users who could buy ships from Japanese even the price are high. For example, the major Japanese ship owners and operators such as NYK, MOL and K Line considers the total cost including various maintenance cost and fuel cost in a long-run because they tend to use one ship longer than others. And therefore, they could possibly accept increase in price for energy saving technologies if they could cover the additional cost by savings in running cost.

In case of SSK, there are two kinds of realignments. The first one is realignment from middle-end shipbuilder to high-end shipbuilder by developing energy saving technologies, which is similar to JMU. And the second one is diversification into renewable energy products such as windmill business. Although SSK does not have ability to take the whole project, they are trying to join the project by realigning itself from being a project leader of the whole product producer to a vendor who partially joins the project.

6-3 Discussion and Recommendation

Discussions

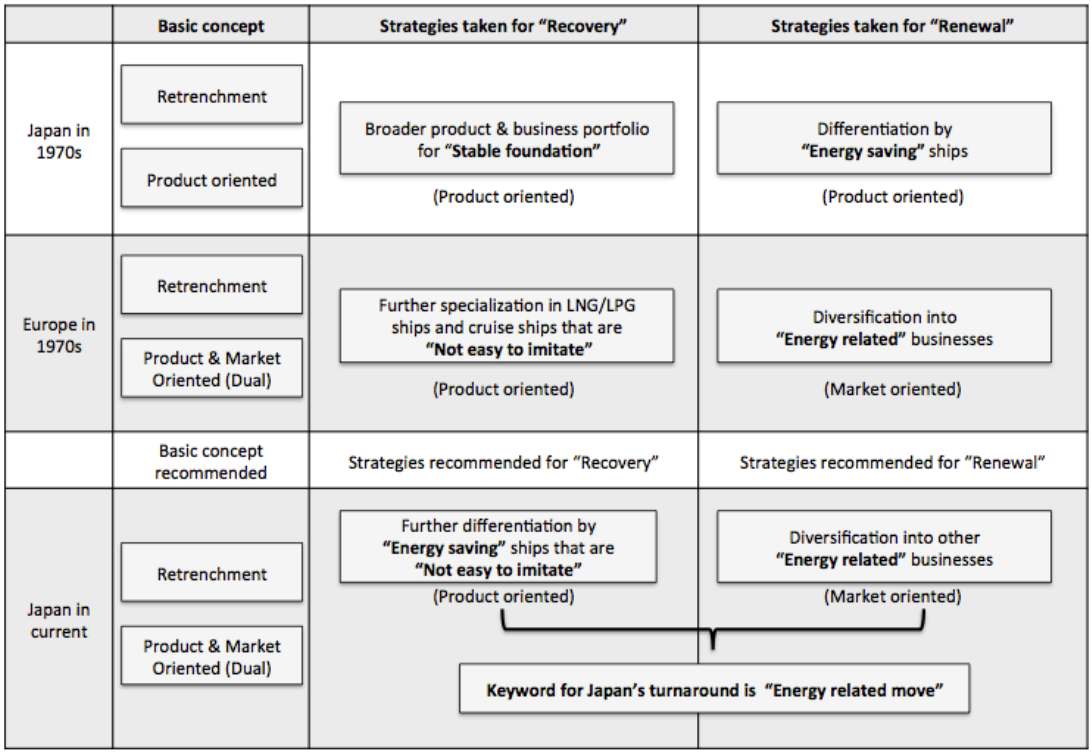
Although retrenchments are taken by all firms as an initial action to stabilize the crisis, it was found that subsequent strategies (Reorganization and Realignment) are not fully established at this moment. Decline in actual performance has currently just started because of order backlogs until recent, which they served before the crisis with relatively good conditions.

In the meantime, strategies taken by Japan and Europeans in the 1970s oil crisis should be considered while providing recommendations to the three Japanese shipbuilders in current crisis mainly by two reasons. The first reason is because of the cumulativeness of sources. It means Japan's knowledge and experiences cumulated during the oil crisis comprise firms' current sources. And therefore, study of the history is essential in order to understand the sources they have. And the second reason is to find helpful lessons from the Europeans that were in more advanced stage of development at the time. Practical lessons could be provided from the previous leader to whom following similar development paths.

Basic concepts and strategies derived from the study

Figure 6.1 shows the concepts and strategies applied in the 1970s to turnaround from the oil crisis and recommendations for Japan in current crisis. As shown in the figure, Japan's basic concepts in the 1970s were "Retrenchment" and "Product oriented" moves which means retrenchment in scale followed by strategic focus on products. In case of the Europeans, basic concepts were "Retrenchment" and "Duel moves" including retrenchment in scale followed by both "Product oriented" and "Market oriented" moves. And what are noticeable in both cases are the Governments interventions, which played an important role to decide the character of concepts.

Figure 6.1 - Concepts and strategies applied in the 1970s and recommendations for Japan in current crisis



Source: The Author's original developed for this research

Strategies taken by Japan and Europe in the 1970s are also shown in the figure. Japan stabilized its foundation by creating broader product and business portfolios. Japan also differentiated itself in the market by developing energy saving ships and these two movements are both analyzed as "Product" oriented. In case of Europeans, it tried to specialize in particular market, which was a "Product" oriented move. Europeans on the other hand, diversified into other energy related businesses, which was a "Market" oriented move.

"Energy related moves" are the keyword for Japan in current crisis

The keyword derived from the 1970s analysis is "Energy related moves" that provides two strategic recommendations for Japan that are currently in crisis. At first, further differentiation by developing "Energy saving ships" that will not be easily imitated by competitors. And second, diversification into "Energy related" businesses including offshore oil drilling rigs, related workboats and windmill plants that could be achieved by reorganizing the sources, which shipyards already have.

Differentiation by "Energy saving ships"

Differentiation by further development of "Energy saving ships" is recommended to all of the three Japanese shipbuilders. Because Japanese well known "Kaizen skill" could help them keeping its motivation for endless improvement in energy saving technologies. Japan's national character therefore matches perfectly with "Product oriented" strategies.

Out of the three shipyards, development of energy saving ships is especially recommended for MHI and JMU having various group companies that could provide more "Synergy" than SSK with narrower business portfolios. Energy saving technologies of ships comprises of various factors including hull design, performance of engines, and various onboard machineries. And therefore, broader and closer relation with group companies producing onboard machineries could provide synergy effects in R&D.

Diversification into other "Energy related" businesses

While considering diversification into various energy related businesses, it is important for shipyards to understand the character of businesses that are new for them. For example, offshore oil drilling rigs and related workboats are large in price, which amounts tens of billions in Japanese Yen. However, a large price does not simply mean that the products are profitable. High risks are involved while deciding the price upon contract because these products are tailor made for each projects and it is difficult to keep the cost under shipyards' control. Offshore oil drilling rigs and related workboats are therefore recommended to big shipyards such as MHI and JMU having broader business portfolios for risk hedge, good financial condition, tolerance to accept failure and losses in some projects.

In case of offshore windmill plants, shipyards already possess skill to fabricate pillars and floats that comprises the product. Its location and access to the ocean, which is suitable for sea transport of large products is also an advantage. However, shipyards cannot take the initiative of the projects because they do not have skills to manage the whole project by themselves. It is therefore analyzed

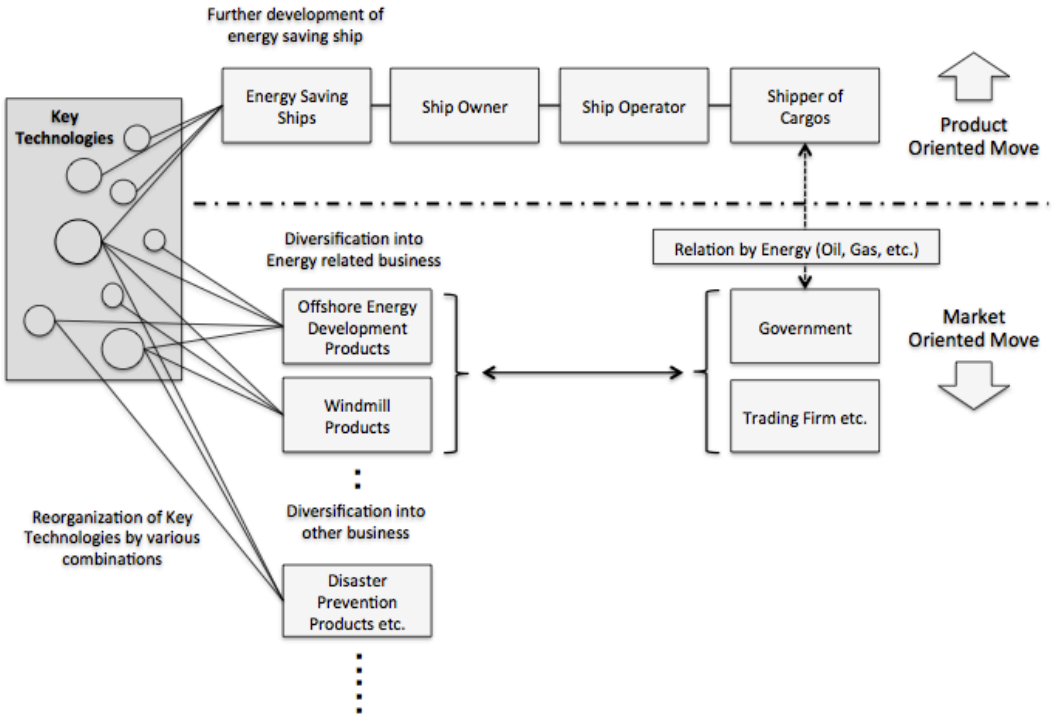
that windmill products are associated with relatively low-risk with low return. It could be recommended to all of the three shipyards but SSK having its shipyard in Kyushu area may have geographical advantage. Since Kyushu area is rarely attacked by Earthquakes and Tsunamis, it is currently focused as a place not only to relocate workshops from dangerous areas but also as a place to build renewable energy related plants since the disaster in 2011.

Lessons from Europeans

One of the most important lessons from the Europeans in the oil crisis is the "Market oriented" move taken by diversification into other energy related businesses. Although Japan and Europe both considered its advanced technologies as its core competence, Japan utilized it only for "Product oriented" moves while Europeans utilized it for both "Product" and "Market" oriented moves. An important lesson here is therefore the key technologies of shipyards could be utilized for various non-marine products other than shipbuilding by reorganizing key technologies by different combinations. Change in focus from "Product oriented" focus to "Market oriented" focus could provide various opportunities for shipyards to diversify into other non-marine products.

Figure 6.2 shows the process of how shipyards utilize its key technologies for "Product oriented" moves and "Market" oriented" moves. It shows that reorganization of the key technologies by various combinations could allow shipyards to diversify not only into energy related businesses but also into various other businesses.

Figure 6.2 – Combination of the Key technologies and two different Moves



Source: The Author's original

An important lesson from the Europeans was that the combination of two different moves (Products & Markets) provided them with competitive advantages that are not easily taken away by competitors. They created a stable business foundation, which is not easily affected by cyclical fluctuations of the world shipbuilding industry. The challenge for Japanese shipbuilders to turnaround from the current crisis is therefore to create its own competitive advantage by utilizing its key technologies by different combinations. In other words, it is to create a strong market position in particular segments, which could not be easily copied by competitors.

Chapter 7 Summary and Conclusion

The world shipbuilding industry currently entered its largest recession period after the economic crisis lead by the failure of Lehman Brothers in 2008. In a recession period, shipbuilders in developing countries expand its market share by taking previous leader's share, which is a nature of shipbuilding. And it eventually causes cyclical change of leaders as it occurred periodically in the history.

This is why shipbuilding is still highly labor-intensive industry relying on human's work. Although there had been various technological innovations appeared during its development, there had been no innovative technologies that could replace human's work dramatically with automation. Shipbuilders in developed countries are therefore always challenged by developing countries having abundant low-wage workers.

However, evidence of various matured industries shows numbers of leaders achieving turnaround after a serious decline by adopting themselves to environmental change. What played an important role in turnaround cases are its "ability to respond to environmental change".

The goal for this research was to create an applicable turnaround model for Japanese shipbuilding industry that enables them to recover from the current crisis. What is important for managers working in a matured industry is to manage the process of turnaround. In order to achieve higher possibility of successful results, managers should manage the process theoretically but not accidentally.

The 3R-ACAP model created through the study comprises of three turnaround strategies (Retrenchment, Reorganization and Realignment) and absorptive capacity (ACAP). ACAP works as firm's ability to find useful information from its sources and to utilize it while creating turnaround strategies. Necessity of integrating the concept of ACAP into the 3R turnaround model is to complement

the missing function of the 3R model. Although the "Ability to respond to change" was recognized by researchers as an important factor for turnarounds, the process of how firms recognize environmental change and how firms assimilate and utilize valuable information was not shown in any turnaround models. Therefore the concept of ACAP was integrated into the turnaround model.

Feasibility of the 3R-ACAP model developed through literature surveys was examined in two steps. At first, it was examined by the three turnaround industries including the U.S. Copper Industry, British Steel Industry, and the Brazilian Aircraft Industry. As a result, some modifications toward an improved 3R-ACAP turnaround model was done. And second, it was examined by the Japanese and European shipbuilding industry in the 1970s oil crisis. As a result, it was found that the 3R-ACAP turnaround model works properly to identify the eight factors (Internal Sources, External Sources, Triggers, Potential ACAP, Realized ACAP, Retrenchment, Reorganization, and Realignment) comprising turnaround strategies. And therefore, it came to the conclusion that 3R-ACAP model is an applicable turnaround model for Japanese Shipbuilding Industry.

As a final step of the research, analysis of major Japanese shipyards including Mitsubishi Heavy Industry, Japan Marine United, and Sasebo Heavy Industry was done by the 3R-ACAP model to provide practical recommendations. As a result, it was found that although Retrenchment was taken by all firms as an initial action to stable the crisis, subsequent strategies were not yet fully organized at the moment.

Energy related moves are the keyword for Japan's turnaround

The keyword recommended for current Japan's turnaround is "Energy related moves" which was derived from the study of 1970s shipbuilding industry. Based on this keyword, Japan should go for further "Development in energy saving ships" and diversification into other "Energy related businesses". An important lesson from the Europeans is to utilize its advanced key technologies not only for "Product oriented moves" but also for "Market oriented moves". If Japan could combine "Market" oriented strategies in addition to "Product" oriented moves,

Japan could create further competitive advantages that are not easily taken away by competitors.

Limitation of the study and future direction

Finally, there are three important limitations to note here. At first, feasibility of the 3R-ACAP model is confirmed by examination of successful turnaround cases only. No examination of unsuccessful industries that failed to turnaround is done in this research. One of the reasons is that the original 3R model developed by George A. Boyne already includes numbers of pilot researches and data analysis in both successful and unsuccessful cases. However, future direction of this research should include examination of unsuccessful cases by the 3R-ACAP model since the model could provide practical recommendations to unsuccessful firms for future turnarounds by identifying the missing parts.

Second, cultural differences, which may have an affect to firms or industry's ACAP is not focused very much in this research. For example, it could be said that Japan has advantage in cumulating internal sources since lifetime employment is still popular and employees tend to work longer in one company. On the other hand, Western countries have advantage in cumulating external sources since employees move actively to create carriers and external networks are more developed. Various organizational and managerial routines peculiar to each country are not focused very much in this research since analysis will become complicated. However, future research should include comparison of cultural differences and its affect to strategies among Western countries and Japan. And third, number of samples studied here are limited due to limitation of time. Further examination of various turnaround cases could provide additional modifications or extension toward an improved 3R-ACAP model, which is also the direction for future research.

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