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Author: Pengfei Chen	 (Signature author)
Faculty supervisor: Professor: Tore Markeset	
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Abbreviations

OECD	Organization for Economic Co-operation and Development
IEA	International Energy Agency
COSL	China Offshore Service Limited
IMF	International Monetary Fund
EIA	U.S. Energy Information Administration
NOCs	National Oil Companies
CNPC	China National Petroleum Company
CDE	COSL Drilling Europe AS
PEMEX	Petroleos Mexicanos
CGG	Compagnie Generale deGeophysical

Chapter1. Introduction

The oil workers of Pennsylvania USA in 1859 utilized modern drilling approaches to successfully find the first oil well which formally opened the prelude of modern petroleum industry. From then on, oil replaced coal as a major world energy and increasingly impacts on the growing economic and social development as well as petroleum industry evolution known as black gold, industrial blood and economic growth engine as well.

Due to the foreseeable rapid growth of oil consumption in the future, it activates oil and gas companies to discover more reservoirs and increase production as possible as they can, this in turn requires oilfield service companies of the world to utilize new technology and advanced management concepts to discover more complicated reservoirs and achieve these reservoirs available to explore and increase the oil production. Researchers ([Kumar et al., 2007](#)) point out that “companies are becoming progressively more dependent on service providers to deliver performance at a competitive level according to the stakeholders and market demands”. Among these oilfield service companies, by merging some little technology companies and increasing research investment, the world gradually emerges some international oilfield service giants like Schlumberger, Halliburton as well as Baker Hughes etc. These huge oilfield service companies not only master the latest technologies but also have the most outstanding engineers providing a package of services from the technical support to asset management of oilfield.

Correspondingly, the Chinese oilfield service industry develops extremely quickly emerging a lot of oilfield service companies, too. Among Chinese oilfield service companies, there is a leader in Chinese oilfield service industry, namely: China Oilfield Services Limited (COSL), COSL is an integrated oilfield service solution provider with nearly 50 years of experience in offshore operation having four major business segments, namely: geophysical services, drilling services, well services and marine & transportation services covering the exploration, development and production phases of oil and gas industry, COSL is an all-round offshore oilfield service company with integrated functions and bundled service chain in China and even in the world ([COSL, 2014](#)).

With the development of Chinese economy and the encouragement of Chinese government, Chinese companies start to focus on international market in order to attract more investors and to acquire international capital and to learn the advanced technology as well as management concepts. They are mainly state-owned and high-tech service companies like Huawei, Lenovo as well as CNPC firms etc. When Chinese companies explore the unknown market, they usually face various troubles and challenges coming from external or internal forces, which cause them to lost a great deal of money, or to suffer from awful reputation even to withdraw the market. However, accompanying with the development and reform of Chinese companies,

they becomes increasingly mature and successfully attracts the eyes of world media. Among in these companies, COSL, undoubtedly, is an outstanding representative. According to the report of Arabianoilandgas.com (2009), COSL ranked the tenth world's largest oilfield services companies. Consequently, the author of this thesis is very interested in this topic and expects to trace its history footmarks to discover why COSL positioned in the top ten club of world-wide oilfield service industry in short time knowing that COSL was found in 2001.

Comparing with its competitors like Schlumberger, COSL is still a small potato although COSL develops promptly these years and the business expands to the world-wide, too. COSL remains to face a series of challenges, for example, the service software is lagged behind the international counterparts, meanwhile, core competitive equipment also inferiors to these giants especially the oilfield technology and simulation equipment. How to keep pace with the competitors and how to surpass the competitors is an interesting topic. Thus, the author of this thesis tries to investigate and analyze the service difference and to attempt to find an available way.

1.2 Problem description

COSL faces some problems during the development history, for example, the service concept conflict with advanced management, the service strategy re-defined, also the hardware and software of service is lagged behind which lead the service level to inferior to international counterparts. In addition, global service support system especially equipment and employees service support is weaker international giants.

However, COSL is a state-own company enjoying its own special advantages like the strong support of the mother company including the finance and manpower. Further, Chinese government encourages ambitious enterprises like COSL to enter into international market competing with international huge companies, that is to say, COSL can be supported by the state policy which in turn precipitates to improve the quality of service indirectly.

Based on the advantages and weakness that COSL face at present and in the future identified, we will investigate the strength and weakness of COSL scientifically in order to reduce the gap, and suggest some available solutions by learning their experience, adopting their advantages and casting away the disadvantages.

First of all, this thesis will be started to look back the oilfield service development history, then author will introduce the detailed development processes of the international oilfield service giants and COSL, why do these companies become the industrial leaders? What kind of services they can provide? How to support the service? What the status quo of COSL at present? What is the main core competency of service? etc.

1.3 Objectives

The main objective of this master thesis is to look into the service difference between China Oilfield Service Limited and other international companies such as Schlumberger, Halliburton, Baker Hughes and Transocean, etc. By analyzing and comparing the service of COSL and these companies including service strategy, service capability, service content, service innovation and service resource, and so on, Author is going to try to look into the service essence between COSL and its competitive counterparts like Schlumberger, Halliburton, Baker Hughes as well as Transocean, etc. Simultaneously, author expects to find practical solutions to narrow the wide gap.

1.4 Methodology

The author of this master thesis has worked in COSL since 2005 after graduation from Southwest Petroleum Institute, China. Thus, author knows about the enterprise culture and service concept as well as service strategy of COSL etc. Meanwhile, author is now in COSL Mexico S.A. de C.V, which is the wholly owned subsidiary of COSL, in addition, author studied one year in the University of Stavanger, Norway, where locates COSL Drilling Europe AS in 2013.

Furthermore, author worked in Jakarta five years ago - the capital city of Indonesia, where has the largest Southeast Asian subsidiary of COSL, that is PT. COSL Indo. Based on the rich domestic working experience in COSL and the overseas working and studying experiences as well, author collects plenty of materials mainly coming from annual reports, official websites and interview of high management of COSL including the president of COSL—Li Yong and the vice president of COSL – Xu Xiongfei. Through the above investigations, plus by using an entry mode, namely: the SWOT approach, the author of this thesis will comprehensively and systematically analyze the service strength, service weakness, opportunities and threats of COSL.

1.5 Limitations

Just like the words mentioned in paragraph 1.4, author has already worked in COSL for 9 years from a trainee drilling fluids engineer to an overseas project superintendent. However, it still has the knowledge recognition limitation and the scope restriction for the author as it is difficult to consider the external environment especially with respect to the political factors.

For example, CNOOC, the mother company of COSL, was going to buy Unocal Corporation of the United States in 2005, but it failed due to the objection of American Congress. Also, another shortcoming is that the author doesn't have any experience working in foreign oilfield service companies even if a small company, which inevitably causes standpoints of this thesis to bias towards COSL though author

attempts to keep neutral points.

Moreover, the information and the data from international oilfield service companies is insufficient and obsolete, which probably results in one-side view and summary as well although the author of this thesis costs a lot of energy and time to collect these data and information from internet and public financial annual reports and friends working in Chinese subsidiaries of international giants.

Further, the entry mode also exist some limitations, for example, Judgment on the strengths and weaknesses is actually a complex measurement problem. However, there are no clear measurement standards when analyzing strengths against weaknesses, opportunities against threats.

Chapter 2 Economy & oil & oilfield service industry

As we know that crude oil is the blood of global economy, which directly determines the stock trends of world-wide. If we review the recent history, the Iraq war can also be mainly defined as a crude oil war. In this chapter, we are going to discuss the relationship between the world economy and oil price and the oil consumptions and the Chinese energy requirements. Thereafter, the author will review the development of China oilfield services industry and briefly overview the giants of oilfield services industry.

2.1 The relationship between world economy and oil price

In today's modern world, the basic life necessities of human beings is closely related to oil and gas especially when entering 21st century because almost everything more or less refers to these resource and its auxiliary products. Furthermore, if we focus on global economy, it is not difficult to find that the economic trend is substantially influenced by the commodity price of crude oil and natural gas, in other words, it is the barometer of global economy. According to a report of International Energy Agency ([2004](#)), a sustained 10 USD per barrel increase in oil prices from 25 USD to 35 USD will cause Organization for Economic Co-operation and Development to lose 0.4% GDP in the first and second year. Simultaneously, the inflation rate will rise by 0.5% while the unemployment rate will correspondingly grow up.

As the Euro-zone countries, since they are closely rely on oil imports which enable them to suffer from terrible loss in the short term, for example, the growth of oil price in 2004 has led to loss of 0.5% of GDP and raised the inflation rate of 0.5%. Meanwhile, as for the biggest economy body and driven engine, the United States also lost 0.3% GDP in this year. Comparing with developing countries, they are more dependent on oil imports, in addition, owing to the lagging behind of the basic energy industrials particularly the inferior oil and gas service production capacity, the same output value of the oil consumed in developing countries is equivalent to two times of the OECD countries, so the economic situation will become worse even the price of crude oil and natural gas goes up lightly. For instance, India spent 15 billion USD in 2003 to import oil occupying 3% GDP.

The flourish of economy must be found on the oil and gas consumptions, the fluctuation of price decides world economy tends directly. This in turn motivates world-wide oil companies to invest large quantity of money in exploration and production areas, which extremely booms the oilfield service industry.

2. 2 The global production and consumption of oil

It is widely known that crude oil and natural gas belongs to non-renewable resources, human has developed and consumed 950 billion barrels of oil in the past 150 years. With the rapid development and high integration of world economy, the requirements of oil and gas become increasingly urgent. Based on the report of Andrew Inkpen of Thunderbird School of Global Management, the global demand for energy will increase by 30-40% by 2030 comparing the year of 2010. Therefore, many researchers and experts claim that the petroleum resource will be depleted when entering 22nd century or even earlier than 2070 (Botkin and Perez, 2010).

Imagine that if one day in the future, the oil and gas resource is depleted completely, what will happen? The answer is undoubtedly negative. Thus, more and more people are asking how many years of left oil and gas can we use? The answer of this question mainly depends on how much oil is produced and how much oil we are going to consume. Based on the BP Statistical Review of World Energy (2013) as shown in the Figure 1, the oil production hardly meets the requirements of consumptions. The world daily production in 2012 was nearly 87 million barrels whereas the corresponding global consumption was approximately 90 million barrels per day.

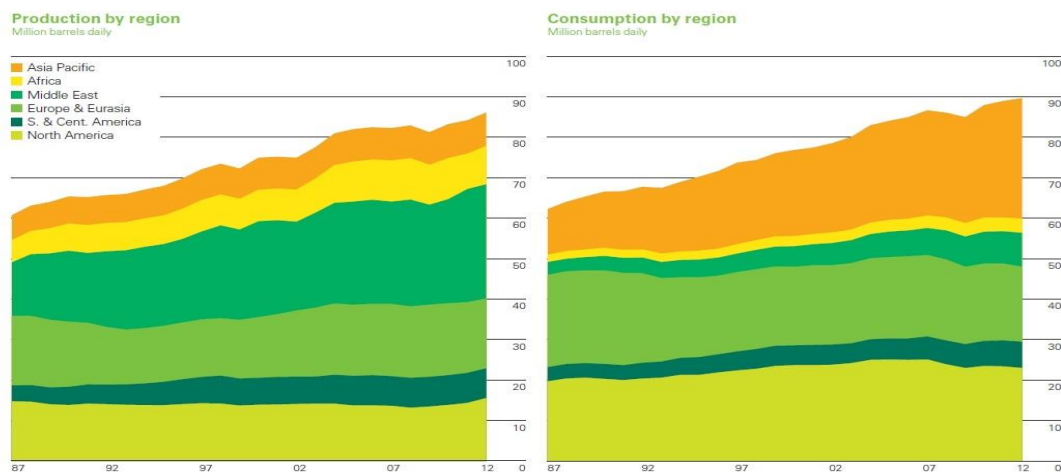


Figure1 Oil production versus consumption by region (BP.P.L.C. 2013)

2.3 The introduction of economy and energy in China

Empirical researches have proved that there is a one-way causal relationship between economic growth and energy consumption, the economic growth is dependent on energy consumption, in other words, the economic growth and the enlargement of economy scale will cause energy consumption growth.

Reviewing the development process of China economy, historically, China was a self-sufficient society, the production could meet the requirements of development of China even exported oil before 1993, but with the rapid evolution of Chinese political and economy, it is not difficult to draw a conclusion that China grows from an infant

to the world's economic giant less than 30 years, correspondingly, the energy consumption soars during these years. China has already become the second largest oil consumer inferior to the United States, due to the insufficient of oil production, China imports oil mainly from the Organization of Petroleum Exporting Countries such as Saudi Arabia and Venezuela.

2.3.1 Economy and energy consumption introduction of

China

Deng Xiaoping, the second generation leader of China, decided brilliantly to reform the political and economy area and open the country to the world in 1978, the Chinese economy started to boom promptly. After three decades spectacular growth, China has already successfully surpassed Japan since 2010 as the second global economy body. Nowadays, China is widely regarded as the driven engine of global economy. The statistics shown in Figure 2 explicitly illustrates that the Chinese real GDP growth almost exceeded 8% from 1991 to 2013 ([International Monetary Fund, 2013](#)). This is a miracle in the global economy history which no country has accomplished except China.

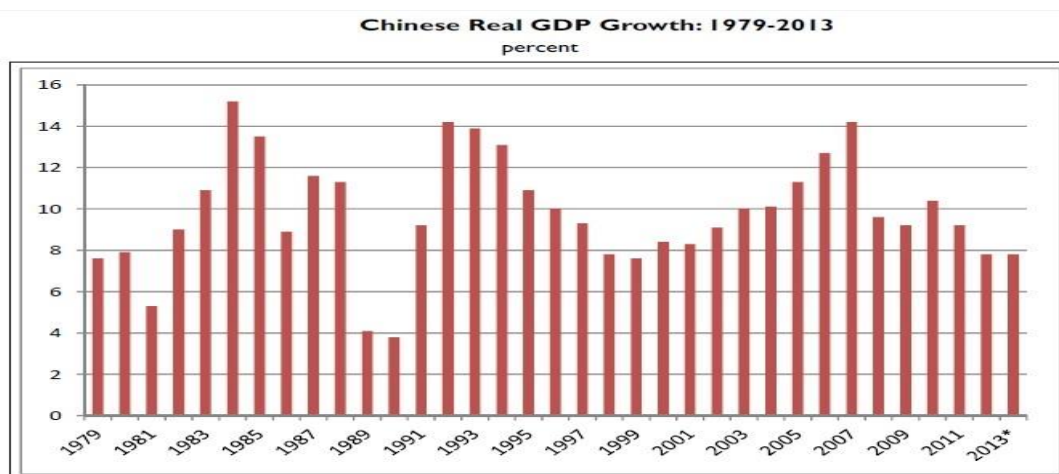


Figure 2 Chinese Real GDP Growth ([IMF, 2013](#))

Nevertheless, just like a coin has two sides, the rapid economy increase must be accordance with a great deal of energy consumption, according to the Figure 3 abstracted from the new investigation of U.S. Energy Information Administration ([2013](#)), if world GDP grows to 3.6 % per year, the energy consumption of China will approximately increase to 220 quadrillion Btu whereas the consumption of United States keeps almost stable within 30 years.

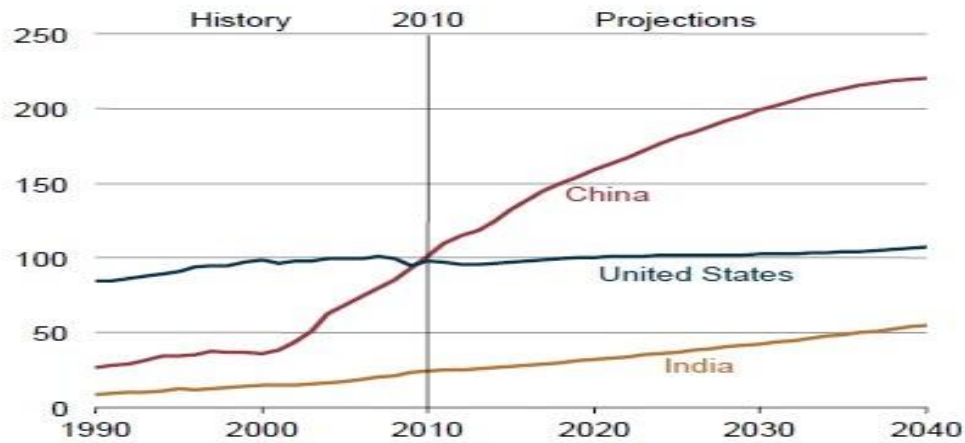


Figure 3 Comparison of energy consumption in the future (EIA, 2013)

2.3.2 Oil and gas resource and production of China

Geographically, the oil and gas resource principally distributes in Russia, Saudi Arabia, Iraq and other middle-East countries, the inhomogeneous resource distribution in turn makes China to be a resource-poor nation in deed although Chinese students in author's generation were taught in primary schools that China enjoys vast territory and abundant resources. However, this utopian thesis has early been attacked by large numbers of scholars criticizing that these words in textbooks tends to mislead publics because China has become a net oil importer since 1993 (Guangding Liu, et al., 2010).

As the major energy, the general trend of proven oil and gas reservoir in the world is on the decline, this principle works well in the future, many evidence turns that it is increasingly hard for China to discover huge oil and gas reservoir like Da Qing oilfield in addition to the production decrease in the previously old oilfield which leads to the production of oil increases slowly while the consumption soars contributing to large quantity of population and the requirements of development. The following Figure 4 (AlaskaBusiness, 2012) clearly demonstrates the comparison between consumption and production of oil. The oil production in 1993 was about 3 million barrels per day, but the daily production in 2013 was only around 4.3 million barrels, in other words, the oil production within 21 years approximately rise 1.3 million barrels per day. Conversely, the consumption goes up critically, it will be almost four times in 2016 than the consumption in 1993 based on the reference of this Figure.

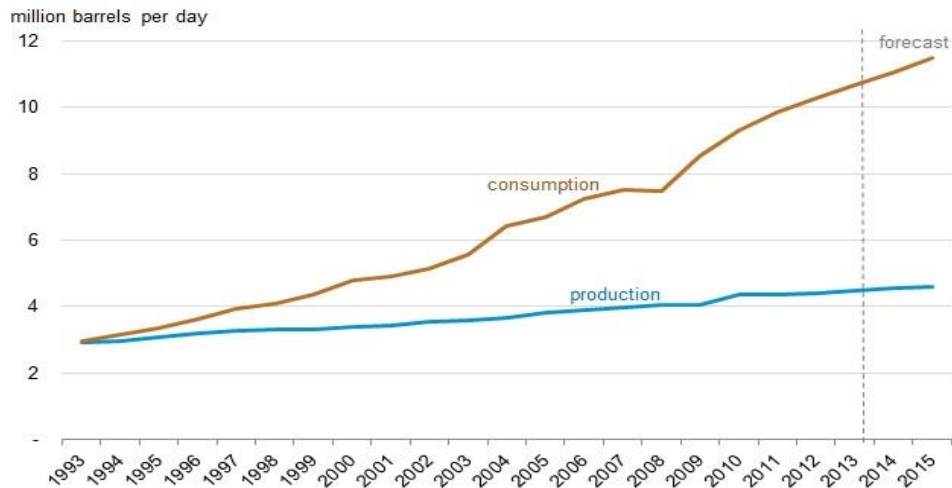


Figure 4 China's oil production and consumption ([AlaskaBusiness, 2012](#))

2.4 Overview Chinese oilfield service companies and international giants

China has become the world's second largest oil consumer since 2006, but oil consumption per capita is far below the average of other countries. At present, the primary energy supply comes from coal, oil, natural gas and hydropower, among these resource, coal accounts for the vast majority standing for the proportion of 70.2%, accounting for 20.6% of crude oil, natural gas occupying 2.9%. With the structure adjustment of energy consumption and promotion of the industrial structure, the energy structure of China will be optimized deeply, the oil consumption per capital will further improve.

Generally speaking, China's crude oil and natural gas market is vast, which prompts the Chinese oilfield service industrial to prosper particularly the national oil companies launch the "go global" strategy . But the Chinese oilfield service companies also have obvious weakness such as the insufficient of R&D, immaturity of technology as well as the small scale, etc. Therefore, to compete with international oilfield service giants and to learn advanced technology as well as modern management experience, Chinese national companies integrates subsidiaries and other business forming professional oilfield service companies one after another.

2.4.1 The definition of oilfield service

What is the oilfield service? Oilfield Services is accompanied by the development of petroleum exploration and production of oil companies in order to provide from engineering to technical professional services industries, it primarily includes oil field services geophysical prospecting, well drilling, well logging, drilling fluids, cement, completion and some related oilfield equipment manufacturing sales, shipping

services. Thus, we can draw out that the oilfield service is the significant partner of oil and gas exploration and production.

Typically, the oilfield service can be divided into three stages, namely: exploration, development and production as well. Exploration is very significant during the oilfield development process involving seismic data acquisition, drilling, assessment and the potential oilfield test which guarantee the commercial development value. The second stage is development of oilfield, this stage includes a large number of drilling activities in order to fruit the exploration work. Production is the last stage, which consists of oil transportation, reservoir management, production well and work-over activities.

2.4.2 The introduction of Chinese oilfield service companies

After 20 years of independent operation of the oilfield services industry, the oilfield service companies in China steps a large development, but still lag behind international counterparts in terms of scale, technology strength and market position as well.

Due to the political factors, all resource-type companies in China are state-owned. Traditionally, they are divided into three national oil companies (NOCs) based on the region and primary business in the oil and gas area, namely, China National Petroleum Corporation (CNPC), Sinopec Group (Sinopec) and China National Offshore Oil Corporation (CNOOC). To satisfy the modern requirements of petroleum industry, some professional service companies have gradually been established by these three mother companies according to the divisions of business. Peng (2013, pp. 19) states that “they all have their own oilfield services companies as independent operating subsidiaries to cover almost the entire oilfield service chains both in their domestic and foreign markets”. Table 1 shows that the main Chinese national oil companies and its subsidiaries (Peng G.C., 2013).

Table 1 Chinese Oilfield Services Companies Summary (Peng G.C., 2013)

Mother company	Oilfield services Subsidiaries	Services scope								
		O	L	GS	DS	WS	MS	CS	PS	MF
CNPC	CNODC									
	BGP									
	GWDC									
SINOPEC	SINOPEC SERVICE Ltd									
	SIPC									
CNOOC	COSL									
	COOEC									

Oilfield Service Companies

CNODC: China National Oil & Gas Exploration & Development Company

BGP: Bureau of Geophysical Prospecting

GWDC: Great Wall Drilling Company

SIPC: Sinopec International Petroleum Exploration and Production Corporation

COSL: China Oilfield Services Limited

COOEC: Offshore Oil Engineering Co. Ltd

Service Scope

O: Offshore

L: Land

GS: Geographic Services

DS: Drilling Services

WS: Well Services

MS: Marine Services

CS: Construction Services

MF: Manufactures

PS: Production Services

2.4.3 A brief introduction to COSL

COSL was found in 25th December 2001, and its mother company is CNOOC, it is an integrated oilfield services provider having 30 years of offshore operations experience in China offshore market. The company's services cover all phases including oil and gas exploration, development and production operations. The business is mainly divided into four segments, namely: drilling services, well services, marine services as well as geophysical services. After more than one decade development, COSL not only has been to be an integrated oilfield service provider with strong competences in international market but also it has an excellent performance in the international capital market.

2.4.4 The international oilfield service giants

Throughout the history of the development of international oil companies, most oil companies not only were engaged in oil and gas business but also participated in engineering and technical services in the early stage. However, oil companies gradually started to strip oilfield services business from 1930s in order to focus on the development and exploitation of the upstream business and downstream operations including retail and marketing as well as in order to shift the risk of commodity price fluctuations through pricing power. Super integrated oil companies were divided into two parts, the one is oil and gas companies (oil companies) and the other is oilfield service companies. Presently, the major international oilfield service companies are, namely: Schlumberger, Halliburton as well as Baker Hughes.

Schlumberger is a leading global technology service company headquartered in Houston, Paris and Den Haag. The company employs more than 123,000 people and represents over 140 nationalities working in more than 85 countries. It was founded in 1926 deriving from a geological logging company. After 80 years of development and expansion, Schlumberger bought more than 20 companies or other business forming to provide real-time, integrated oil and gas field services solutions to the clients ([Schlumberger, 2014](#)).

Halliburton, currently, is one of the largest oil and energy providers in the world. The company was established in 1919 headquartered in Dubai, it has the capability to focus on the entire life cycle of oil and gas fields providing value-added services from oil and gas exploration, development, production, operation, maintenance, conversion and refining to infrastructure construction as well as oil and gas field abandonment. The employees in Halliburton are more than 75,000 people worldwide and the business operates in more than 80 countries and regions ([Halliburton, 2014](#)).

Baker Hughes is a global oil and gas exploration and processing company which can provide products and services to oil companies headquartered in Houston. It was merged in 1987 by Baker International and Hughes Tool Company. It hires around 60,000 employees in the worldwide and the business covers 80 countries. Baker Hughes can provide a package of service including drilling, completion and production of oil and gas wells all kinds of products and services ([Bakerhughes, 2014](#)).

This chapter mainly discusses the relationship between global economy and oil price, the development of Chinese economy and requirements of oil, overview the three giants of world-wide and the development of China oilfield service industry. Since the requirements of energy, which lead to the investment of oil companies rapidly urging oilfield services industry development.

Chapter 3 COSL services and service practice.

In this chapter, we will review the development of COSL and financial performance according to the annual reports. Then, the author will introduce the business segments and their financial performance including the drilling services, well services, marine services as well as geophysical services. Lastly, the practice of COSL will be discussed in two sides, one is the domestic practice, and the other is international roads.

3.1 The development history of COSL

COSL is currently the largest offshore oilfield services provider on market scale of China. The services capabilities conclude from offshore oil and gas exploration to production. Tracing the history footmarks of COSL, as early as February 15, 1982, CNOOC, the mother company of COSL, was approved by the State Council of China to be a national oil company. Then, in December 25, 2001, CNOOC decided to reform its business model in order to enable the company to be more systematic, competitive as well as professional combing the drilling, well services and petroleum exploration companies into one company, namely: China Oilfield Service Limited. Just only 4 days later, CNOOC re-integrated the business again, which regrouped the two shipping companies into one entity.

In 26 September 2002, with the approval of the Chinese government, COSL was registered to be a joint stock limited liability company. After almost two month, COSL went public on stock market of Hong Kong successfully. The stocks of COSL, in 26 March 2004, can be traded by means of level one depository receipt of America in New York Stock Exchange. Three years later, COSL was successfully listed on the biggest stock exchange in China – Shanghai Stock Exchange. Only one year later, COSL bought Awilco Offshore ASA of Norway, the predecessor of COSL Drilling Europe AS (CDE).

Presently, COSL is operating and managing a total of 32 drilling rigs including 28 jack-up drilling rigs (one leased) and 5 semi-submersible drilling rigs, 2 accommodation rigs, 4 module rigs and 6 land drilling rigs. The company also owns China's largest and most complete fleet of offshore work including more than 80 support vessels, 3 oil tankers, 5 chemical tankers, 9 seismic vessels, 7 surveying vessels and advanced logging, mud, directional drilling, cement and work-over services equipment as well.

Meanwhile, owing to the rapid development of China economy and the increase of oil consumptions as well as the growth investment of oil and gas companies, COSL enters into a high running track, we can see the below Figure that the total assets

increased substantially from 5,030 million RMB in 2001 to 74,649 million RMB in 2012. In other words, it is almost 15 times in 2012 than the value of total assets in 2001. Further, there were both substantial increases in the year of 2007 and 2008, which contributed to high oil price and buying Awilco Offshore ASA of Norway, respectively.

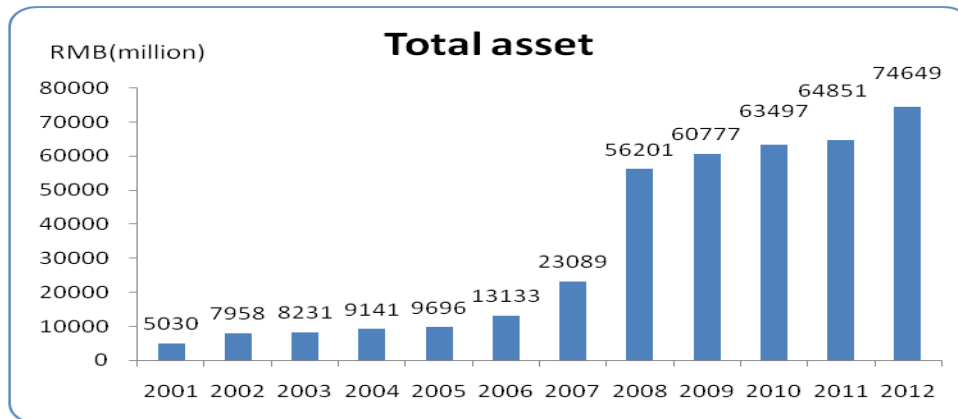


Figure 5 Total assets from 2001 to 2012

3.2 The yearly financial performance of COSL

This part is going to talk the financial performance of COSL based on the major financial indicators such as revenue, net profit, profit from operations and earnings per share as well. According to the data collected by the author from the annual reports of COSL, we can see from Figure 6 that the annual revenue of COSL increased dramatically from the first year of 2001 to 2009. Afterwards, the annual revenue went down slowly in 2010. Comparing with last year, it only decreased 2% that was 17,561 million RMB. However, the revenue in 2012 historically increased to 22,105 million RMB.

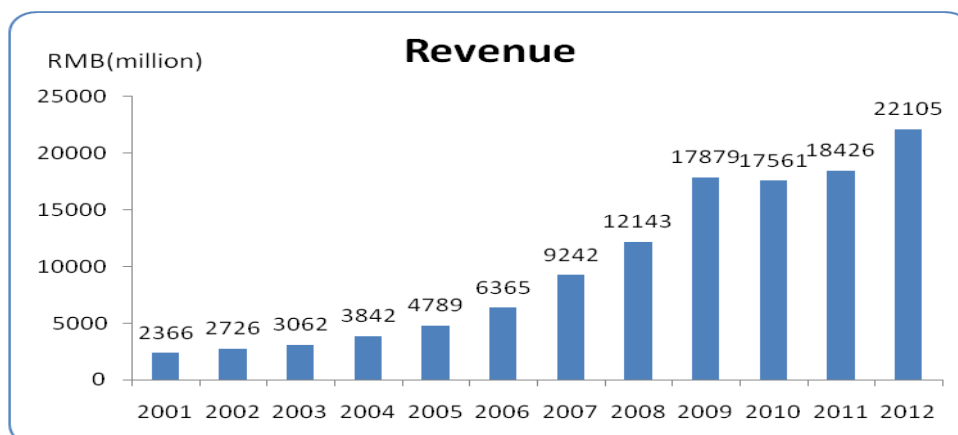


Figure 6 Revenues from 2001 to 2012

Additionally, the author once again collects the data from annual reports of COSL, Figure 6 illustrates that the net profit in 2001, the first year of COSL, was 273 million

RMB, after 11 years prompt development, the net profit in 2012 was up to 4,570 million RMB, it is almost 17 times than the net profit in 2001. Further, this Figure also showed an interesting phenomenon, which was the net profit continuously increased 11 years except the year of 2011., the profit of COSL, in 2011 was 4,040 million RMB, representing only a decrease of 88.5 million RMB or 2.1% compared with 4,128 million RMB of last year contributing to the fluctuation of foreign exchange rate as well as the curtailment of debt size and debt optimizing ([Annual report, 2011](#)).

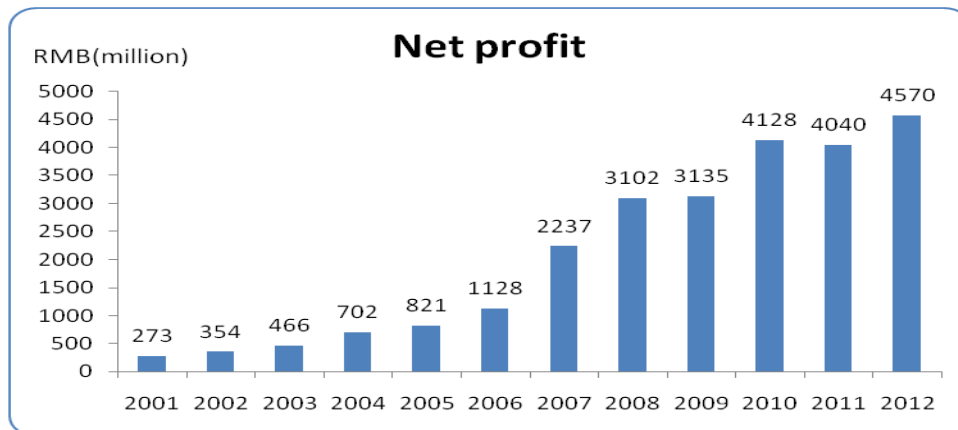


Figure 7 Net profits from 2001 to 2012

Furthermore, the Figure 8 can explicitly indicate the trend of profit from operations. The growth trend was not clearly within the beginning of five years. However, it critically increased to 1,392 million RMB in 2006 from 850 million RMB in 2005, afterwards, the value increased progressively with years from 2006 (1,392 million RMB) to 2010 (5,200 million RMB), then the value of profit from operations decreased to 4,983 million RMB in 2011 temporarily, after that, it once again went up to 5,619 million RMB.

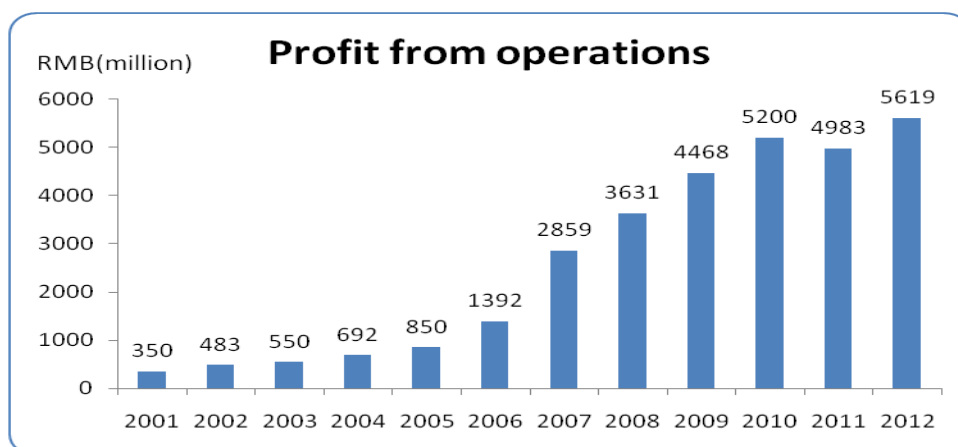


Figure 8 Profit from operations from 2003 to 2012

Moreover, undoubtedly, due to the perfect performance of COSL, the feedback of

stock market also strongly supported to the shareholders' confidence viewing the Figure 9. As we know that, COSL was listed on the stock market of Hong Kong in 2002, in the beginning, the Earnings per share was 0.13. From then on, the annual general trend of this value kept increase except 2011. In spite of this exception, it only decreased 0.2% comparing with the year of 2010.

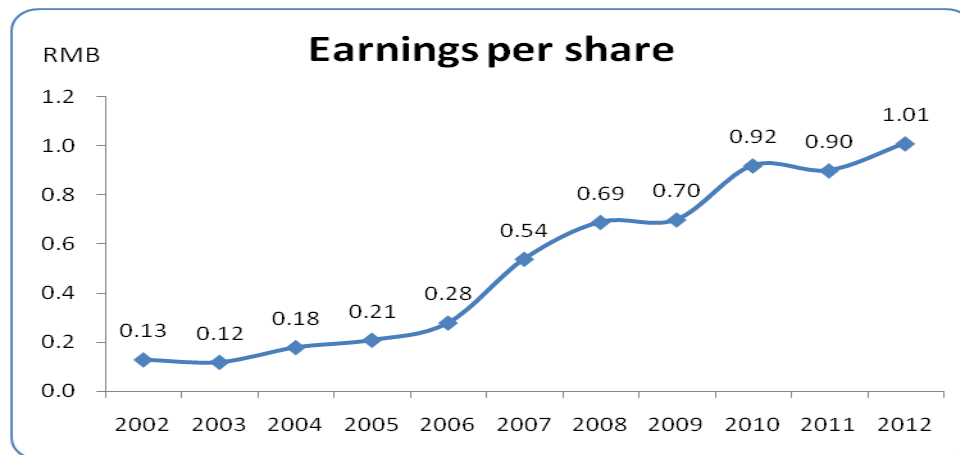


Figure 9 Earnings per share from 2002 to 2012

3.3 The business of COSL

Basically, the business capability of COSL currently covers all the upstream and downstream oilfield services business. In other words, COSL can provide an integrated service involving well site survey, drilling services, casing and tubing services, drilling fluids services, cement services, oilfield development and production etc. Simultaneously, with the business extension, COSL establishes overseas subsidiaries like COSL Mexico S.A.DE C.V., PT COSL INDO, COSL Middle East FZE, COSL Drilling Pan-Pacific Ltd. COSL Drilling Europe AS etc, the international clients incorporate Shell, Conoco-Phillips, Agip, Rock Oil, Devon, Pemex, Statoil etc, the domestic clients are CNOOC, CNPC and SINOPEC as well.

3.3.1 The core business segments of COSL

As we discuss before, there are four business segments, namely: drilling services, well services, marine services as well as geophysical services. Among these services, drilling services is its core service. The development of other services is mainly dependent on the extension of drilling services.

➤ Drilling Services:

COSL is the major drilling services supplier in China offshore, which provides the following services mainly covering drilling rigs, module rigs, casing and tubing services as well as drilling rigs management service etc. Until now, it runs and manages 37 drilling rigs, 2 accommodation rigs, 4 module rigs and 8 land drilling rigs

based on the middle-term market recommended material of 2013 ([COSL, 2014](#)), the operation capability can reach to 10,000 ft water depth and well depth can drill to 30,000 ft. The author draws a table and Figure 10 below which clearly indicates the development of drilling services business from the first year to 2012 abstracted from the annual reports of COSL. Particularly, the year of 2008 was memorable, the managed and rental rigs of COSL was up to 25 contributing to purchasing Awilco Offshore ASA of Norway. Further, this year was critical to the financial performance of COSL, just like the discussion before in paragraph 3.2, each economic indicator grew substantially in 2008. Additionally, due to the deep water development requirements, COSL invested and built HYSY981. Its operation water depth is up to 3,000 m, which formally represents that COSL has the ability to drill water depth wells.

Table 2 The development of drilling services business

Rig type	Years											
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Jack-up	9	9	9	10	10	12	12	19	22	24	27	27
Semi-submersible	3	3	3	3	3	3	3	3	4	4	6	8
*Rent	0	0	1	1	1	1	1	1	1	1	0	0
Land drilling rigs	0	0	0	0	0	0	0	0	6	6	8	8
Module rigs	0	0	0	0	0	0	0	0	4	4	4	4
Accommodation	0	0	0	0	0	0	0	2	2	2	2	2
Total rigs	12	12	13	14	14	16	16	25	39	41	47	49

*Rent: COSL ever rented one jack-up drilling rig from North Korea called YOUSHENG from 2003 to 2010 operating in Bohai Bay, China. After that, COSL finished to purchase this rig and renamed HYSY 935 in year 2011.

The Figure 10, collected resource from yearly reports of COSL and made by the author, shows that the revenue of drilling service continuously increased from 2001 to 2009 especially the revenue of the year of 2009 owing to the high efficient operation of CDE and equipment ([Annual report, 2009](#)). In 2010, due to the global economy crisis and the oil spill of Mexico gulf, the revenue of drilling services declined to 9,327 million RMB ([Annual report, 2010](#)), but with the recovery of economy and the high requirements of oil as well as the increased investment of oil companies, the revenue of drilling services of COSL grew once again and it went up to peak 11,252 billion RMB. By analyzing the two Figures, we can draw that the total rigs in 2012 is more than quadruple than 2001. However, the revenue in 2012 was 11.4 times than the year 2001. Now, COSL has become an important player in the international drilling services industry and its core business also has extended to Indonesia, Thailand, Singapore, Australia, Iraq, Mexico, USA, Norway and UK, and so on.

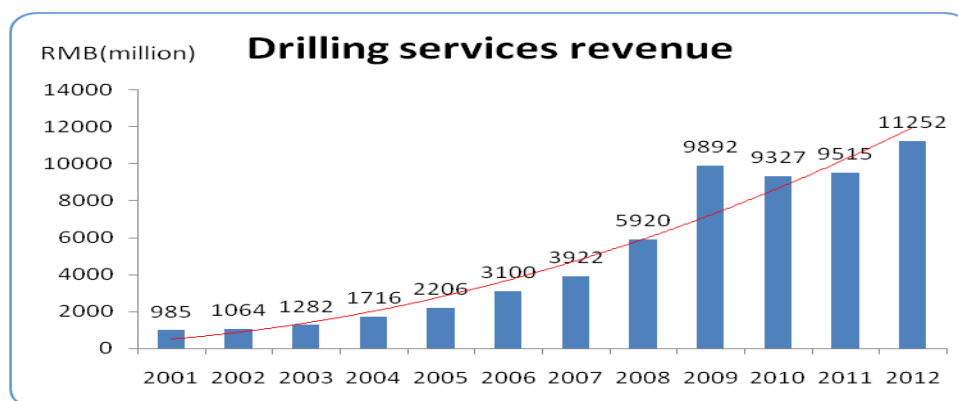


Figure 10 Drilling services revenue

➤ **Well services:**

Presently, well services in COSL contain three main business divisions, namely, oilfield chemicals, well-tech as well as oilfield optimization. Well services can provide comprehensive professional well services approximately covering all oilfield technical services industry such as well logging, drilling & completion fluids, directional drilling, cementing, oilfield production optimization etc. furthermore, the business of well service has already entered into overseas markets like Indonesia, Myanmar, Philippines, Thailand, Iraq and United Arab Emirates and so on. The main overseas market of well service in 2012 was Indonesia, which occupied the proportion of revenue almost one third. In addition, some well services like cement and drilling fluids services are going to bid the tenders of Mexico National Oil Company, if successful, the revenue of well services can go up dramatically.

The development of Well services is accordance with drilling services of COSL. The following Figure is the revenue of well services, which sketch almost the same trend comparing with the revenue of drilling services except 2011. The main reason of this trough was caused by two major reasons ([Annual report, 2011](#)), the one was the external market environment, for example, two oilfield technical services teams of COSL worked in Libya having a lot of equipment including cement pumps and logging equipment, but the war happened in this year. Xu Xiongfei, the vice CEO of COSL, presented that the Libya war caused 10 million US dollars lost at least directly, until now, the cement pumps are still left in Libya. The other was the small scale of oil spill in one production well belonging to COPC, a subsidiary of Conocophillips in China, directly led to the decrease of operations, which resulted in the fall of revenue. Afterwards, the well services revenue soars once again owing to the recovery of operations and overseas revenue such as the Missan oilfield of Iraq market.

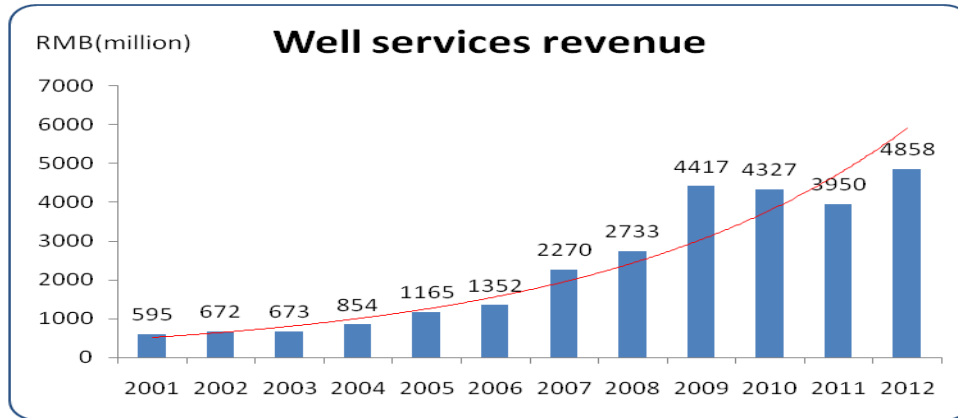


Figure 11 well services revenue

➤ **Marine services:**

The predecessor of marine division were two companies, the one was north marine company, the other was south marine company, the both companies were integrated by CNOOC, the mother company of COSL in 2001. The major business mainly includes marine support services providing a total package services for field exploration, development and production and transportation services providing position for rigs, towing, transporting oil and gas products as well as carrying chemical products like liquid methanol. After more than 13 years development, marine division, currently, is the third biggest division of COSL. We can observe the variety of tangible assets showing in table 3 to know about the development process of marine services. Limitation of the original resource of 2001, table 3 can still demonstrate the development of marine services, basically, the total vessels increased each year except of 2009 because some were be eliminated or sold due to the vessel age.

Table 3 The development of marine services business

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Utility vessels	54	58	68	68	69	75	70	80	75	75	72
Oil tankers	6	5	5	5	5	4	4	3	3	3	3
Chemical carriers	0	0	0	1	1	5	5	5	5	5	5
Total	61	63	63	74	75	84	79	88	83	83	80

According to the report of China Offshore Oil News (2012), after more than one decade development, the amounts of vessels towing for drilling rigs are more than 1200 times; assisting in storage and offloading oil extraction operations are more than 5800 times; the voyages per year are nearly 4,000 in average, more than 800,000 offshore material tons are transported. All the data proves that the exploration and production of China offshore oil is strongly supported by marine services. Currently, 55% China offshore market share is occupied by marine services of COSL, the marine services capability also simultaneously extends to Indonesia and Middle-East countries. The revenue of marine services maintains strong enhancement seeing from Figure 12 collected and sketched by the author. It increased to 2945 million RMB in

2012, which was the six times of the revenue in the first year 2012

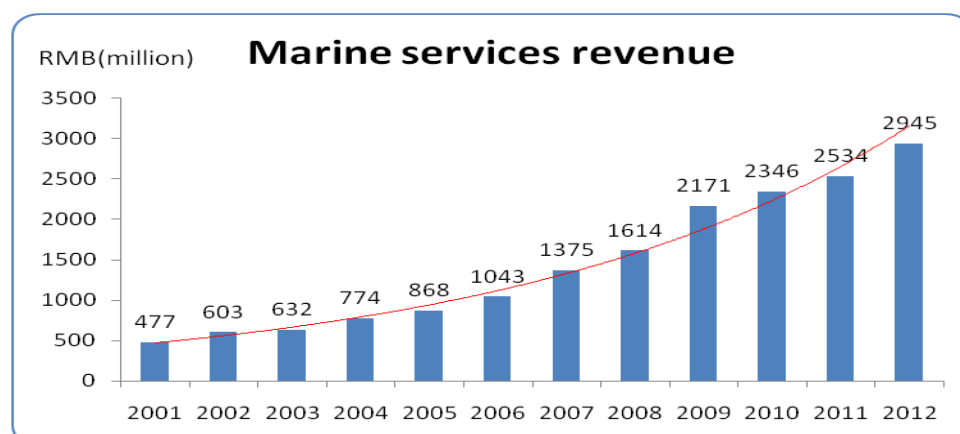


Figure 12 Marine services revenue

➤ **Geophysical services:**

Before drilling, oil companies must have the geological data of offshore blocks in order to preliminarily assess the probabilities of oil reservoirs, otherwise, exploration activities in blind lost its purpose and meaning. Geophysical business is to provide this kind of geological data collecting services, which mainly involves marine seismic data collection, marine surveying, seismic data processing and interpretation, land-based engineering and cable maintenance. We can find from table 4 abstracting from annual reports of COSL that the number of survey vessels were two times in 2012 comparing with the 2002 while the amounts of seismic vessels were 16 comparing with 9 seismic vessels in 2002. Importantly, the service capability increases substantially, for example, the seismic data processing ability in previous was majority in 2-D and a small quantity of 3-D interpretation business, but now, the seismic data processing ability has qualitative leap, which owns the 4-D interpretation capability.

Table 4 The development of geophysical services business

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Survey vessels	3	3	3	4	4	4	4	4	4	5	7
Seismic vessels	6	6	6	7	7	7	8	8	8	8	9
Total	9	9	9	11	11	11	12	12	12	13	16

COSL not only becomes the major supplier occupying most Chinese offshore market share, but also it is a significant participant in the world-wide geophysical services market. Currently, it develops overseas offshore regions including Southeast Asia, Europe, America, Africa and the Middle East as well. The following Figure indicates the financial performance of geophysical services, the revenue in 2009 was dramatically declined mainly contributing to the decrease of operation contracts and insufficient of working capacity based on the annual report (2009), afterwards, with the use of new generation vessels and the upgrading of novel equipment and

techniques in old vessels in 2011 and 2012, the operation ability grew up sharply and won a great deal of contracts which guarantee the rapid growth of gross revenue of geophysical services segment. According to the Figure 13, the revenue entered into the historical peak in 2012 surpassing the marine service revenue at the same period. Additionally, the ordered deep water survey vessel – HYSY721 will be delivered to COSL in 2014, we believe that the revenue will be increased to a new height by the year 2014. Also, if we continue to analyze The Table 4, it is easy to conclude that the revenue in 2012 was approximately 10 times than the year of 2001 although the total vessels in 2012 was 16, which was less than two times in 2001.

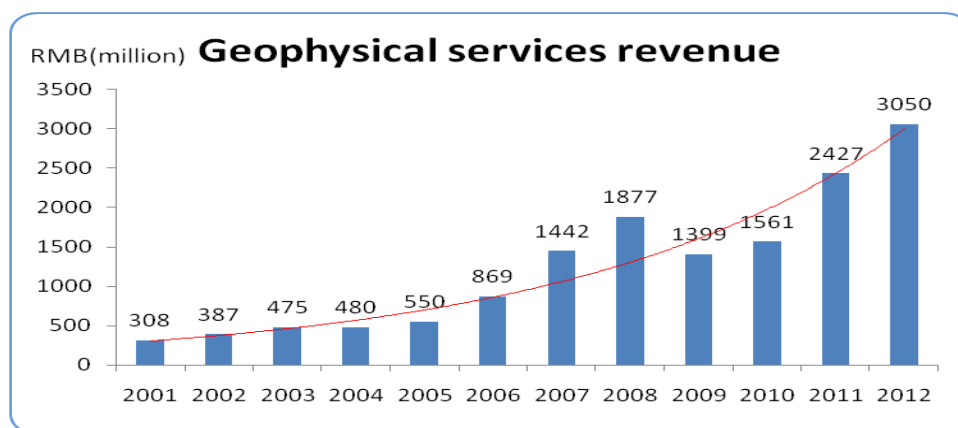


Figure 13 Geophysical services revenue

3.3.2 The revenue contributions to COSL

We discuss about the core business segments of COSL and clearly introduce the financial performances and development process using tables and Figures in the last paragraph. Now, in this section, we are going to discuss the revenue contributions of each segment. By collecting the statistics from the annual reports of COSL, the author of this thesis depicts the revenue contributions Figure of each business segment as below. From Figure 14, we can see that drilling services segments is the core service of COSL contributing the majority of revenue and the other services segments share the left revenue jointly.

For instance, the revenue contribution percentage was 42% in the beginning of foundation of COSL, and this parameter of the following 6 years floated around 42% except in 2006, it was up to 49% owing to the expansion of overseas market, the rise of service price as well as utilization of new generation equipment ([Annual report, 2006](#)). From 2008, the revenue contributions percentage exceeded half proportion principally caused by buying Awilco, afterwards, the revenue contributions maintained the same level and went up and down at around 52%. Further, the revenue contributions of well services kept good situations and balanced in fluctuation.

Also, the revenue contributions of marine service kept stable in the beginning of four

years, after that, the general trend declined gradually, the reason was that the revenue increase of drilling services and well services especially the expansion of drilling services led to the decrease of marine service contribution although the marine services revenue increase annually. Geophysical service is the shortcoming of COSL all the time, the revenue contribution from the Figure 14 never arrived at 17%, the peak point was 16% in 2003 and 2007, respectively. And the bottom point of the geophysical service fell to 8% in 2009, the main reason based on the annual report (2009) analyzed that the oil price in this year was low because of global financial crisis, which directly resulted in the slash of upstream exploration investment from oil companies.

The following data could indicate the recession of offshore geophysical industrial in the year of 2009, the 2-D and 3-D collecting business workload decreased by 15,548 km and 3,198 km² comparing with the same time, respectively, moreover, data processing services of 2-D and 3-D workload reduced by 3.5% and 5.1%. Afterwards, with the economy recovery and high demands of oil and gas resources in addition to the investment growth of COSL and expansion of overseas market, the geophysical service revenue contributions to COSL rebounded slightly.

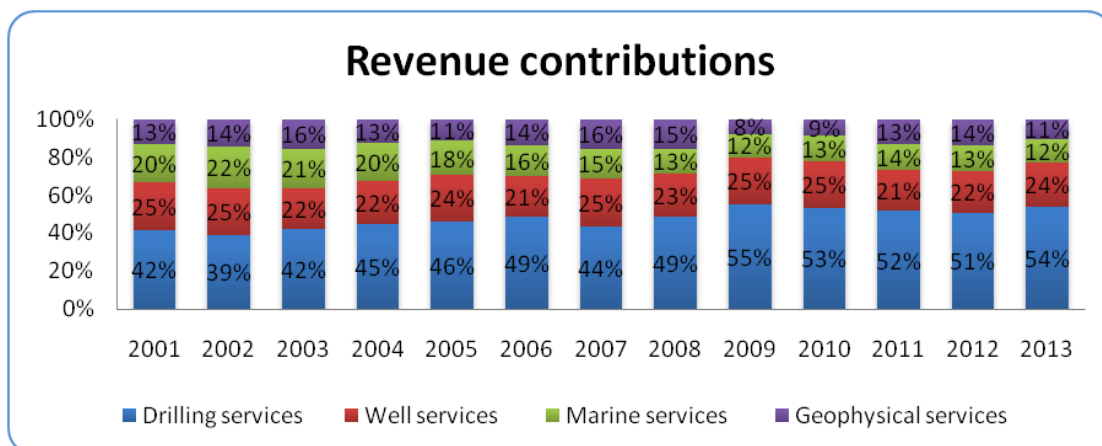


Figure 14 Revenue contributions

3.4 COSL service practices

In the past 10 years, the flourish of world economy drives the steady increase of consumptions of crude oil and the high international oil price urges oil companies to expand the exploration and production investment scales year by year, which directly motivate the prosperity and development of global oilfield service industries. According to the data abstracted from the annual reports of COSL, the author lists a table of the investment of oil companies world-wide from 2009 to 2013. Thus, we can conclude that it is the injection of global oil companies' capitals that drives the oilfield service industrial to become unprecedented prosperity.

Table 5 The investment of oil companies world-wide from 2009 to 2013

Year	2009	2010	2011	2012	2013
Investment (billion USD)	395	439	500	604	644

Meanwhile, China turns to be the global economy engine especially when the United States suffered from subprime crisis aggravating the recession of worldwide economy, furthermore, the government encourages Chinese companies to world-widely invest in oil industry in order to obtain stable and reliable oil and gas resources to drive the development of Chinese economy. Obviously, oilfield service companies of China are benefit from this policy, which directly motivates these companies to grow rapidly depending on the abundant capitals.

CAPEX is the short of capital expenditure, which defines that CAPEX is expenditure that leads to the obtainment or construction of a fixed asset or the improvement of an existing fixed asset. Also, generally, It also can be simply defined the investment of money and fixed asset, in other words, the profitability and revenue of oilfield services industry is closely related to the scale of oil companies' CAPEX. Absolutely, as the biggest offshore oilfield service provider in China, COSL is benefit from the policy and the investment, too. According to the data from annual reports, CNOOC gradually increase to invest in oil and gas resource exploration and development as well as production, Table 6 shows the CAPEX of CNOOC in recent years, the expected expenditure in 2014 will reach the peak point from this table, consequently, it is the three core factors that drive COSL to explore business rapidly, that are international clients' huge investment, the increase of CAPEX of CNOOC and the domestic requirements.

Table 6 CAPEX of CNOOC

Year	2010A	2011A	2012A	2013E	2014E
CAPEX (million USD)	507	642	599	905	1050-1200

Now, COSL continues to dominate the China offshore oilfield services market and the market share in Chinese offshore for drilling services, well services, marine services, geophysical service are 80%, 60%, 50% and 80%, respectively. Additionally, COSL actively expands overseas market, too. The direct result is that the percentage of overseas revenues has reached 32.5% ([Annual reports, 2013](#)).

3.4.1 The domestic service business

The main focused area for COSL is still the domestic market, which contributes almost more than 70% revenue annually, therefore, large equipment like drilling rigs are mainly distributed in Chinese maritime space, for example, the annual reports ([2013](#)) publishes that there were 11 drilling rigs operating in Bohai Bay, 10 and 2

drilling rigs located in South China Sea and East China sea, respectively. Meanwhile, the research systems and manufacturing and maintenance centers are fully in Chinese mainland, the providers are mainly from China considering the cost and transportation factors, etc.

Although the full name of COSL is China Offshore Service Limited, COSL still early services onshore projects contributing on the government policy that is the government encourages the Chinese national oil companies to compete mutually in order to improve the comprehensive capacities. Moreover, COSL has the ambitions to be an integrated oilfield services provider in international market, to be an integrated services provider, undoubtedly, it is not easy to accomplish this goal especially the main business focus on marine all the time, but COSL has to do it because the competitors of COSL like Schlumberger have the both capabilities operating onshore and offshore areas.

Thus, to make up and develop the shortcomings, the top management invests in onshore oilfield services projects, for instance, the Cement Division operated the business on the desert of Xinjiang Uyghur Autonomous Region as early as 1990s. Another example is that COSL possesses 8 onshore drilling rigs until now while it was 6 land rigs four year before. Furthermore, its clients turns diverse because of the changes of operations. For example, the both traditional oil companies in China such as CNPC and Sinopec are involved, too.

Simultaneously, due to oil and gas resources becomes more and more difficult to find and produce, oil companies gradually eyes on the deep water market from the shallow water, the deep water defined by oil drilling industry is that the water depth extends to 500 meter and the water depth more than 1500 belongs to super deep water. Presently, the active areas for drilling in the world are mainly in Mexico gulf, Brazil and West Africa.

Thanks to a series of important discoveries of deep water oilfields, the investment in deep water oil and gas exploration and production from oil companies increasingly raises, Figure 15 ([Global Offshore Prospect, 2013](#)) shows the increasing importance to global hydrocarbon supply, which explicitly demonstrates that crude oil from deep water oilfield becomes increasingly important, the oil production will reach to almost 55 million barrels of oil equivalent per day by the year of 2025.

According to the report of Douglas Westwood Firm ([Yang Jinghua, 2014](#)), the total investment in deep water oil exploration and production was 112 billion US dollars during the period of 2008 to 2012, while the expected value is going to increase to 223 billion US dollars from 2013 to 2017. Among these investments, the “golden triangle” (Brazil, Mexico Gulf and West Africa) will share 80% proportion and the left will be invested in Asia. Further, the total global investment in deep water exploration and production will increase from 38% in 2012 to 53% in 2017 based on

the forecast of Infield System Firm ([Yang Jinghua, 2014](#)).

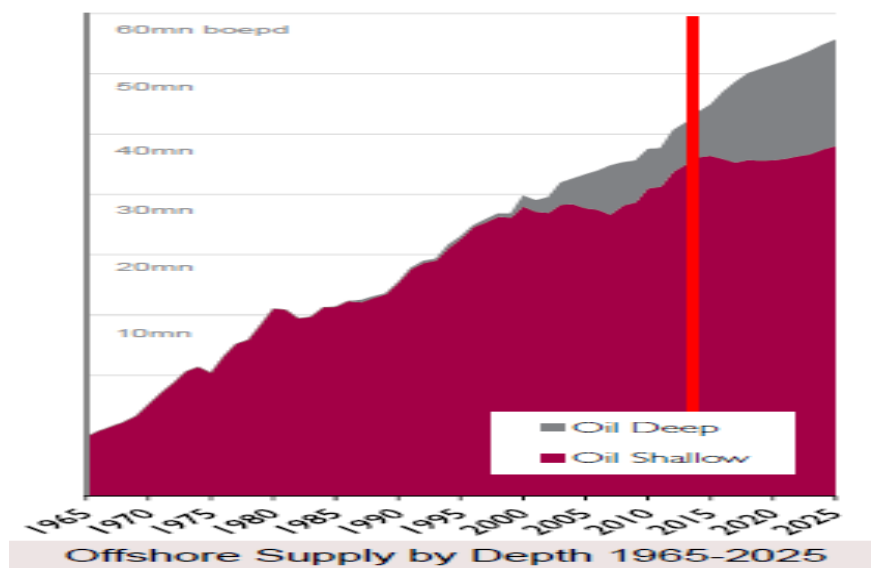


Figure 15 Oil supply of deep and shallow water ([Global Offshore Prospect, 2013](#))

Additionally, another data shows that the amount of the deep water drilling also soars, the amount deep water wells in 2005 was 438 while this number increased to 805 in 2013. Just like the discussion in last paragraph, the core business of COSL is drilling services segment, which contributes more than half revenues recently, thus, there is no reason for COSL not to eye on the deep water areas, but limited to the technique and investment scale, COSL few sets foot in deep water drilling business and some related matching oilfield services industries.

However, COSL takes some strategies to learn and then to enter into this area, the strategies are the following, firstly, COSL executes a strategy called “buying, renting and manufacturing”, COSL buys and invests foreign drilling services firms or equipment, this is the best and most convenient approach to master deep water drilling equipment and skills and to shorten the difference, buying Awilco company and NH9 deep water drilling rig are both good examples.

Furthermore, COSL rents deep water drilling platforms to meet the increasing workloads, for instance, COSL rented Kantan2 drilling rig in 2013 to satisfy the deep water drilling business requirements. Moreover, deep water drilling rigs are scheduled to manufacture, for example, HYSY982 is being manufactured now, which will promote the deep water operations competitiveness;

Secondly, some outstanding employees are appointed to developed countries to learn advanced management concept, for example, around 12 employees come to foreign universities to learn management courses from 2012 such as University of Stavanger, University of Aberdeen as well as University of Texas at Austin, some are designated to be in charge of deep water business after graduation. Further, COSL hires some top elites from its competitors, for example, Xiang Tao, the ex-chief drilling fluids

engineer of Baker Hughes, was hunted to work for COSL in 2012. Xiang contributes great and splendid work to the successful application of deep water drilling fluids system. Even new employees are going to be trained because freshmen will be sent to the COSL School in Xinjiang, a training school to new employees particularly, studying deep water knowledge;

Thirdly, research institutes are established one by one, COSL encourages its institutes to develop new equipment and products as well in order to gradually utilize own products replacing foreign equipment, this is also a strategy to strengthen the core competitiveness. Now, some products are developed successfully, for instance, Oilfield Chemical Institute of COSL develops deep water cement slurry systems and successfully applies them into deep water cement operations; Fourthly, the low cost concept is the fourth core strategy which urges COSL having the capabilities and huge advantages to expand its worldwide business. This strategy, to a extent, shortens the gap between COSL and its counterparts as COSL can provide the services to improve its capabilities especially promote some related matching services development such as cement, drilling fluids and stimulation, etc.

Basically, prior to the appearance of HYSY981, COSL neither had the deep water drilling equipment and services capabilities nor had any deep water operation experience. But when HYSY981 started to drill the first well in South China Sea, it formally announces that COSL has already possessed the deep water operation capabilities. Simultaneously, COSL manufactures deep water support vessels, for example, HYSY681 is the first generation deep water support vessel in China starting to work in 2012, which mainly is used for supporting the daily operations of HYSY981. From then on, a batch of large deep water equipment is manufactured, for instance, HYSY611 and HYSY 612 were put in to use in 2013, the another two sister deep water support vessels will service in 2014. According to the introduction of the official web page of COSL, there will be more than ten deep water support vessels working for worldwide clients of COSL by 2015.

Also, integrated services become increasingly significant business model for oilfield services industry, the three giants firms all have the capabilities to operate integrated services. Researchers ([Stephane, et al., 1995](#)) defines that integrated services is that a series of services are tied up together under one contract. Generally, oilfield services providers can supply services from upstream to downstream including drilling, completing and maintaining wells, etc. To meet them, oil companies work together with the oilfield service providers to establish a new relationship to fully designing and managing complete, complex projects. The reason is that the positions in today's oil industry are gradually declining with representatives of international giants like BP, Shell and Exxon-Mobil while others become more and more prominent with rich reserves, the representatives are Petroleos Mexicanos, Saudi Aramco and Iraq National Oil Company, which relatively are lack of a complete set of oilfield development experience, matching professional staff, equipment and skills comparing

with the old oil giants. Therefore, there is urgent need for an integrated services company to provide one-stop services. Integration is the one of the core strategies, which reflects that COSL accurately grasps the trend of oilfield services evolutions.

As we know that the predecessor of COSL was grouped by some professional technical companies, and the primary goal was to build an internationalized oilfield services firm. Recently, by hiring top elites, buying and manufacturing equipment, etc, COSL gradually, maturely and systematically masters integrated services. Table 7 indicates the scopes of services for each segment, which covers the entire upstream exploration chain. Basically, COSL executes the integrated services strategy in China all the time mainly owing to the integrated contracts given by CNOOC, the third largest oil company in China. Moreover, foreign clients in China also recognize the integrated services capabilities and tend to authorize integrated contracts to COSL, for example, COSL provides the integrated service to ROC Oil Company as early as 2005.

Table 7 Scope of Services for COSL

Business segments	Scope of services
Drilling services	Drilling services, integrated drilling services, casing and tubing running services, platform rig services, pipe inspection & repair services, rig management services.
Marine services	Marine support services, transportation services
Well services	Field services, data processing and interpretation services, products and sales, drilling and completion fluids services, cement services, environmental protection services, chemical products.
Geophysical services	Offshore seismic acquisition services, offshore geo-survey services, seismic data processing & interpretation, underwater engineering services, land-based engineering services.

3.4.2 The international service business

COSL ambitions to be an internationalized integrated services provider, internationalization are one of the core strategies. COSL always expands overseas business during these years and accomplishes good performance. The author will discuss the international service business of COSL in this paragraph.

Awilco was ever a large offshore oilfield services company in Norway having six

jack-up drilling rigs and two accommodation rigs and operating in Norway, Saudi Arabia, Vietnam as well as Australia. Meanwhile, Awilco was manufacturing two jack-up drilling rigs and three semi-submersible drilling rigs in China and Singapore. Prior to acquisition of Awilco, CNOOC failed to buy Unocal Corporation due to the political issues. Therefore, this was vital for COSL to expand the drilling business to top drilling market and also this was a big challenge for Chinese firms to practice its international business capabilities. Meanwhile, most the drilling rigs were signed intentional 2-8 years contracts with oil companies like BP and Statoil. Additionally, Awilco had the priority right to choose two semi-submersible drilling rigs. In 23rd September 2008, COSL completed to make an acquisition of Awilco offshore ASA of Norway and this was a milestone for to COSL to expand its nationality, which enabled COSL to be the eighth drilling fleet in the world. Further, the drilling services expanded to North Sea, Middle East and Australia, too.

Additionally, by making an acquisition, COSL not only updated and optimized the age of vessels but it importantly established client-customer relationship with international oil companies like BP and Statoil, this in turn lays a good foundation to win new contracts, for example, COSL Promoter, a new semi-submersible drilling rig built in 2012, is now operating eight years contract of Statoil in North Sea. Also, generally, manufacturing drilling rigs will take long time, the construction cycle is three or five years, to meet the high requirements of clients, COSL also buys old drilling rigs, after upgrade, some of the rigs will be assigned to foreign offshore, for example, COSL Hunter and COSL Gift were bought from Singapore, the both rigs are working in Mexico gulf and Thailand, respectively.

Also, the main international business in the world for COSL is to open the overseas bases and establishes wholly-subsiaries. Typically, there are some benefits, firstly, the procedures is relatively simple when the mother company invests, further, it just only hands in little registering fee that can gain the operation license; Secondly, the mother company has absolute power to manage overseas bases and subsidiaries as they are parts of the mother company, the management employees are also managed by the mother company. Therefore, COSL also establishes overseas bases and subsidiaries in Indonesia, Norway, Singapore, Philippine and Mexico and so on, presently, COSL and Petroleum Brunei Services are going to establish a joint venture in Brunei, which will provide drilling service in this country.

Furthermore, just like we discuss before, integrated services becomes more and more important in today's oilfield services industry. Thus, COSL, as a new comer, must have some kind of experience operating integrated service in other nations to persuade clients when COSL bids international tenders, otherwise, winning contracts is absolutely unbelievable. So, the experience becomes foremost significant. Fortunately, COSL is providing the integrated services contract in the Missan oilfield of Iraq including the land drilling rig renting, drilling fluids, running casing, cement, logging, data interpretation, completion and so on, in other word, all upstream exploration

services, in addition, COSL has the work-over integrated service in Indonesia. Benefiting from this contract in Iraq, integrated services is going to expand to other countries. COSL Mexico S.A DE C.V won the first contract in 2007 allying GOIMA S.A DE C.V, a local Mexican company, there was four module drilling rigs in the beginning, but most importantly, it entered into Mexico market though the daily expenses was low, for example, the daily expense of COSL2 is only 50,000 US dollars per day in 2013. After eight years development, the total rigs will increase to eight in 2004. There are COSL1, COSL2, COSL3, COSL4, HYSY936, COSL Confidence and COSL Hunter as well, respectively. Owing to the development and great help, the other services divisions of COSL also ambitions to enter into Mexico, Oilfield Chemical Division now is establishing the base in Carmen, Mexico and preparing to bid long-term tenders of PEMEX. In addition, CNOOC, the mother company of COSL, is negotiating with PEMEX to buy operational block, if successful, the other divisions like marine service will step into Mexico one by one.

With the rapid development of business, the revenue of overseas markets occupies increasing weight on the total income. Figure 16 shows the overseas revenue from 2004 to 2013, basically, the trend of overseas revenue weight gradually increased year by year except the year of 2010 because of the irresistible factor-the Libya war and global economic crisis. After that, the revenue weight increased again, it occupied more than one third proportions to 89 billion RMB in 2013, thus, Li Yong, CEO of COSL, believed with confidence on the result conference of 2013 that the overseas revenue will increase to 40% by 2015.

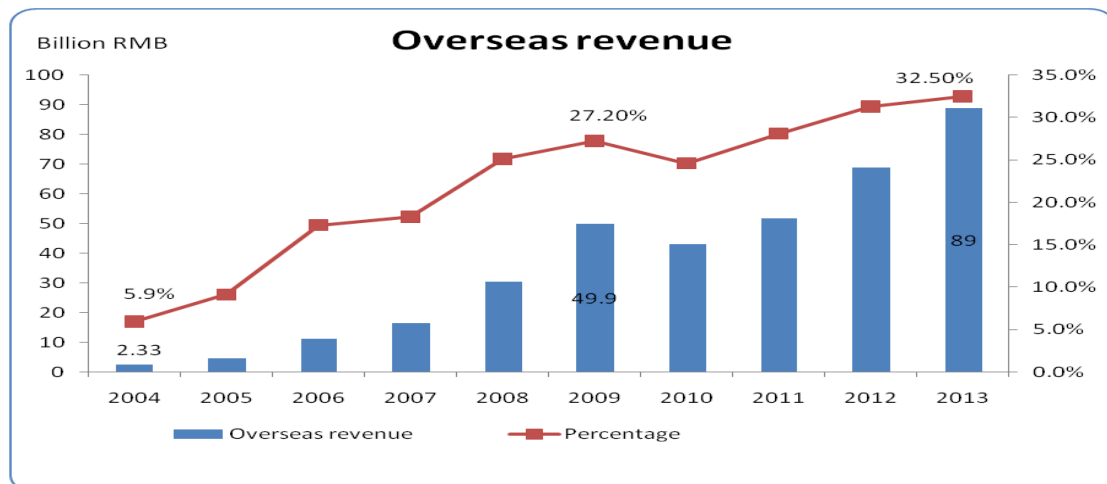


Figure 16 Overseas revenue and weight

To sum up, we discuss in detail about the develop process of COSL and its financial performance, we can find that COSL has a good prospect analyzing the above figures especially the domestic business, which is the largest oilfield services giants in China offshore market. Also, the international business is expanding to a dozen of counties like Norway, USA, Mexico and Middle East, etc. The business revenue of overseas contributed more than one third of COSL, thus it is reasonable to believe that overseas prospect is bright.

Chapter 4 Competitors services

industrial practice

To compare the services of COSL, we have to know about the histories of the international oilfield services giants and the world-wide oilfield services development processes. The three giants, Schlumberger, Baker Hughes and Halliburton presently dominates 70% market share in the entire world-wide oilfield market and the other oilfield companies such as Weatherford and COSL share the left cakes. This chapter will discuss the development and success of these transnational corporations and the inspiration to COSL.

4.1 Review of global oilfield services industry

Generally, it is widely known that oilfield services industry experienced four development stages. The first stage was 1859 to 1910, this was the “infant” of oilfield services industry. The United States was the birth place of oilfield service industry, the boom of “finding oil” in Pennsylvania urging people in USA to buy and rent probable oil land ownership and hire drilling crews to find crude oil in order to accomplish American dream. The findable oil was pumped by steam water pumps and was transported using beer barrels. Later, people using pipes to transport oil instead of transporting beer barrels one by one. After that some drilling equipment and drilling tools and oil pipe providers gradually appeared to provide some basic services and this was the elementary form of oilfield services industry. For example, Smith Bit Company, now is bought by Baker Hughes, was developed from a smithy, the elementary business was to manufacture and repair bits.

The second stage was 1920s to 1950s, owing to world oil industry technical revolutions, the global oilfield services industry developed rapidly. The revolutionary techniques included at that time were seismic exploration techniques, logging techniques, the mature of drilling fluids, rotational drilling techniques, and so on. Many professional technical companies were established one by one. for example, Baker International and Hughes Tool Company, the predecessor of today’s oilfield services industry giant and MI Drilling Fluids Company. Meanwhile, the United States, the cradle of oil industry, became the a center of oilfield services, there were some far-reaching impacts on oilfield services companies began to be established one after another, the typical firm was Halliburton.

The third stage was 1960s to 1980s, there was a new round of revolution in oilfield services industry, which enabled this industry to set foot in digital and automatic control, the seismic technical also developed dramatically from 2-D to 4-D. To produce much oil and save operational time, directional drilling technique and logging while drilling technique was researched and applied by Schlumberger, further, reservoir interpretation with the application of computer simulations improved the

success of oil finding, the depth of wells was also from hundreds meters to thousand meters. In a word, a lot of new techniques in this stage turned to be mature and successfully used in each area and the world gradually formed leading industry companies, the most outstanding five firms were Schlumberger, Halliburton, Baker Hughes, Dresser Inc as well as West Atlas.

The fourth stage was from 1990s to now, we know that the exploration and production services was closely combined the engineering technical services in the early stage of oil industry, this was also the common model for oil companies. In the 1930s', oil industry started re-shuffle, this was a significant reform because the strategy for global oil companies had totally been changed, among this change, the most profound reform was that oil companies adjusted technology strategy, the detailed was to compress the research scale with the help of universities to do the basic research. And the other long-term research projects were delivered to services companies with the method of allied research. From then on, oil companies was gradually separated into two kind companies, the one was oil and gas companies, the other was oilfield services companies. the business of oil companies is to produce oil and gas while the oilfield companies provides technical support services in the area of engineering and techniques.

4.2 The basic pattern of oilfield services industry

Nowadays, the basic situation in today's global oilfield services industry is that there is a Harmony co-existence in industry giants and other small professional technical companies, meanwhile, large companies, having rich fund, gradually make acquisitions or merge to relatively small companies and then they re-combine the assets of bought companies with other mighty business in order to be more competitive and overwhelming or to develop a new business. For example, the ever top five oilfield services firms-Dresser Inc and West Atlas- was bought by Halliburton and Baker Hughes. In a word, the basic pattern of this industry is that the three oilfield services companies dominate the markets having absolute power and the others survive in the intense competitions.

Drilling area

Now, the amount of having 100 drilling platforms in the world is more or less 10 companies, the other drilling services provider just only have one to two drilling platforms. The core drilling business is to manage high technical drilling services companies, most complicated wells were drilled by drilling companies possessing core techniques. For example, power drive technique can achieve the bit in the down hole to rotate in a fixed direction automatically using computer software simulations. Further, it concludes the drilling platforms and tools manufacturers and drilling mud companies such as the previous MISWACO.

Logging area

Logging technique is divided into two parts, the one is wire-line logging, and the other is logging while drilling technique, the development trend is that wire-line logging will gradually be replaced by logging while drilling technique as this technique can save a great deal of time for clients. Undoubtedly, Schlumberger is a leading company in the area of logging, which dominates half global logging market, the left cake is shared by other companies like Halliburton, Baker Hughes and Weatherford. W-H Energy Services Inc. In general, since the equipment is precise and complex. Companies, maintaining this kind of techniques and equipment, are less than 10, thus this area is a highly concentrated industry.

Geophysical area

In the early of 1980s, Western, GSI and Geosours were three leading firms in geophysical services, but they all have been substituted by Western Geophysical (Baker Hughes), Geco-Prakla (Schlumberger) and CGG. The three companies occupy 75% geophysical services market, Geco-Prakla and CGG. Further, in recent 20 years, some geophysical software firms were established one by one like Gequest and Landmark.

Oil production area

At present, the most competitive company in the world is Halliburton in this field, the main business refers to completion and oilfield stimulation and sand control, this three methods can the oil production

4.3 Competitors service practice

The three giants were all developed from single technical professional companies. Schlumberger was evolved from a logging firm. Halliburton was originally from a cement company while Baker Hughes was formed by two professional companies. In the year of 2013, the revenue for Schlumberger, Halliburton and Baker Hughes were 45.26, 29.40 and 22.36 billion US dollars, respectively. After a few decades development, these three companies have become industry giants yet, whose business is evolved from a solo model to complex and integrated services covering hundreds of counties from Asia to Latin America. Generally, they have the following features: namely, internationalization, integrated services, technical leading as well as merging and re-organization.

4.3.1 Internationalization

Schlumberger is a French company, while Halliburton and Baker Hughes are both American companies, if they just only focus on domestic market, it is difficult to imagine that they can be the industry giants and survive in today's intense competitions. Thus, oilfield services firms have to execute internationalized road in order to keep pace with variation, otherwise, they are tend to be in crisis and easy to

be merged by a mighty firm. there are many branches in more than 140 countries and the market value in 2012 was great than 100 billion US dollars. The revenue in 2013 was 45.26 billion US dollars, which mainly contributed from Middle East and Asia market, North America, Latin America as well as Europe and Africa. Among this revenue, Asia market shared 23% proportion. Further, Schlumberger expands its business area by merging and re-organizing other professional technical companies, for example, Smith was bought in 2012, the deal price was up to 11.3 billion US dollars. Andrew Gould, CEO of Schlumberger, claimed that the drilling techniques and other products as well as expertise can have a good complementary with the products of Schlumberger. In 2003, Schlumberger purchased the largest Russia oilfield service company – Petroalliance, this in turn enhanced the service ability in far East area.

The first internationalized step for Halliburton started from 1940, its cement pump and operational personnel entered into Venezuela. From then on, its services expands to more than 70 countries, the main operational area are North Sea, Middle East, Latin America, China, Africa, Far East and Russia. Consequently, 64% revenue was from other areas except North America market in 2009.

The internationalized road for Baker Hughes can be demonstrated by the two issues, the one was that it established Baker International company in order to enter into Canada and Venezuela market as early as 1949, the other was that a subsidiary firm in Mexico was found in 1960. Up to now, Baker Hughes expands its business in almost 90 countries, meanwhile, the services network is already build covering 23 areas. Owing to the global business, the overseas revenue of Baker Hughes in 2013 was reach 70%.

Furhter, since they are internationalized companies, the revenue distribution, to a extend, reflects internationalization level, let's take Figure 17 for example, North America is the most important for Baker Hughes, which shared more than half proportion of revenues form 2011 to 2013. Latin America market revenue maintained almost the same level to 12%, but Europe/Africa/Russia Caspian market keep stable in latest three years while Middle East and Asia Pacific market keep increasely.

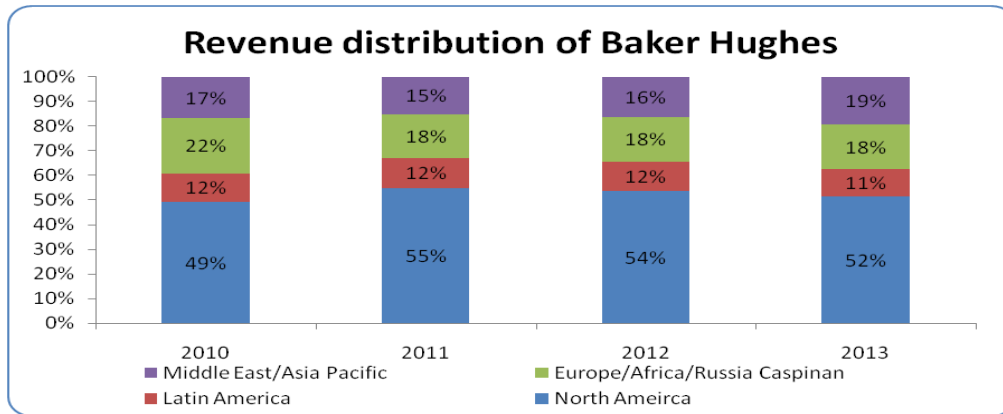


Figure 17 Revenue distribution of Baker Hughes

4.3.2 Merging & re-organization and Integration Strategy

By buying and re-organizing other professional technical companies, they cover each area of oilfield services industry relying on the integration advantages of products, market and techniques, the revenue and profit grows continuously by expanding business scale.

Schlumberger

Schlumberger is the largest oilfield services company in the world, which evolved from a simplex resource exploration company to an integrated enterprise by developing mighty business, making acquisitions and expanding other business. Schlumberger bought Johnston Tester Company and Flopetrol Company in 1956 and 1971, respectively and then became a professional comprehensive logging company. In 1984, Anadrill Company was established, which was a subsidiary of Schlumberger by merging the drilling business and vertical drilling business of Dowell. It indicated that the Schlumberger gradually paid attention to integrated services market. Thereafter, an oilfield coordinating office of Schlumberger was found in Houston, which provided one to one services. In 1993, Schlumberger completed an important acquisition that it purchased IDF firm which enabled Schlumberger became a significant player in the global drilling fluids field. In 2010, Schlumberger bought the second largest bit manufacturer- Smith Company and the largest drilling fluids and equipment provider-MISWACO. Especially after buying MISWACO, Schlumberger becomes the largest comprehensive drilling fluids services provider.

Making acquisitions of these professional technical firms, Schlumberger covers the entire upstream industrial chain and its business includes drilling service, cement, drilling fluids, logging, reservoir management and project management gradually forming integration services. The main business of Schlumberger is seismic services, subsea services, drilling services, completions and productions, well testing, well intervention, characterization. Schlumberger, in 2009, executed 35 integration contracts in 25 countries including the offshore oilfields in Malaysia and onshore oilfields in Mexico.

Halliburton

Halliburton was established in 1919, and the primary major business was cement business. Halliburton bought a drilling pipe test firm in 1932 and after two years, it started to provide acid services, then Halliburton made an acquisition to Walex Company in 1957, which enabled Halliburton to have the capability to provide logging and perforation services. In 1959, it purchased Otis Engineering Company, this in turn made Halliburton to develop completion and oil and gas production services. Brown Root Company, wholly bought by Halliburton, was used to develop engineering and construction business in 1962. Two years later, Halliburton acquired Joseph Industrial Company and then developed comprehensive services, project management, crude oil refining and chemical engineering technologies.

Since then Halliburton finished the strategy layout of oilfield services, thus, we can see that the development process of Halliburton is similar to its competitor-Schlumberger. Firstly, develop mighty business, then by merging and buying other professional companies, it forms completed industry chain to provide integration services. The main business of Halliburton is well locating hydrocarbons, geological data management, drilling and reservoir assessment, well construction and completion, production optimization, and so on. Among these services, some famous brands belong to Halliburton like Bariod Drilling Fluids Company and Landmark geological interpretation software.

Baker Hughes

The pre-life of Baker Hughes was Baker International and Hughes Tool Company, it was found in 1987, the main business before was casing shoes and core bit business, afterwards, Baker Hughes continued to buy other small professional technical firms, it included Brown Oil Tools, Elder Oil Tool company and BJ Services Company, Teleco Company, and so on. It made an acquisition of Perfomix Company, which was a professional oilfield data transmission and software analysis company in 2014, this is the milestone for Baker Hughes to increase the competitiveness in the area of tool integration, real time data monitoring and visualization and standard. The main service of Baker Hughes is integrated operations, drilling & evaluation, completion and production, industrial services, etc.

Nowadays, Schlumberger, Halliburton and Baker Hughes are widely known as the three giants of oilfield services companies, which all belong to top 500 enterprises. Figure 18 demonstrates the trend of revenues abstracted from their annual reports, which explicitly shows that Schlumberger is the head of the giants and the others are Halliburton and Baker Hughes, respectively. Interestingly, the revenue for the three international giants in 2009 all decreased, for example, Schlumberger revenue fell by 16% to 22.7 billion because of the sluggish economic environment, the dropped expenditure of clients as well as low oil price on stock market ([Annual reports of Schlumberger, 2009](#)). Thereafter, owing to the gradual recovery of world economy

conditions, the Schlumberger revenue grew continuously. Further, Halliburton revenue from 2006 to 2008 increased slightly, after economy crisis of 2009, the annual revenue of 2010 recovered almost the same to 2008, only one year later, the revenue increased by 8% to 17.973 billion US dollars. The trend of revenue of Baker Hughes was same to its competitors.

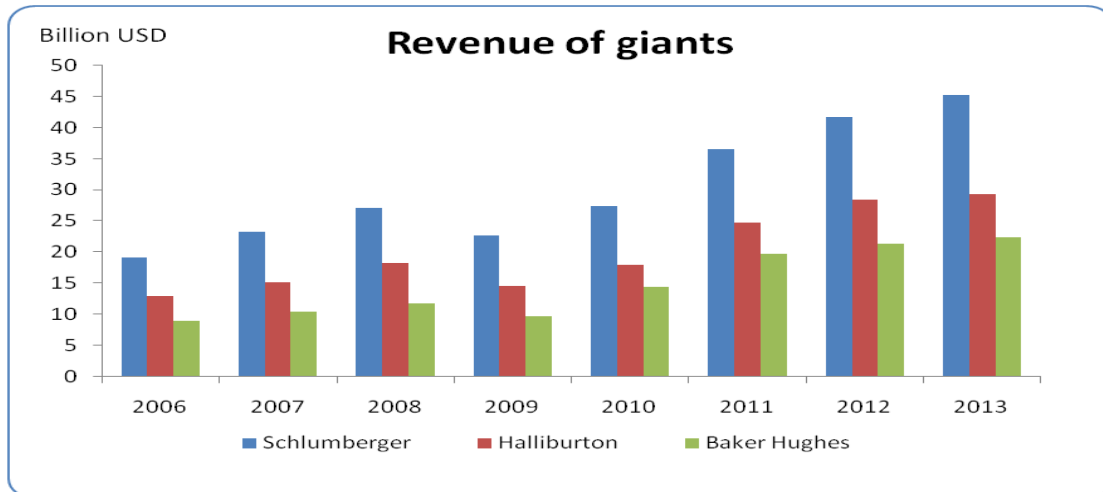


Figure 18 Revenues of the Giants

4.3.3 Technical leading strategy

Techniques is the foundation of survive. To meet the increasingly critical requests of Clients and reservoirs, oilfield services companies must believe in and do the strategy, that is technical leading strategy, otherwise, they are in crisis quickly. The three companies are very concerned about technique leading strategy and they invest in a lot of capitals in novel technique researches.

Schlumberger continuously invested in new technique researches from 1996, which in turn guarantees the global leading quo in oilfield services industry. According to the annual reports of Schlumberger (2013), there are totally 11,500 patents from 2009 to 2013, the logging patents occupies more than 18% of the total amount of logging patents in the world, for example, the electrical imaging technology of Schlumberger is leading the other companies. Further, it has 11 technical research centers in the world including Beijing Geological Research Center, also Schlumberger establishes three strategy research centers in Cambridge UK, Connecticut USA and Stavanger Norway. The main goal of the three centers is responsible for the prospective studies of petroleum technology in the next 10 years. Besides, Schlumberger keep good cooperation relationship with more than 40 universities.

Halliburton also pays attention to researches, the enterprise concept is that investing in technology can be benefit for keeping the leading position in core business. To reinforce this advantages, Halliburton establishes research centers successively. The first research laboratory was found in 1930. Afterwards, Halliburton research center

building was erected in 1980 awarded the best USA research center. Specially, Duncan Research Center of Halliburton combines research and engineering, which can make from mechanism research to products delivery. Let's take cement for example, this center not only researches rock mechanism and cement theory, but also it develops cement and cement additives. Additionally, Halliburton invest a great deal of money in research and development program to meet the requirements of clients, according to the annual reports of Halliburton from 2007 to 2013 showing in Figure 19 , the expenditure for research and development activities almost kept growth continuously, especially, the research investment increased by 27% to 588 million US dollars in 2013.

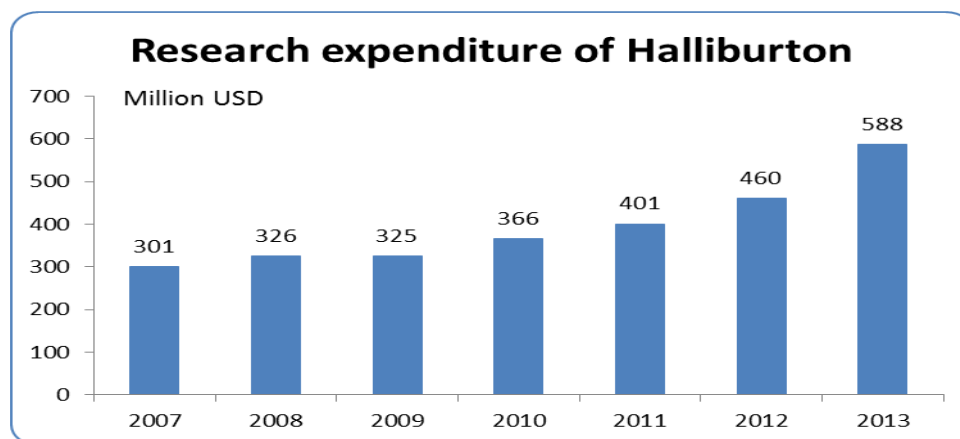


Figure 19 Research expenditure of Halliburton

Furthermore, Baker Hughes also eyes on research and development investment, Table 8 shows that Baker Hughes annually invested much money in research areas in order to win more contracts and meet the requirements of customers, it indicates that the expenditure for research was gradually increased. Moreover, Baker Hughes establish overseas research centers better serving for local market, for example, shale and tight gas is a big challenge for oilfield services companies while this gas mainly distributes in Middle East. To research and develop tight gas, Dhahran Research and Technology Center in Saudi Arabla and the Reservoir Development Services Middle East Technology Center in Abu Dhabi will assist clients to better understand and to develop efficiently reservoirs.

Table 8 Investment in research of Baker Hughes

	2010	2011	2012	2013
Investment in research (million USD)	430	462	497	556

This chapter reviews the development process of oilfield services industry, after that it mainly discusses the history of competitors of COSL, namely: Schlumberger, Halliburton and Baker Hughes. And why these three companies can be the giants of industry? From the discussion above, it is clearly that they all execute same strategies.

There are technical leading, integration service, merging and re-organizations, which give the hint to do the same methods.

Chapter 5 Service comparisons between COSL and competitors

In this chapter, the author will utilize SWOT approach to analyze the weakness, challenges and strength as well. Using this approach will help us to deeply understand the challenges, weakness, chances as well as advantages.

5.1 SWOT approach

SWOT was proposed by Professor Heinx Wehrich of University of San Francisco, it defines that it is usually used to establish strategy and competitor's analysis. SWOT includes the strengths, weaknesses, opportunities and threats. By using SWOT analysis, it not only assists enterprises to accumulate resource and activities in strengths and opportunities, but also it assures the strategy of firms.

Generally, SWOT approach can be divided into two parts, this first part is SW (Strengths & Weaknesses), which is used to analyze internal factors; the second part is OT (Opportunities & Threats), which is to discuss external environment.

SW analysis is to analyze advantages and disadvantages of the company and its competitors covering all phases, for example, whether the price of one product is competitive in the market or not? Whether the supply chain is complete or not? Whether customers are would like to buy or not? Concretely, it involves awful or awesome reputations, technical & research capabilities, scales, abundant and shortcoming finance, competitiveness, etc.

OT analysis is used to analyze external conditions including opportunities and threats, for example, whether a policy benefiting for one industry is published or not? Whether attract more investors or not? Whether obtain higher rank by Stands & Poor's? Whether a new comer enters into the market or not? Basically, it includes new competitors, break events, policies modifications & changes, new market & requirements, etc.

5.1.1 The advantages of COSL

➤ **The giants of China offshore oilfield services market**

COSL is undoubtedly the leader of China offshore oilfield services market, which decided by its own role and market identification. It has largest and multi-functional equipment with competitiveness.

➤ **Rich experience working in China offshore market**

It has more than 40 years services experience in China, most importantly, COSL is familiar with China offshore operational environment such as weather and geological

conditions, which provide absolute advantages when compete with new comers.

➤ **Integration services**

After decades development, COSL has covers the entire upstream oilfield services from geological survey to stimulation of oilfield forming the capability of integration operations.

➤ **Cost advantages**

Cost leading is one of the four core strategies of COSL. Thanks to the cost leading strategy, COSL keeps high profits, while high profits enable COSL to invest world-widely.

➤ **Positive internationalized strategy**

This is also the core strategy of COSL. Internationalized strategy can bring modern management concept and thinking as well as more revenue, according to Figure 16, the overseas revenue occupied 32% proportion in 2013, and the business expands to USA, Norway, Mexico, Thailand, Indonesia, and so on.

➤ **Abundant human resource**

Chinese universities supply 30,000 graduates with the background of petroleum and related majors each year. Meanwhile, COSL aims to hunt senior talents from competitors, for example, Xiang Tao was ever the chief drilling fluids engineer of Baker Hughes, who is working in Oilfield Chemical Institute.

➤ **High quality clients**

The biggest and core customer for COSL is its mother company, CNOOC. Further, there are some foreign clients such as Pemex, Statoil and Husky, etc. high quality clients not only guarantee the business expansion of COSL, but also increase internationalization.

➤ **Outstanding top management**

The top management of COSL has rich petroleum industry experience and background, for example, Li Yong, the CEO of COSL, has more than 30 years oil management experience.

5.1.2 The disadvantages of COSL

➤ **Relative small scale**

Compare with the three giants, COSL is still a potato. The revenue in 2012 was 22,105 million RMB, the amount of this number with today's exchange rate would amount to 0.5 billion US dollars. Comparing with the weakest giant-Baker Hughes, the revenue in 2012 was up to 21.36 billion US dollars.

➤ **Research weakness**

Though COSL establishes some research centers in China, the research strength is still weak. The main shortness is the lack of fund and high quality researchers.

➤ **Core technologies weakness**

Core technologies are controlled by external factor, for example, Power Drive used in China, a tool for drilling directionally, is mainly from Schlumberger and Baker Hughes, but this kind of high technology equipment would never be sold by the two companies.

➤ **International competition weakness of well services**

Other business segment except drilling services is weak comparing with giants, the main reason is that the technology and equipment is old and is very difficult to meet the clients' requests.

➤ **Internationalized talents deficient**

Nowadays, a dozen of subsidiaries and bases of COSL are erected successively, the management of these companies needs personnel with internationalized views and modern enterprise concept and experience, but this kind of staff is insufficient. For example, the author is in Mexico, we are going to bid the coming long-term cement and drilling fluids tender of Pemex, I find that we are lacking of experience and resource, if we have some related internationalized talents in Carmen, the situation will be better.

➤ **Main revenue is from the mother company**

CNOOC is the largest offshore oil company in China, which provides more than 65% revenue each year, revenue structure is excessively single. If the mother company was in crisis, it must extremely influence the income.

➤ **Services software deficient**

In the past, COSL is concerned about the hard software ignoring the development of software. Some is used to be judged based on rich experience of engineers whereas competitors develop a lot of software which reform the oilfield services. For example, COSL doesn't have applied hydraulic software to conduct operations, presently.

5.1.3 SWOT matrix approach

Based on the above analysis, using SWOT analysis, the author establishes a matrix indicating in Table 9. Some internal and external factors are listed in the table, then by using a matrix, the internal and external factors are grouped in order to analyze and conclude solutions.

Table 9 SWOT analysis

<p>Internal environment</p> <p>Group</p> <p>External environment</p>	<p>Strengths-S</p> <p>A. Absolute leader of China offshore oilfield services market.</p> <p>B. Rich experience working in China offshore market.</p> <p>C. Cost advantages and sufficient fund.</p> <p>D. Positive internationalized strategy.</p> <p>E. Outstanding management enables the company to work stable.</p> <p>F. Covering entire upstream oilfield services chain.</p> <p>G. Abundant human resource provides a great deal of backup talents</p>	<p>Weakness-W</p> <p>A. Relative small scale.</p> <p>B. Research weakness.</p> <p>C. Core technology is controlled by competitors.</p> <p>D. International competition weakness of well services.</p> <p>E. Internationalized talents deficient, overseas management experience insufficient.</p> <p>F. Revenue structure is excessively single, mainly from CNOOC.</p> <p>G. Non-profit business consumes a lot of money.</p> <p>H. Insufficient of Service software.</p>
<p>Opportunities-O</p> <p>A. “Go global strategy” of the government .</p> <p>B. Domestic energy needs.</p> <p>C. CNOOC support.</p> <p>D. The good performance in capital market enables COSL to attract more investment.</p> <p>E. The rapid development of Chinese economy urges international capital to invest in COSL.</p>	<p>SO- strengths and opportunities</p> <p>A. Continue to execute “Go global strategy”, persist internationalization.</p> <p>B. Increase the domestic offshore market share and develop onshore oilfield services market of China.</p> <p>C. Persist integration strategy, increase the range of business.</p> <p>D. Attract more foreign and civil capital.</p>	<p>WO- weakness and opportunities</p> <p>A. Utilize the support of CNOOC and government, continue to develop domestic market in order to make up the disadvantages of technology and increase scale.</p> <p>B. Develop positively oversea market to increase multi-revenues and change distributions.</p> <p>C. Use of the support of government and CNOOC, hunt more</p>

		talents. D. Attract more external capital to develop core technologies.
<p>Threats-T</p> <p>A. Competitors enter into Chinese oilfield services market.</p> <p>B. Government encourages civil competitions among CNOOC, CNPC and SINOPEC.</p> <p>C. High potential safety hazard of old equipment.</p>	<p>ST-Strengths and threats</p> <p>A. Execute “cost leading” strategy and keep the dominant quo in domestic oilfield services industry.</p> <p>B. Cooperate with foreign companies to achieve win-win policy.</p> <p>C. Foster internationalized talents to increase international competition.</p> <p>D. Develop onshore oilfield services market of China</p> <p>E. Use of sufficient fund to gradually upgrade old equipment.</p>	<p>WT- weakness and threats</p> <p>A. Adjust structure and gradually eliminate non-profits business.</p> <p>B. Improve the equipment management level to avoid awful accidents happen.</p> <p>C. Increase research level.</p>

The SWOT approach is used in this chapter to analyze the strengths, weaknesses, opportunities and treats of COSL, which definitely defines the problems what COSL faces, the chance what COSL confront and weaknesses what COSL has. Also, the author proposes the suggestion how to solve these problems based on Table 9.

Chapter6 Conclusion

By knowing about the development of COSL and analyzing the history and industry pattern, the thesis vividly describes the difference between COSL and the three main counterparts. Recently, there are also some problems although COSL makes great progress, for example, the insufficient of core technologies and top talents. COSL can learn a lot from the development, history and experience of giants as the following.

Firstly, giants establishes advanced laboratories and research centers in the world, which can support global operations, while if we look back COSL, the research bases are totally in mainland China. Limited the distance and time zones, the research centers in China can't support the world-wide operations in 24 hours. Further, the research cost of COSL is still low comparing with its counterparts and the total patents are 170. Thus, COSL should establish overseas research centers to serve local market and invest more money in researches. Also, it is better to cooperate with universities and competitors to narrow the gap.

Secondly, the weight of revenue of COSL is mainly from China while the revenue of giants distributes in continents, Figure 16 and Figure 17 has explicitly indicated the huge difference, thus, it is important for COSL to persist to internationalized strategy and positively to develop and increase overseas market share. Also, COSL should rely on the assistance of its mother company-CNOOC and develop the business to other countries, this is a unique advantages.

Thirdly, merging and re-organization is the successful factors based on the development histories of the three giants. Making an acquisition is a good example for COSL, but the steps are still slow. Relying on abundant funds and the support of CNOOC, COSL should continue to buy good quality assets to enhance its capabilities.

Fourthly, integration is also important, the three big companies earn large amounts of money each year due to integration business while COSL just provide limited integration services and the main client is CNOOC. Therefore, the author believes that the largest difference between COSL and giants is that COSL doesn't manage core technologies, for example, as for drilling fluids service, the core technology is the material, which directly decides the success of the well. If the quality of materials doesn't meet the requirements or is terrible, it is very hard to win integration contract from clients. Consequently, COSL should develop its own core technology.

Fifthly, "cost leading" is a good strategy. However, If look around the giants salary to employees, it is not difficult to draw a conclusion that the payment of employees in COSL is extremely low. Thus, to keep the competitiveness and save top talents, COSL should increase the expenditure of human resource.

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