

ANALYSIS OF PETROBRAS' CORPORATE STRATEGY

by

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Abstract

This document presents an analysis of Petrobras' corporate strategy to enhance the firm's competitiveness in the industry. The document provides an industry analysis that identifies the company's current position and a strategic alternative that will improve the company's performance.

The industry analysis determines the structure of the industry and the competitive forces identify the key success factors. The key success factors pinpoint the opportunities and threats to form the strategic alternative.

The strategic alternative is assessed using the "Diamond-E Framework" which consists of management preferences, organization and resources. The final recommendation is then made for the benefit of Petrobras' success.

Keywords: Petrobras; Brazil

Dedication

This thesis is dedicated to my parents, friends and teachers who have helped me in my intellectual journey. I also want to thank my classmates as they have helped to contribute to my success.

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1: INTRODUCTION

The initial chapter provides the purpose and scope of the project as well as an overview of the energy industry and information about the target company which is Petrobras.

1.1 Purpose and Scope

The purpose of this document is to analyze the current corporate strategy of Petrobras and then provide recommendations for the company to change its strategy from differentiation to low cost if necessary. The scope of the paper includes the global energy industry, the major competitors involved and the home country of Petrobras which is Brazil.

In order to determine strategic options for Petrobras, this paper will present an industry analysis that uses Porter's Five Forces Model. Based on the Five Forces Model, the Key Success factors will be identified and then in conjunction with the Diamond-E Framework (Crossan, 2005) the strategic options will be derived and discussed. These strategic options will assist Petrobras to enhance its competitiveness in the energy industry.

1.2 Industry Overview

The segments that comprise the global energy industry include oil, natural gas, coal, fuels, and the equipment and services industries that refine and transport these products. The energy industry has recently been expanded to include alternative energy which consists of solar energy, wind power, wave energy, biomass, etc.

The industry's supply chain is comprised of two major parts upstream and downstream. Upstream operations occur in the first part of the supply chain and involve exploration and production. After locating oil reserves the next step is to extract the oil from the ground by drilling beneath the surface and pumping out the oil. The drills that are used for this purpose are called rigs and the four most common types of rigs are land rigs, submersible rigs, jack-ups and drill ships.

Land rigs are set up on the ground and drill deep into the earth below. Submersible rigs are used to drill into the ground under a body of water. Jack-ups are found in the ocean and consist of a triangular structure that has been designed to withstand the power of the ocean's waves. Drill ships have the appearance of tankers above the water but below they have a drill that explores for oil in the ocean floor. (Investopedia.com, 2009)

After the oil is removed from the ground it is transported to the refineries where the downstream activities begin. The downstream activities are the refining of crude oil into commercial products such as gasoline and diesel oil, and the distribution, sales and marketing of these products.

The components of the downstream sector are refineries, distribution companies, retail outlets, and chemical plants. The products offered from the refining of oil are gasoline, diesel, jet fuel, heating oil, asphalt, and fertilizers, amongst others.

(Wikipedia.org, 2009)

The following table displays the key statistics of the global energy industry. The next table (1.2) shows the Compound Annual Growth Rate, CAGR, for the time period 2004 to 2008 which was 25.5%.

Table 1.1 Key Industry Statistics

Market Value	Total Industry Value is \$10,272.8 Billion as of 2008
Market Value Forecast	\$10,039.9 Billion by 2013
Market Segmentation	Oil and Gas comprise 97.6% of the industry's value
Largest Consumers	The Americas consume the largest amount at 33.3%
Largest Market Share	ExxonMobil has the largest market share at 4.6%

Source: (Datamonitor, Global Energy, 2009)

Table 1.2 The Compound Annual Growth Rate of the Industry

Year	\$ Billion	% Growth
2004	4,141.3	
2005	5,589.1	35.00%
2006	6,400.2	14.50%
2007	7,366.8	15.10%
2008	10,272.8	39.40%
CAGR		25.5%

Source: (Datamonitor, Global Energy, 2009)

Furthermore the energy industry includes the revenues created by the exploration, production, refining, selling and transportation of oil, its related products and alternative energy sources. Table 1.3 provides the breakdown of the percentage of industry value provided by each industry segment. (Datamonitor Global Energy, 2009)

Economic recovery is expected to commence in 2010. In the meantime the global recession has lowered the demand for oil and related energy products. The price of oil has plummeted from a high of \$147 per barrel in 2006 to a low of \$33 in 2009 as a result of this slowdown.

Table 1.3 Segmentation of Global Energy Industry as of 2008

Segment	% of Industry Value
Oil, Gas and Consumable Fuels	97.60%
Equipment and Services	2.40%
Total	100.0%

Source: (Datamonitor, Global Energy, 2009)

After the recovery has started, the main source of energy demand is expected to be from the Non-OECD countries. The Non-OECD countries are those that have not joined the OECD such as Mexico and Turkey. According to the Energy Information Administration (EIA), consumption by non-OECD countries is expected to increase by 73% compared to only 15% for the OECD countries. GDP growth among the non-OECD countries is responsible for the rapid growth in energy demand. (Energy Information Administration, 2009)

The tables below display the difference in the amount of energy that is projected to be consumed between the Non-OECD countries and the World.

Table 1.4 Total Non-OECD Consumption of Energy by Type

Amounts are in Quadrillion Btu

Region or Country	1990	2002	2003	2010	2015	2020	2025	2030	Avg. Annual % Change
Oil	52.7	63.3	65.1	82.3	91.6	100.4	109.8	120.0	2.3
Natural Gas	38.0	44.7	47.2	63.1	75.1	87.0	99.6	113.1	3.3
Coal	45.9	51.8	54.8	79.1	92.9	105.7	118.4	132.4	3.3
Nuclear	3.1	4.0	4.2	5.5	7.0	8.7	10.0	10.6	3.5
Other	10.3	14.6	15.2	23.6	26.8	29.6	33.1	36.7	3.3
Total	150.0	178.4	186.4	253.6	293.5	331.5	371.0	412.8	3.0

Source: (EIA, 2009)

Table 1.5 Total World Consumption of Energy by Type

Amounts are in Quadrillion Btu

Region or Country	1990	2002	2003	2010	2015	2020	2025	2030	Avg. Annual % Change
Oil	136.1	158.7	162.1	185.6	199.1	210.8	224.3	239.1	1.4
Natural Gas	75.2	95.9	99.1	121.1	139.8	156.1	172.5	189.8	2.4
Coal	89.4	96.8	100.4	128.8	144.4	160.1	176.7	195.5	2.5
Nuclear	20.4	26.7	26.5	28.9	31.0	32.9	34.0	34.7	1.0
Other	26.3	32.2	32.7	45.2	49.1	53.1	57.8	62.4	2.4
Total	347.3	410.3	420.7	509.7	563.4	613.0	665.4	721.6	2.0

Source: (EIA, 2009)

Due to the worldwide use of motor vehicles, liquid fuels are expected to be the most demanded product. Based on the EIA projections, the use of liquid fuels increases from 85 million barrels/ day in 2006 to over 100 million barrels/day in 2030. To meet this increase in demand the EIA expects the total supply of liquid fuels to increase to over 100 million barrels/day with OPEC producing 40% of this amount. This leaves 60% of the world's liquid fuel demand to be supplied by non-OPEC countries which includes Brazil. (EIA, 2009)

The world's major suppliers of oil can be divided in a number of simple ways. Some energy companies are controlled by shareholders and others are controlled by governments. Another comparison is those companies that belong to the Organization of the Petroleum Exporting Countries (OPEC) and those companies that are classified as non-OPEC countries.

Moreover, there are three types of energy companies that provide oil to the rest of the world. The public companies, which are owned by shareholders are driven to provide the most return for their investors. Some examples include Chevron Corp., and Royal Dutch Shell. These companies bid for contracts offered by oil rich countries then proceed to extract, produce and sell the finished products to those in demand. Companies such as Petrobras are aligned with their government to incorporate the needs of the country with the needs of the company to form the corporate strategy. The other form of national oil company is the extension or operating arm of their government. Saudi Aramco from Saudi Arabia and PDVSA from Venezuela are two good examples of companies that are more state-controlled than Petrobras. These companies are set up to benefit the country

more so than the other two types of oil companies. The finished products are sold to domestic consumers at prices that are lower than the competitive markets dictate. Also these companies do not have the same motivation to develop and produce reserves as their industry counterparts.

The governments of oil-rich countries have significant influence over the world's oil supplies. Countries such as Nigeria and Angola have interesting political climates that make operating in these countries more difficult. "As the majority of reserves becomes increasingly concentrated in fewer countries, changes in leadership or strategic alliances of individual countries have more substantial effects on world oil supply and energy markets than in past years." (EIA, par. 7, 2009)

The Organization of Petroleum Exporting Countries, OPEC, is an organization of twelve countries that control a significant amount of oil, approximately 75% of proven reserves in the world and use their influence to control global oil prices. These twelve countries are in alphabetical order: Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.

OPEC's purpose is to identify the difference between the amount of oil produced by non-OPEC countries and world demand and then provide the necessary amount to maximize profits. OPEC determines a quota for each member of the organization in an attempt to influence the world's supply. Each OPEC country has its own state-controlled oil company and a few external oil companies that it allows to operate within its borders.

When OPEC signals a cut in production, OPEC members restrict the amount that the external companies can produce and leave the state-controlled company to continue operating.

Some of these external companies are the major competitors in the industry and are highlighted in the next section. More discussion on these companies will be provided in chapter 2.

1.3 Major Competitors

The major competitors in the industry are Exxon Mobil Corp. Royal Dutch Shell (RDS), BP, and Saudi Aramco. The chart below displays each companies' market share as of 2008.

Table 1.6: Market Share of the Major Companies in the Energy Industry

<i>Company</i>	<i>% Share</i>
Exxon Mobil Corp.	4.60%
Royal Dutch Shell	4.50%
BP	3.60%
SaudiAramco	3.50%
Other	83.80%

Source: (Datamonitor, Global Energy, 2009)

Before moving to the next section which provides information on Petrobras itself, information on Petrobras' home country will first be presented to display the high level of energy demand that Brazilians have; and secondly to introduce possible opportunities for the company to consider in later chapters.

1.4 Summary of the Energy Industry in Brazil

“Brazil is the 10th largest energy consumer in the world and the third largest in the Western Hemisphere, behind the United States and Canada. Total primary energy consumption in Brazil has increased significantly in recent years. In addition, Brazil has made great strides in increasing its total energy production, particularly oil, over the past decade. Increasing domestic oil production has been a long-term goal of the Brazilian government.”(EIA- Brazil, par. 1, 2009)

The top three sources of energy consumed by Brazilians are oil, hydroelectricity and natural gas. The demand for natural gas is expected to increase as the country's government is moving away from hydroelectric dams to gas-fired power plants.

The following provide key statistics regarding Brazil and its energy use.

Table 1.7 Overview of Key Statistics for Brazil's Energy Use

Proven Oil Reserves as of Jan. 1, 2008	12.2 billion
Oil Production (2007E)	2.2 million per day
Oil Consumption (2007E)	2.3 million per day
Crude Oil Distillation Capacity (2008E)	1.9 thousand barrels per day
Proven Natural Gas Reserves (Jan. 1, 2008)	12.3 trillion cubic feet
Natural Gas Production (2006E)	349 billion cubic feet
Natural Gas Consumption (2006E)	683 billion cubic feet
Recoverable Coal Reserves (2004E)	11,148 million short tons
Coal Production (2006E)	7 million short tons
Coal Consumption (2006E)	23.8 million short tons
Electricity Installed Capacity (2005E)	90.7 gigawatts
Electricity Production (2005E)	396.3 billion kilowatt hours
Electricity Consumption (2005E)	368.5 billion kilowatt hours
Total Energy Consumption (2005E)	9.3 quadrillion Btus
Total Per Capita Energy Consumption (2005E)	50.1 million Btus
Energy Intensity (2005E)	6,312 Btu per \$2000-PPP

Source: (EIA Brazil, 2008)

Table 1.8 Overview of Key Environmental Statistics for Brazil

Energy-Related Carbon Dioxide Emissions (2005E)	360.6 million metric tons
Per-Capita, Energy-Related Carbon Related CO2 Emissions	1.94 metric tons
CO2 Intensity	0.24 metric tons per thousand \$2000-PPP

Source: (EIA Brazil, 2008)

After Venezuela, Brazil has the next largest oil reserves in South America with 12.2 billion barrels of proven reserves which are located off the country's east coast in the Campos and Santos Basins. Brazil's oil production is rising, an increase from 2006 to 2007 of 110,000 bbl/d and more is expected with EIA projections of 2.41 million bbl/d in 2008 and 2.72 million bbl/d in 2009. The EIA also predicts that Brazil will start to export its oil starting in 2009.

Petrobras still has the dominant position in Brazil despite the opening of the industry to foreign competition in 1997. The first foreign company to enter the market was Royal Dutch Shell which has a small operation in the Campos Basin. Recently, a domestic company OGX bought the rights to 21 sections in the offshore oil reserves.

The majority of the crude oil production in Brazil is conducted by Petrobras. 80% of Brazil's oil production is located in Rio de Janeiro and most of the reserves are located offshore in mostly heavy grades. (EIA, 2009)

1.5 Company Overview

Petroleo Brasileiro (Petrobras) is an international energy company that operates in all of the industry segments, exploration, production, etc. and is headquartered in Rio de Janeiro, Brazil.

According to Petrobras' website, the company has increased net revenues by 54% and increased net income by 56% since 2007. Other highlights are as follows.

- Ranked 2nd in Research & Development spending behind Royal Dutch Shell
- Operates 23% of global deepwater production
- Dominant position in a country where the oil consumption is growing faster than OECD countries

Petrobras utilizes more than 100 production platforms and sixteen refineries in its global network. Some of the countries where Petrobras is operating besides Brazil are Angola, Colombia and the U.S. The main headquarters is located in Rio de Janeiro and the international offices are in New York and Japan.

The company has four business segments, Exploration and Production, Downstream, Gas & Energy, and International. The Exploration and Production (E&P) business unit is responsible for finding and producing oil and natural gas reserves. Each E&P business unit is separated by its geographic location, size and infrastructure. This business unit is especially valuable considering the fact that the majority of Petrobras' oil reserves are in its deep, off-shore basin. The downstream operations generate 1.8 million

barrels per day of oil and 370,000 barrels of natural gas. Petrobras is the 8th largest company in the downstream sector based on this segments' capacity to generate 2.1 million barrels per day and its large capital investments including 50 tankers and over 30,000 km of pipelines. The purpose of the Gas & Energy segment is to produce and develop an extensive natural gas network that supplies Brazil with enough natural gas to meet its growing needs. The international business segment is responsible for exploration, acquisitions, and logistics amongst others.

The refining of oil and its related products are handled by the supply segment which has a refining capacity of over 98% of Brazil's total refining capacity. This segment manages the relationships with the external wholesalers, exporters, and chemical companies. Under this segment's supervision are 11 refineries which make the company one of the largest in the world.

Petrobras has an extensive network comprised of pipelines, a shipping fleet, and oil tankers to transport products from one destination to the next. The company's refineries are located close to its pipelines to create a more efficient transport system, cutting costs and enhancing delivery times.

Petrobras Distribuidora is Petrobras' service station network which has a strong hold on 34% of the Brazilian market. This network is responsible for distributing oil products, ethanol, and other chemicals to retail and industrial customers. Distribuidora sold large quantities of oil products in 2007 due to increased demand for diesel and other petroleum products.

The gas and energy segment oversees the distribution of electricity, uses of natural gas and biofuels. Petrobras' natural gas network has two main pipelines, the

Malha Sudeste and the Malha Nordeste. The Malha Sudeste operates in the Campos and Espirito Santo basins to transport gas to Rio de Janeiro and Sao Paulo. The Malha Nordeste transfers gas in the northeast region of the country from local gas fields to the nearby facilities. In 2007, the company transported gas at the rate of 48.6 million cubic meters per day.

The ethanol industry in Brazil is growing rapidly and Petrobras is taking measures to keep up with the increasing demand. Petrobras' main focus is to transport ethanol to other countries rather than producing it domestically. Petrobras has expansion plans that involve the further development of relationships with international ethanol producers and customers.

The international division operates in over 20 countries outside of Brazil and conducts business in exploration and production, supply, distribution, and natural gas. More specifically, Petrobras produces oil and gas in the U.S., and Angola.

Petrobras ranked behind only RDS in R&D spending in 2007. This company is committed to improving its position. Petrobras is the leader in global deep water production with a 23% share. Based on its 2009 Business Plan, Petrobras plans to be one of the world's five largest publicly traded company oil producers. The company plans to produce more than 5000 mm boe by 2020.

Petrobras has made a \$2.8 billion investment in biofuels with 84% of that being invested in ethanol. The company's goal is to become a leader in the biofuels segment in the coming years. (Datamonitor, Brazil Country Profile, 2009)

1.6 Company's Current Strategy

1.6.1 Identification of Current Strategy

Petrobras has chosen a differentiation strategy with its commitment to sustainable development. The company's goal is to "Operate in a safe and profitable manner in Brazil and abroad, with social and environmental responsibility, providing products and services that meet clients' needs and that contribute to the development of Brazil and the countries in which it operates." (Petrobras, 2009)

The following chart displays the analysis done to support this claim.

Table 1.9 Petrobras' Strategic Fit Grid (Bukzar, 2009)

	Cost		Differentiation	
Product Strategy	Rapid Follower		Innovative	X
R&D Expenses	Low		High	X
Structure	Centralized		Decentralized	X
Decision Making	Less Autonomy	X	Autonomy	
Production, Service	Economies of Scale	X	Economies of Scope	
Labour	Mass Production		Highly Skilled and Flexible	X
Marketing	Comparative		Pioneering	X
Risk Profile	Low Risk		High Risk	X
Capital Structure	Leveraged		Conservative	X

Petrobras has made a commitment to be a leader of sustainable development in the energy industry. Its website describes the company's awareness of the environmental impact that its activities have on the earth. It acknowledges the fact that the purpose of corporations in current times is not solely to generate profits but to also conduct business while being socially and environmentally responsible.

Petrobras has adopted the ten principles of United Nations global compact initiative. These ten principles provide suggestions for the areas of transparency, labor, human rights, and the environment. Petrobras has taken an active role in growing the awareness and implementation of the ten principles around the world.

Earlier this decade, Petrobras formed a committee to analyze, implement and monitor the ten principles of Global Compact. This committee included 12 executive managers, the Ombudsman, a CEO advisor and directors from Petrobras' subsidiaries. The company has taken the following actions to implement its Commitment to Sustainable Development:

1. Formed the Gender Commission to promote gender equity in the workplace.
2. Created Petrobras University which offers courses in Ethics and Social Responsibility
3. The only Latin American company that attended an international workgroup to enhance the awareness of responsible global leadership
4. Garnering the support of the UN Global Compact and European Foundation for Management Development (EFMD) by conducting research on Responsible Global Leadership

5. Membership in the Extractive Industries Transparency Initiative (EITI), with the goal of improving transparency between parties in the extractive sector.

In a competition amongst 600 companies, Petrobras won the Best Company of Latin America at the 2005 International Stevie Business Awards. This award is given to the company with the best financial position and compliance with Global Compact.

Furthermore, the CEO Jose Sergio Gabrielli de Azevedo was awarded with the Best Financial Executive of Latin America for his contributions as Financial Director and Director of Market Relations.

The benefit of a differentiation strategy is to attract customers that are willing to pay higher prices for a product that has additional value. Petrobras is building a reputation as a “green” company in an industry famous for its lack of regard for the environment. Petrobras can sell to potential customers with its “Commitment to Sustainable Development” strategy as long as the company does not violate any environmental laws.

1.6.2 Disadvantages of Company’s Current Strategy

Petrobras’ strategy of commitment to sustainable development has its disadvantages as the company’s operations and more importantly its reputation are under constant scrutiny. Petrobras was not always committed to environmentally friendly operations. According to a report by Greenpeace do Brasil, “It (Petrobras) has indeed had a history of oil spills and accidents. But in the 1990s, a series of accidents triggered the growing attention of the media. One of those accidents happened in 1997 at Petrobras’ Reduc refinery along the Guanabara Bay in Rio de Janeiro. A report into the causes of

the accident found that the pipelines at the Reduc refinery were badly in need of repair. When in 2000, another accident took place at the same refinery causing irreparable damage to the environment and threatening the livelihood of local fishermen, it caused a public outrage.” (van Leeuwen, 2005)

There are 5 major oil accidents in Petrobras’ history. The largest involved an Iranian oil tanker which was freighted by Petrobras that leaked causing tremendous damage to the environment. An explosion occurred in 1984 from a leaky pipeline that killed 93 people and released over 70,000 litres of petroleum into the nearby habitat. Later that year, 37 people died in another gas leak explosion on one of Petrobras’ oil platforms. More recently, there was the Sao Sebastio oil spill that resulted in 2.7 million litres of oil being poured onto public beaches.

“A decade ago, state-controlled oil company Petrobras was such an industry laggard that it earned a nickname: Petrosaurus. Workers were 25% less productive than the industry average, and Brazil depended on imports for nearly half its oil. Petrobras’s board consisted solely of company insiders. Today, Petrobras boasts more crude reserves than Chevron Corp., lower costs of finding oil than Exxon Mobil Corp., and a listing on the New York Stock Exchange – with a market value of around \$130 billion.”

(Moffet, 2007)

This table illustrates Petrobras' history of environmental negligence.

Table 1.9 A Record of Petrobras' Environmental Accidents from 1975 to 2001

Date	Damage	Location
March 1975	6 million litres	Guanabara Bay (RJ)
October 1983	1.5 to 3 million litres	Bertioga
February 1984	700,000 L and 93 dead	Cubato
August 1984	37 people died	Enchova submarine
August 1989	690,000 L	Sao Sebastiao
January 1994	350,000 to 400,000 L	Campos Basin
May 1994	2 to 3.1 million L	Sao Sebastiao
March 1997	600,000 to 2.8 million L	Guanabara Bay
October 1998	1 to 1.5 million L	Sao Jose dos Campos
January 2000	1.3 million L	Guanabara Bay
March 2000	18,000 L	Tramandai
July 2000	4 million L	Barigui Iguacu Rivers
August 2000	1800 L	Rio Grande de Norte
August 2000	4000 L	Angra dos Reis
November 2000	86,000 L	Sao Sebastiao
March 2001	1.4 million L	Campos Basin
December 2001	392,000 L	Campos Basin

Petrobras has not been able to move up the ranks in the past because of its poor corporate structure and inability to extract and produce oil. The corporate structure changed as the government removed the insiders from the board and imposed US

accounting standards. The Brazilian government also opened the industry up to competition and listed Petrobras shares on the New York Stock Exchange.

Petrobras responded to the new competitive environment with innovation. The company discovered large reserves off of its coast and started operations in other countries. The international expansion led to operations in over 20 countries including a contract to explore in the Gulf of Mexico. This contract is especially rare as Petrobras was the first company to win U.S. approval.

Petrobras increased its research and development budget to a five-year high of \$700 million in 2006. The company has also become a leader in offshore drilling technology. Petrobras designed a torpedo that is driven into the ocean floor, acting as an anchor to replace the older version which was previously made of steel. The new torpedo design is made of a pipe pile filled with scrap metal and concrete, which keeps the offshore platform in place and with better balance than its steel predecessor.

For marketing purposes the current strategy works and pleases those that are following the trend towards sustainability. However, the most important factor for the success of any energy company is the cost of extracting the oil from the ground. The price of oil is determined in an open market and is subject to great volatility as previously discussed. The volatile nature of the oil price means Petrobras must find oil reserves that cost less to extract and must develop technology that will improve the cost efficiency of its processes in order to sustain long term success.

1.6.3 Type of Change

According to Crossan there are three types of change that require a company to reassess its current strategy because the conditions of the market have changed. The three types are anticipatory, reactive, and crisis. For the purpose of being concise the one that affects Petrobras which is anticipatory will be the only one discussed.

Anticipatory change involves looking forward to see what changes will occur in the market and then re-evaluating the company's current strategy. The performance of the company has improved over the first part of this decade but it has slowed due to the decline in demand for oil and more specifically the oil price. The price of oil is not expected to reach the level it did in the past few years, making the situation not as optimistic for those companies, such as Petrobras, which sell oil. These changes in the market are the catalyst for change for the company's strategy.

1.7 Chapter Summary

This document has four chapters. The first chapter provides an introduction to the industry, the company, the company's current strategy and the current problems being experienced. Based on the company's unfavourable past it is not surprising that the company's management elected to have a differentiation strategy with a focus on being pro-environment. This chapter also discussed the industry which is global energy and the industries' major competitors.

Chapter two will provide the industry analysis that leads to the Key Success Factors required to increase the competitiveness of the target company. The major competitors will be discussed in greater detail as well as the opportunities and threats that need to be addressed before the strategic options can be identified.

The next chapter analyzes Petrobras' internal capabilities to identify which strategic option will be best for the company to implement. By using the Diamond-E Framework, management preferences, the organization and the company's resources will be examined.

Chapter four offers the final strategic option that Petrobras should implement to enhance its industry competitiveness.

2: INDUSTRY ANALYSIS

The analysis of the global energy industry uses Porter's Five Forces Model to identify the major competitive forces that must be discussed to assess the company's strategy. This analysis will be used to identify the Key Success Factors (KSFs) that contribute to the success of the company in the global energy industry. After this step, the competitive analysis which compares Petrobras to its main competitors on the global stage, will identify the opportunities and threats that will be used to generate the strategic alternatives. These strategic options will be scrutinized in the next chapter for their viability and potential positive impact on the company's success.

2.1 Industry Analysis Chart

The chart on the following page displays Porter's Five Forces Model. Porter's Five Forces Model provides a method for analyzing the competitive forces of an industry to determine the important industry drivers that a company must have to be successful. The five forces are the Threat of New Entrants, Threat of Substitutes, Bargaining Power of Buyers, Bargaining Power of Suppliers and the Level of Competitive Rivalry. Each of the forces will be ranked using the scale of low, moderate or high. After the chart, each force will be examined in detail.

Figure 2.1 Diagram of Porter’s Five Forces Model



The global energy industry involves large international conglomerates that use integration to their advantage. This integration makes these companies both buyers and sellers within the industry depending on the particular segment and their capabilities. Also, companies can enter the industry by operating in one of the components of the supply chain making the industry analysis complicated. Another complication is the presence of companies such as Haliburton which only operate in the oil services segment. For the purposes of this analysis the global energy industry includes not only the liquid fuels portion but also the equipment and services portion as well.

2.2 Bargaining Power of Buyers (Variable)

The power of buyers is defined as the amount of pressure that the customers of the product have to control or negotiate the price of the product. In this complex industry the power of the buyers depends on the level at which the buyers operate. There are three buyers that need to be discussed.

- A. Large companies who buy oil from oil-rich companies
- B. Governments that buy for their own reserves
- C. Customers that buy from retail outlets

A) Large Oil Companies (High)

Large oil companies, such as Exxon Mobil, that operate in both areas of the business, upstream and downstream have strong buyer power as they are able to purchase large amounts that offer the potential to negotiate on price. Also, the financial strength of these large companies increases their buyer power as they are capable of purchasing oil from other sources. Some of the factors that weaken these companies' positions are the large number of buyers and their dependency on oil and its related products for sale to consumers. Another hindrance to buyer power is the reliance on the regional pipelines that these companies must use to transport products.

2.2.1 Backward Integration

Backward integration in this situation is doubtful as the oil-rich countries are not willing to allow these foreign multinationals to own part of the reserves. As discussed in the previous chapter, oil-rich countries are developing their own state-controlled oil companies making it more difficult for multinationals to own any part of the reserves or the operations.

2.2.2 Availability of Substitutes

The availability of substitutes is also low which weakens buyer power as the multinationals are limited to the available sources of oil. These large companies are developing alternative energy sources but these alternatives are still in the early stages of development and provide no real threat to the wide-spread use of oil.

2.2.3 Product Differentiation

Commodities such as oil and its related products lack uniqueness and are not differentiated after being refined. The only difference is the quality of oil that is extracted from the ground which differs depending on the impurities, such as sulphur, that are found in the mixture. This lack of product differentiation coupled with the price being determined on the open market weakens buyer power.

2.2.4 Bargaining Leverage

The bargaining leverage that these companies have is based on the capabilities of the host country and its policies on foreign competition. Oil-rich countries that are not capable of extracting and producing their oil reserves need a foreign company to provide these services. This places the foreign company into a favourable position to negotiate on price and strengthens the buyer power. This position is further strengthened when there are no other competitors in the oil-rich country to contend with.

B) Governments that Purchase Oil for their own reserves (High)

For the purposes of this document only the U.S. Strategic Petroleum Reserve (SPR) will be discussed as this government agency has the largest reserve of crude oil in the world. This government agency was created in response to the oil embargo of the early seventies to provide an option for the U.S. government in the event of another threat to its economy. (DOE, 2009)

At maximum capacity the SPR is capable of holding over 720 million barrels of oil and is an investment by the U.S. government that totals \$22 billion. The SPR uses the

Royalty-in-Kind program to purchase oil at negotiated prices in an arrangement involving the Department of Energy and domestic oil companies. The presence of these negotiated prices indicates that the buying power of the U.S. government is high. (DOE, 2009)

C) Retail Customers that purchase gas for personal use (Low)

Retail level consumers have virtually no buyer power. The large number of consumers far outweighs the number of retail outlets available. Also, consumers are highly dependent on the existing distribution channels that are available in their local communities.

As a whole the consumer market creates the large demand for liquid fuels but as individuals each consumer has little bargaining power. Currently, there are no viable substitutes for liquid fuels. There has been some penetration of the consumer market by the adoption of the hybrid engines but not to the amount necessary to constitute a real threat. Overall, the only option that a consumer has is to scan the local retail outlets for the best price which puts the consumer in the inferior position with no bargaining power.

Key Success Factors For Dealing With Buyers

The one concern that is common amongst all three of these parties is low cost. Neither one of the parties involved is that interested in any other factor. The large oil companies want to purchase oil from the oil-rich countries at the lowest price possible. The U.S. government as with all governments, wants to purchase oil from its suppliers at low prices and consumers want the lowest price possible for their gasoline.

2.3 Bargaining Power of Suppliers (High)

The suppliers are defined as those entities that have the oil either as a raw material or as a finished product for sale. These entities have the power in the supplier/buyer relationship as they have possession of the product that is in demand. For the purposes of this document the two suppliers that will be examined are A) the countries that possess oil reserves and B) the energy companies that sell the finished products.

A) Oil-Rich Countries (High)

Each country that has its own reserves has its own grade and is differentiated based on the purity of its oil. An example of this is the difference between the oil from Saudi Arabia and the oil from the Canadian Oil Sands. The oil from Saudi Arabia is of higher quality with less impurities and is easier to extract based on the geological structure of the ground beneath the surface. The Alberta Oil Sands offer a very heavy crude oil that requires extensive processing to reduce the impurities and a more expensive means for extraction with the present mixture of oil, sand and silt. High quality reserves are in greater demand because of the low cost to extract providing the countries with these reserves with a superior position when dealing with buyers.

The number of countries that have oil, especially the ones without their own state-controlled company, are rare. This strengthens the suppliers' power as the number of oil-rich countries is far less than the multinationals competing for their oil reserves.

2.3.1 Switching Costs

Switching costs for oil-rich countries weaken their supplier power as the legal ramifications would be costly to switch from one company to another. Also, the time involved for one company to leave and for the other to take over the operations would be costly since there would be a period of time when the production rate drops to zero.

2.3.2 Threat of Forward Integration

The threat of forward integration by oil-rich countries is significant and increases supplier strength. As discussed in chapter one, many countries have decided to have their own oil company and keep competition to a minimum. Outside firms can attempt to backward integrate but this is limited to the regulations set by the host country.

B) Energy Companies that Sell Finished Products (High)

In most cases, the multinationals are vertically integrated and move the oil through their network from extraction through to the retail outlets. Some companies, such as Schlumberger, are service providers and supply the industry with finished products. This section will discuss how these oil services companies fit into the supply chain and will assess their strength level.

These two industry players have a superior position over those companies that purchase finished products for sale. The quality and price of finished products can vary amongst the suppliers which strengthens supplier power as higher quality products can be sold at higher prices. Also, there are less oil services companies than there are gas retailers providing the oil services companies with more bargaining power.

The probability of forward integration by the oil services companies is greater than the probability of backward integration by the retailers. These oil services companies are large scale, public companies that have the upper-hand in the negotiations with the gas retailers.

The agreements to supply finished products between the oil services companies and the retailers are legal contracts making the switching costs high if there is a disagreement that must be settled in court. One factor that weakens oil services companies' supplier power is the possibility of labour problems. Union workers can become disgruntled over contract disputes leaving the company subject to decreases in production and labour strikes.

Key Success Factor For Dealing With Suppliers

A) Domestic Reserves

The best method for dealing with suppliers is to be the one with the supply. Countries with their own oil reserves are in a better position if they create their own state-run oil company as this enables more control over the supply as well as the other operations in the supply chain.

B) Vertical Integration

Retailers will be in a better position if they purchase or create their own oil services operation. Companies need to avoid the situation where they are on the weaker side of the negotiating table.

2.4 Threat of New Entrants (Low)

New entrants are attracted to the energy industry because of the large profits to be made. However, there are considerable barriers to entry that discourage new competitors from entering the arena. These barriers are discussed in this section.

2.4.1 Capital Requirements

The large number of oil companies in the world does not accurately demonstrate the difficulties of entering this industry. Some of the more notable barriers include large off shore oil rigs, international pipeline construction, and skilled labour. According to Rigzone.com, used land rigs cost in the neighbourhood of \$100,000 and the cost of

offshore rigs can cost close to 1 million depending on the technology and age of the drill. The offshore rigs require large platforms and some have residence quarters, helicopter pads etc. that cost several million dollars to build and maintain. The cost of an international or large scale pipeline can be tremendous. The costs include materials, landscaping, labour, fees for consulting and engineers, which when summed can cost billions of dollars. The cost of the Keystone Pipeline which transports gas from Alberta through the U.S. to the Gulf of Mexico cost TransCanada Corp. \$12 billion. (Rigzone.com, 2009)

2.4.2 Reputation

Reputation is important when a foreign company approaches an oil-rich country to sign a contract to start exploration as the company's reputation is a factor in the country's decision. However, on the retail side of the industry marketing has less significance as consumers are focused on price.

Large energy companies have strong marketing departments and strong brands that make it difficult for new entrants to compete. Companies such as ExxonMobil have name power that has experience and a proven track record that a new entrant does not have. The new entrant, which does not have the same marketing strength, must compete using a different strategy than leveraging its brand.

2.4.3 Access to Distribution Channels

The existing distribution channels have been created by current companies in the arena making it difficult for new entrants to gain access to them. An existing company

might agree to allow a new entrant access to their distribution channel for the right price. But the management of the company with the distribution channel would be better off deciding to extract all of the available resources in that area themselves.

In the case of allowing access to a distribution network on the retail level, management might go ahead with an agreement depending on the benefits received but this situation would need to be very enticing.

2.4.4 Government Policies

The governments of oil-rich countries keep restraints on the entrance of foreign competitors in to their countries and as a result lower the threat of new entrants. This barrier makes it very difficult for new entrants to extract oil because they must convince a government to open access to its reserves for exploration. Allowing the new entrants in to the arena is not in the best interest of the host country when it already has its own state-run oil company.

2.4.5 Economies of Scale

The larger, more experienced firms can produce and transport oil at lower costs than the smaller, less experienced firms. This provides the existing multinationals with a proven cost advantage and the new entrants with a cost disadvantage. As mentioned, vertical integration enables the established companies to control the costs at each segment in the chain as opposed to the smaller companies which do not have this advantage.

2.4.6 Patents

Patents are made in the energy industry to protect the components of a formula, the processes and the technology used to conduct the operations. The presence of patents forces the new entrant to design a new product or service themselves placing even more strain on their success.

Key Success Factors To Eliminate Threat of New Entrants

A) Capital Requirements

The large costs of property, plants and equipment keep the majority of would be entrants at bay. This industry is too expensive for companies that lack the resources, capabilities and commitment to be able to compete.

B) Reputation

Reputation gives the established companies a significant competitive advantage over new entrants that no oil-rich country has ever dealt with. Companies that are currently in the industry should build their reputation by offering great service and high quality products leaving the new entrants to prove themselves.

C) Access to Distribution Channels

Access to distribution channels provides a proven method for companies to control the supply chain of their products. Companies with their own distribution channels should limit the access to competitors unless the agreement is mutually beneficial.

2.5 Threat of Substitute Products (Low)

Substitutes are defined as the products or services that can act as alternatives providing the same benefits as the original product or service. In this document, alternatives are defined as the current alternative energy sources which are solar power, wind power, hydroelectricity, etc.

2.5.1 Buyer Propensity to Substitute and Switching Costs

Alternative energy sources offer options that have less of a negative effect on the environment than carbon-based fuels. The adoption of alternative energy sources will take considerable time and investment leaving the chances of an immediate shift to alternatives highly improbable. One example, which is the shifting from the use of oil for heating one's home to the use of solar panels requires extensive investment and manufacturing commitment. This large commitment makes the availability of substitutes low because of the high costs of switching.

Another valid point is that oil is not only used for motor vehicles but also for manufacturing clothing and plastics as well. This widespread use of oil derived products offers little support for alternatives to become a wide spread substitute.

2.5.2 Perceived Level of Product Differentiation

The difference between using oil and an alternative energy is largely perceived by consumers as being overwhelming at this point in time. The electric car for example, is seen as an unfavourable choice by consumers as its price is too expensive and the recharging time is too long of a commitment for wide spread adoption.

Key Success Factor To Eliminate Threat of Substitutes

Use of oil and its related products is too ingrained in modern industry for alternative energy to become a viable substitute at this point in time. The construction of solar power plants, and the use of electric cars are too expensive to replace the existing fossil fuel based methods.

2.6 Competitive Rivalry (High)

2.6.1 Industry Concentration

Industry concentration involves examining the top firms in the industry and how much market share that they have. If the top 5 companies own the majority of the market share then the industry is said to be very competitive and conversely the opposite is true. According to the Global Energy Datamonitor report the top 5 companies account for 16.60% of the market share. (Datamonitor, Global Energy, 2009)

A low concentration ratio, as is the case here, indicates that the majority of the market share is divided up amongst a large number of competitors each having a small piece of the market. As a result this industry' fragmented state is highly competitive.

An industry that has a large number of firms is another characteristic of a competitive environment. The rivalry is more intense because there are a large number of companies fighting for the same customers and resources. Also, the top firms all have approximately the same percentage of market share making the competition to be the market leader intense.

2.6.2 The Effect of Low Oil Prices

The world is currently experiencing an economic slowdown that has temporarily affected the price of oil. The relatively low oil price has led to the closing of projects and a slow down in the industry. This slowdown decreases the rivalry as the lower oil price squeezes profit margins and decreases interest in the industry.

2.6.3 The Rate of Growth of the Industry

Based on the predictions by the EIA world energy consumption is expected to increase from 472 quadrillion BTUs to 678 quadrillion BTUs by 2030. This represents growth of 43.64% for the industry. This growth rate increases competition and intensifies the rivalry.

2.6.4 Exit Barriers

The high fixed costs associated with the large capital expenditures involved in the industry places the companies into the position where they must maximize production in order to lower their per unit or per barrel costs. After the product has been created it must be sold in order to make a profit on the vast amount produced.

After a company has been in the industry for a while the high exit barriers make it very difficult for the company to exit the industry. The exit barriers in this industry are so high that a company will keep operating despite a decrease in market share and profits. The equipment in the industry is very industry specific and as a result offers very little return in the used market.

2.6.5 Minimal Product Differentiation

The minimal product differentiation, as mentioned earlier, intensifies competition since the companies must find other ways to separate themselves from the pack. Whether the advantage is reduced extraction costs or a better brand name companies must distinguish themselves from one another.

Key Success Factors For Dealing With Rivalry

A) Low Cost

The main success factor for this industry is low cost. The purpose is to find methods that will enable a company to extract oil at a lower cost than the rivals do. This places the company in a position of absolute cost advantage.

B) Marketing

Marketing is a great method for firms to separate themselves from one another when vying for contracts with oil-rich countries. However, marketing is less important on the retail level of the industry.

C) Existing Contracts and Relationships

Due to the consequences of breaking agreements, companies that have existing contracts with suppliers have an advantage over those companies that do not. Establishing contracts with suppliers in the business is a necessity for companies to be successful.

2.7 Summary of Key Success Factors

The industry analysis was used to identify the following key success factors which are important for firms to have in order to be competitive in the industry.

Each key success factor has been ranked on a 1 to 3 scale whereby 3 is very important and 1 is the least important. Some key success factors occurred in the industry analysis more than once and as such are deemed more important than other factors.

1. Low Cost (3) This factor is found in bargaining power of buyers section, as well as threat of substitutes and competitive rivalry
2. Domestic Reserves (3) This factor is discussed in the bargaining power of suppliers section.
3. Capital Requirements (3) This is from the threat of new entrants section
4. Access to Distribution Channels (3) This factor is discussed in the threat of new entrants section
5. Reputation (2) This is discussed in the threat of new entrants section
6. Existing Contracts (2) This factor is found in the competitive rivalry section
7. Vertical Integration (2) This is discussed in the bargaining power of supplies section
8. Marketing (1) This factor is found in the competitive rivalry section

The ranking was determined by the importance in the supply chain as well as the effect on company profits. Domestic reserves offer a company that has them a significant

competitive advantage over those that do not. Capital requirements are necessary to initiate, manage, and grow the business. A distribution network is critical because without it the products will not be transported to the consumers.

Reputation is especially important for those companies that do not have their own reserves to draw upon and must sign contracts with suppliers of crude oil. This leads to the presence of existing contracts since these contracts are the agreements between the supplier and the company to extract and produce oil and its related products for profit. Vertical integration is another key success factor as it enables those who have it to control the supply chain more so than those companies that do not. Finally, marketing is the least important as it has never been the difference maker in negotiations with suppliers but it does factor into the ability of the company to differentiate itself from its competitors.

2.8 Competitive Analysis

The purpose of the competitive analysis is to provide information on Petrobras' main competitors and then make comparisons based on the key success factors to identify the opportunities and threats. These companies were selected for comparison because they are the top four in the industry based on market share.

2.8.1 Main Competitors

Exxon Mobil Corp.

Exxon Mobil Corp. is the largest public company involved in the oil industry with operations in each segment, exploration, production, manufacturing of products, transportation and retail.

Exxon Mobil has both upstream and downstream businesses. The upstream involves global operations in the development of gas and power services. The purpose of the upstream segment is to identify reserves for exploration that will deliver substantial profits.

Exxon's downstream segment produces oil related products for sale through its distribution network. This network is comprised of production plants, transport vehicles, pipelines, and distribution centres. (Reuters.com, 2009)

According to wikinvest.com, Exxon incurred an average barrel of oil cost of \$8.72 in 2008 and is expecting an average selling price of between \$40 and \$60 per barrel in 2009 which will help the company's bottomline. In addition, Exxon is the leader in the industry in revenue, income, and returns on capital employed. Exxon also has the largest distribution and retail network with the ability to produce 6.2 million barrels per day and over 10,000 retail locations.

Total income was \$45.2 billion in 2008 with the upstream segment producing the most with an income of \$35.4 billion. 60% of Exxon's reserves are split between the U.S. and the Caspian Sea.

Exxon's management is focused on investment with plans to spend \$150 billion over the next five years to expand operations. The falling price of oil has not slowed company investment in 2009 as capital expenditures have increased 11%. Source: wikinvest.com

Exxon's global presence involves challenges as the company's foreign operations in unstable countries, such as Saudi Arabia and Venezuela, expose the company to political and exchange rate risk. Earlier this decade, the government of Venezuela nationalized Exxon's operations so that it could retain the profits for its own use. This situation led to an international court hearing. (Wikinvest.com, ExxonMobil, 2009)

Royal Dutch Shell

Royal Dutch Shell plc (Shell) is an umbrella company that is comprised of several different companies spread throughout the globe. Shell operates in the following segments exploration, production, gas, oil sands, products and chemicals.

Shell searches the world for oil and gas reserves which the company then extracts and transports the raw materials through its network to the market. Shell's downstream segment involves the conversion of oil sands to crude oil and refined products.

Also, Shell has a sulphur solutions division that finds uses for this by-product of processing. (Datamonitor, Royal Dutch Shell, 2009)

So far revenues have been lower in 2009 than in 2008 with a first quarter revenue of \$58 billion. The company's production remains relatively unchanged year over year at 3 million boe/day (barrels of oil equivalent). In an effort to increase long-term revenue, Shell has sold operations in developed countries such as France and is focusing on developing assets in countries that are projected for larger growth such as Russia. The company is also focused on China as it plans to expand its refining and marketing operations there. Recently, Shell purchased a Chinese lubricant manufacturer and as a result became the largest lubricant manufacturer in the country.

Shell's operations in Nigeria have been in turmoil as four of its production facilities were shut down for safety reasons. This shut down led to a decrease in production of over 2 million barrels /day. Nigeria is famous for its violence and civil unrest and has continuously proven to be a detriment to Shell's international operations.

Chevron Corp.

Chevron is one of the largest corporations in the world and has operations in 100 countries. It operates in both upstream and downstream businesses in North America, South America, Europe , Africa and parts of Asia.

Chevron has operations at each step in the supply chain. Its exploration and production division develops oil and natural gas. Chevron also has operations in refining,

marketing, and transportation. Other products include petrochemicals, plastics, and lubricants.

Total revenues for the company have increased from \$150,865 million in 2004 to \$264,958 million in 2008, representing an increase of 15% CAGR. (Datamonitor, Chevron Corp., 2009)

According to the company website, net income was \$18.6 billion in 2007 and \$23.9 billion in 2008, representing an increase of 28% in one year. The amount of cash reported on the balance sheet was \$9.3 billion in 2008, up 26.9% from \$7.3 billion in 2007. This provides the company with the capital to expand its operations. (Chevron.com, 2009)

BP plc.

BP plc. operates an exploration and production division that includes exploring and producing oil and natural gas. BP also sells liquefied natural gas on the open market. BP has refining and marketing operations that refine, manufacture, and market oil and its related products.

Last year, BP's exploration and production division provided 3.8 million barrels of oil equivalents and produced refined products of 2.2 million barrels/day. The company increased its output to 4 million boe/day in first quarter 2009 as its new operations in the Gulf of Mexico began. In 2008, BP produced 8.3 million cubic feet of natural gas and 2.1 million barrels of refined products per day. (Wikinvest.com, BP Plc, 2009)

72% of BP's oil assets are located in North America and Europe and the company has continued to conduct business in other countries such as Algeria, Angola and Russia. With operations in politically unstable regions, BP has exposed itself to theft, work stoppages and political uncertainty.

BP's operations in Russia have become unstable as its joint venture with Russian investors has led to a battle for leadership of the company, named TNK-BP. The former CEO was removed for favouring BP's side. This has led to a dispute about who should be elected the new CEO. This is just one example of the hurdles that are faced by foreign companies in uncertain political environments. (wikinest.com)

The chart below ranks each company according to its strength in each key success factor with a maximum of five. It also analyzes the opportunities and threats which are based on the differences between Petrobras and its competitors on each factor. The opportunities are identified by the margin where Petrobras scores higher than the competition. Conversely, the threats are identified by the margin where Petrobras scores less than the competition.

The information gathered to conduct this comparison was from each company's website, annual reports, wikinest.com and each company's datamonitor report.

Table 2.1 Comparison of Key Success Factors

	Importance	Exxon	Shell	Chevron	BP	Petrobras	O/T
Low Cost	3	5	4	3	2	4	O
Capital Requirements	3	5	4	3	2	3	T
Distribution	3	3	5	3	4	2	T
Reputation	2	5	4	3	2	2	T
Existing Contracts	2	5	4	4	4	3	T
Vertical Integration	2	4	4	3	2	4	O
Marketing	1	3	3	2	1	1	T

2.9 Analysis of Opportunities and Threats

2.9.1 Opportunity 1 – Low Cost

Petrobras has the opportunity to improve its cost position in the market due to collaboration with the Brazilian government and its investments in technology. The partnership with the government improves Petrobras' competitiveness because the company has access to government funding and the majority of the offshore oil reserves.

Funding from the government provides Petrobras with a significant advantage over a company that does not, such as Exxon Mobil. If shortfalls occur funding from the Brazilian government will assist Petrobras to maintain its operations and to continue to make profits in slow economic periods while non-government affiliated companies such as Exxon Mobil are struggling. In stronger economic periods, both Petrobras' and the Brazilian government's resources are allocated to the development of the country's oil reserves allowing the company to minimize costs and maximize profits. Financial resources are used to improve technology and manufacturing processes to reduce costs.

2.9.2 Opportunity 2 – Vertical Integration

Petrobras' vertical integration consists of upstream, midstream and downstream operations. Each one of these divisions could be improved through innovation and employee compensation negotiations to reduce the costs of operations.

2.9.3 Threat 1 - Capital Requirements

All new projects require the application of more capital and in this industry the projects can cost billions. Petrobras does not have the same capital reserves as the market leader Exxon Mobil. This places Petrobras' management in the position of making strategic capital allocation decisions. Also, the net profits that are made need to be carefully re-invested in the company especially during the growth phase to please both employees and shareholders.

2.9.4 Threat 2 – Access to Distribution Network

Petrobras' domestic distribution is threatened by the foreign competition if the Brazilian government decides to allow increased access to the network by foreign companies. This is a sensitive area that could move against Petrobras' position if the Brazilian government decides to open up the network to increase competition.

2.9.5 Threat 3 – Reputation

The company's current differentiation strategy of commitment to sustainability opens the company up to the media's microscope. Every time Petrobras has an accident that has a negative affect on the environment the company will be criticized in the public eye. This threat leaves the company open to attacks and should be closely monitored by management.

2.9.6 Threat 4 – Lack of Existing Contracts

Petrobras already has a strong presence in its domestic market but it lacks the international contracts to operate in other countries. International contracts offer more sources of revenue, ones which Petrobras does not have. It does have some operations outside its Brazilian borders but no particular agreement stands out to be that impressive nor is there the amount of contracts that the market leader Exxon Mobil has.

2.9.7 Threat 5 – Marketing

Petrobras has yet to become known as a leading industry player. Its name has been mentioned occasionally in the media because of its discovery of oil reserves in the past few years but it has not developed the brand name of Exxon Mobil or Royal Dutch Shell. This leaves the company in a vulnerable position when negotiating for international business. Oil-rich countries will select a proven winner that has the track record and the marketing power behind it rather than a company with a weaker brand name that has only recently been successful.

2.10 Strategic Alternatives

The opportunities that are present for Petrobras in the industry are low cost and vertical integration. This situation leads to a switch of the company's strategy from differentiation to low cost.

The differentiation strategy of committing to sustainability makes sense given the negligent attitude towards the environment of the past by company management but with

the main reason for success in this industry being low cost the emphasis should be placed on improving profit margins.

Petrobras' vertically integrated network needs to be re-designed to lower costs and improve profit margins. As stated the strategic option is to switch corporate strategy from differentiation to low cost which will involve analyzing the different segments of the value chain to make improvements through innovation that will improve the profitability of the company.

On a broad scope, this will involve lowering the cost of goods sold, creating and implementing new technology, restructuring transportation, negotiating with employees and reducing the financing costs of the business.

3: INTERNAL ANALYSIS

The purpose of the internal analysis is to assess the internal resources and capabilities of Petrobras to evaluate the viability of the proposed strategic option in the previous chapter. The implementation analysis involves the application of the “Diamond-E Framework” which consists of management preferences, organization analysis and resource analysis. Each one of the Diamond-E Framework components are used to assess the strengths and weakness of the company. (Crossan, 2005)

The proposed strategic option is to change the corporate strategy from differentiation to low cost and by doing so improve the long term profitability of the company.

Evaluation Process

The evaluation process consists of discussing the preferences of management, analyzing the capabilities of the organization and the necessary resources of the company. Management preferences include the preferences of the senior management team which are displayed through the company’s values. The capabilities of the organization include the effective and efficient use of systems within the company. Company resources include the financial, human and operations aspects involved to make improvements.

3.1 Management Preferences

The management preferences are reflected in the companies' values and are listed in the following chart.

Table 3.1 List of Management Preferences

Sustainable Development	Integration
Results	Readiness for change
Entrepreneurship and Innovation	Ethics & Transperancy
Respect for life	Human & Cultural Diversity
People	Proud to be Petrobras

Source: (Petrobras, 2009)

3.1.1 Sustainable Development

Petrobras has a long term focus and is conscious of the environment in which it conducts its business activities. Petrobras is a member of the Dow Jones' Global Sustainability Index which is the most recognized index of sustainable companies in the world. The company has made many changes to its operations as a result of its past malfeasance.

3.1.2 Integration

Petrobras's goal is to have its separate divisions all work together towards the company's goals which is to become one of the top five largest integrated oil companies in the world.

3.1.3 Results

The company values its people and strives to improve its capital allocation abilities and cost management. This preference is a solid indicator for the need to switch from a differentiation strategy to low cost as it will assist to improve the company's results focus.

3.1.4 Readiness for change

Petrobras embraces change. This is important as the proposed strategic alternative will lead to large scale changes in corporate culture and operations. The management team must commit to the changing of the strategy in order for the alternative to maximize performance.

3.1.5 Entrepreneurship and Innovation

Petrobras is committed to innovations that lead to improving the business. This preference is important as innovation will need to be the focus as new technologies and processes will need to be designed that will improve the cost-effectiveness of the company.

3.1.6 Ethics and Transparency

Management prefers to conduct business operations in an ethical manner and is guided by the company's ethical principles. The following achievement reflects the results achieved by the company's ethical focus.

“In early 2008, Petrobras was acknowledged by a Management & Excellence (M&E) survey as the world's most sustainable oil company. Ranked first, scoring 92.25%, the company is the global reference in ethics and sustainability based on 387 international indicators, among which lower pollutant emissions and oil leaks, less power consumption, and a transparent vendor service system.” Source: Petrobras Website

The company's ethical focus may contradict the low cost strategy. Typically, this conflict occurred in the industry decades ago when the oil companies' sole purpose was to generate profits with little to no care for the environment. To overcome this challenge, the new innovative processes will reduce waste leading to a situation where cost and ethics are both incorporated into the strategic decisions of the company.

3.1.7 Respect for Life

Petrobras has respect for life and strives to provide the best working conditions for its employees and to protect the environment.

3.1.8 Human & Cultural Diversity

Petrobras aims to respect and appreciate the diversity of cultures amongst its employees and its affiliates.

3.1.9 People

Petrobras helps to develop its employees as the company realizes the importance of its human capital and how it can be used as an advantage over its competition. The company has nine guidelines that it follows in order to maximize its investment in its people. These guidelines concentrate on recruiting and training professionals as well as the employees' technological competencies.

3.1.10 Proud to be Petrobras

The people of Brazil see Petrobras as a symbol of country pride as the company provides wealth for the country and the opportunity for great careers for the Brazilian people.

Petrobras started the Children's Program in 1983 which provides after-school programs for children between the ages of seven and fourteen. These programs include athletics, the arts, and hygiene.

Another example is how Petrobras initiated an education program, called the Life and Health program, for children that discusses drugs, prostitution, early pregnancy and sexually transmitted diseases. (Petrobras, 2009)

3.1.11 Summary of Management Preferences

The management preferences reflect the current strategy to commit to sustainable business operations. Petrobras has taken several steps to prove this with the social programs that it has developed and its globally recognized sustainable business operations.

The major hurdle was discussed in the ethics section as this one is the most likely to conflict with the proposed alternative. Petrobras' ability to innovate will create a win-win situation as the new technology designs will benefit both interests of low cost and sustainability by reducing waste, improving profitability and enhancing the company's public image.

In summary, management preferences are aligned with the change to a low cost strategy as long as this new strategy does not interfere with the company's improved image.

3.2 Analysis of Firm Resources

Firm resources are comprised of all of the assets that the company can use to its advantage. Some examples of resources include, technology, people and facilities. As a global company that is backed by its domestic government, Petrobras has many resources to deploy.

Table 3.2 Firm Resources

Dominant Position in the Brazilian oil industry
Large Domestic Reserves
Market leader in deepwater exploration
Vertical Integration
Leader in the Brazilian natural gas market
Ability to attract partners for various activities

3.2.1 Dominant Position in the Brazilian oil industry

Petrobras is the market leader in the Brazilian oil industry and has developed various operations and significant ownership of the offshore oil reserves. These are two advantages that Petrobras has over existing competitors as well as new ones.

Petrobras has a stranglehold on the refining industry in Brazil which provides it with a source of revenue not only from their own operations but also from those of the company's domestic competitors.

3.2.2 Large Domestic Reserves

“As of December 31, 2008 the company had Proved Reserves at 15.08 billion boe according to the criteria of the Society of Petroleum Engineers (SPE), of these total reserves, 93% are in the Brazilian territory.” (Petrobras, 2009)

These reserves place the company into an advantageous position that enables it to generate large profits over the long term. Before Brazil was a net importing country meaning it imported more oil than it exported placing the country in the position of paying for oil in the open market. The domestic reserves enable the company to be a net exporter that supplies its own country’s needs and sells oil on the open market for profit.

3.2.3 Market Leader in Deepwater Exploration

Petrobras has developed leading technology in deep water and ultra deep water exploration that includes drilling techniques that are capable of exploring 3,000 meters into the ocean floor.

These innovative techniques and designs demonstrate the company’s ability to create new devices and methods that are more cost-effective and capable of implementing the new strategic alternative. (Petrobras, 2009)

3.2.4 Vertical Integration

Petrobras' vertical integration consists of its upstream and downstream operations. The company's upstream operations averaged 2,065 million boe/d with the majority of that coming from oil at 87%. (Datamonitor, Petrobras, S.A., 2009)

The company also has a complicated network of pipelines, distribution centres and transport ships that distribute products to its customers. As of 2007, Petrobras' domestic pipelines are over 13,000 km in length and cover the country transporting liquids between its distribution centres.

Petrobras is also involved in the production and marketing of oil derived products in its downstream businesses. Petrobras has ownership over eleven refineries which have a production rate of over 1.9 million barrels/day. (Datamonitor Petrobras, 2009)

Petrobras has diversified its business operations to include natural gas and electricity distribution. In 2007, Petrobras sold 1,535 MW of electricity and provided 48.6 million cubic meters/day of natural gas. (Datamonitor, Petrobras, S.A., 2009)

Petrobras' vertical integration components will be the focus of the low cost strategy. Each one of the segments will be examined for ways to improve the cost-effectiveness of its processes. Examples of these improvements will be discussed in the next chapter.

3.2.5 Leader in the Brazilian natural gas market

Petrobras has the leading position in the Brazilian natural gas market and plans to benefit from the growing demand of natural gas in the future. The company has developed natural gas reserves in Bolivia and has created a pipeline that transports gas from the reserves in Bolivia to Brazil. The 2012 projections for natural gas are 1.2 billion of boe which represents an increase of 19% from 2007. (Datamonitor, Petrobras, S.A., 2009)

3.2.6 Ability to attract partners for various activities

Petrobras' improving reputation has enabled the company to partner with other industry players to reduce risks, share costs, develop technology and improve its own competitive position. The company has developed partnerships with companies such as ExxonMobil, Total and Shell. (Datamonitor, Petrobras, S.A., 2009)

3.2.7 Summary of Firm Resources

Petrobras has a large pool of resources to draw upon to switch strategies from differentiation to low cost. These resources are important as the new strategy will focus on maximizing their use to generate profit.

3.3 Systems, Structure and Culture

Petrobras' operations are comprised of its systems, structure and culture. The systems are the processes that are designed and implemented to achieve specific goals.

The company's structure refers to the blueprint of its levels of decision making. Its culture is the behaviour and way of thinking that the company employees have.

3.3.1 Systems

The best method to discuss Petrobras' systems is to focus on production. Previously in this document the systems of the company and some of its productivity numbers were mentioned. The table below helps to illustrate some of these productivity numbers.

Table 3.2 Summary of Petrobras' Productivity

Total Domestic Production of oil and natural gas 2008	1.8 billion barrels per day
International Production 2008	123 million barrels per day
Total Domestic Production of oil and natural gas 2007	1.79 billion barrels per day
International Production 2007	126 million barrels per day

Source: (Petrobras.com)

Petrobras tracks its production numbers carefully as they are the major contributor to profitability besides the market price of oil. This careful tracking enables the company to implement a cost-based strategy as efficiency can be improved by achieving productivity goals and identifying any weaknesses in the production process.

The ability for the company to improve one metric such as barrels per year will result in an increase in profitability .

3.3.2 Structure

The structure of the company can be divided into two parts. One part is the corporate structure and the other is the operations structure.

The corporate structure consists of the CEO, Directors, Ombudsmen, Fiscal Council, and various committees. This structure is similar to most corporations and follows the hierarchial structure that is favourable for the low cost strategy. Based on the theoretical structure associated with differentiation strategy this company should have a decentralized structure but this is not the case. The change of strategies will involve widespread adoption within the company and that starts at the senior level where Petrobras is already structured to transition into the proposed strategic alternative.

(Petrobras, 2009)

As mentioned in chapter one, the business is divided into four segments: exploration & production, downstream, gas & energy, and international. The main reason to switch from differentiation to low cost strategy is to reduce the costs associated within these segments and to improve each segment's profitability. This can be achieved by analyzing each component of the segment to locate areas to lower costs.

3.3.3 Culture

Petrobras has committed to improving its business operations by dedicating itself to social, cultural and environmental causes. The company has many social efforts that it discusses in its social report. A few of these social efforts were mentioned earlier but overall the company offers education programs for children, the people of the communities it operates in and its employees.

On the cultural side, Petrobras provides a travelling exhibition that enables Brazilians to view digital replicas of its most prolific painter, Candido Portinari. It has also formed a non-profit orchestra that performs classical and popular music for millions of people.

Petrobras has re-committed itself to the environment and has been a sponsor of such projects as the Manatee Project. This project is a joint venture with the Brazilian Environmental Protection Agency to study the behaviour of the rare manatee bird.

(Petrobras, 2009)

The various commitments the company has made demonstrate its willingness to incorporate non-operational activities into its company interests. However, these activities have high costs that will need to be examined for cost reduction. Any cost reductions to these efforts will receive negative attention but the company must place its long term profitability ahead of its social efforts or the company will suffer.

3.3.4 Summary of Organization Capabilities

Petrobras has impressive organizational capabilities. The systems, structure, and culture display the potential for the new low cost strategy to be implemented and to act as places for the cost-cutting to occur.

3.4 Internal Analysis Summary

Petrobras' strength and weaknesses are summarized in the following chart.

Table 3.3 Summary of Strengths and Weaknesses

Strengths	Weaknesses
Dominant Market Position	Commitment to Sustainability
Domestic Reserves	Social and Environmental Programs
Deepwater Technology	
Vertical Integration	
Leader in Domestic Natural Gas Market	
Hierarchial Structure	

The strengths listed above are those that would favour the proposed low cost strategy and the weaknesses are the potential obstacles to the new strategy. Based on the internal analysis the low cost strategy is plausible and should be implemented to improve the success of the company.

4: RECOMMENDATIONS

This chapter includes a summary of the strategic alternative, recommendations for improvements and an action plan to initiate the process.

4.1 Summary of the Strategic Alternative

The best strategy for Petrobras to implement is a low cost strategy that focuses on maximizing profitability and leave the sustainability strategy for other companies to implement. After conducting the industry and competitive analysis, the best strategy for success in the energy industry is low cost not differentiation. The margin between the cost to produce the finished product and the market price is the number one priority.

Petrobras' innovative capabilities are typical of a differentiation strategy but would best be used to design new ways to make the company's processes more efficient. This along with its high research and development budget enables the company to invest both time and money into new cost-effective technology. Petrobras already has a hierarchial structure with less autonomy which is best suited for a low cost strategy.

The labour hiring strategy will need to change to profile those employees that are more skilled and lower paid than the previous ones. The marketing department must change its focus from pioneering to using more comparisons with competitors to highlight Petrobras' cost competitiveness. These tactical changes will decrease the risk level of the company and will assist the company's ability to raise debt financing to fund future projects.

According to Porter, the low cost position generates above average returns in an industry, such as oil and gas, despite the presence of intense competition amongst the industry players. One advantage of this strategy is the ability of the low cost company to make profits in an environment where the competition has squeezed their profits because of the high level of rivalry. Since the price of oil is determined in a market system and not by the head office of the company, a low cost strategy enables Petrobras to make profits in low-oil price scenarios, such as the one experienced in 2009 and large profits in high-oil price scenarios similar to the market conditions of 2007-8.

Porter also mentions that to implement the low cost strategy, the company must have significant market share and access to raw materials. Petrobras has the largest market share in Brazil, which is an energy-starving country and has one of the world's largest oil reserves off its Atlantic coast. (Porter, 2008)

After the low cost initiative has been successful, the larger profit margins will enable Petrobras to modernize its facilities and equipment to continue the low cost advantage.

This table outlines the proposed increases for Petrobras to achieve by shifting to a low cost strategy.

Table 4.1 Summary of Proposed Improvements for Each Business Segment

Segment	2007 Performance in \$Billions	Proposed Increase	Projected Performance \$Billions
Supply	\$69.5	15%	\$79.9
Exploration & Production	\$41.9	10%	\$46.1
Distribution	\$23.3	25%	\$29.1
International	\$9.1	25%	\$11.4
Gas & Energy	\$4.9	25%	\$6.1
Totals	\$148.7		\$172.6

These projections, although preliminary, provide achievable goals for Petrobras' management team. The main areas that will be improved with a more efficient, cost-effective strategy are distribution, international and gas & energy.

Distribution networks always have efficiency problems. Leaky pipelines, worn-out trucks, and unmotivated union employees to name a few. Many improvements can be made in this areas to pass the 25% goal.

The international segment, which operates in countries such as Angola, always has its challenges with technology, inefficient systems, and less educated employees. The gas & energy segment has room for growth but speed should not be chosen over efficiency. Electric power grids must be as efficient as possible to avoid creating infrastructure that loses power during transport and wastes money. These recommendations offer places to examine first, but the full analysis of the company's operations will require extensive time and effort.

Overall, the efficient processes are the main factor for success in a low cost strategy. All of the company's processes will need to be analyzed and where necessary improved. The efficient processes should be kept and the inefficient ones should be improved or removed.

4.1.1 Action Plan

Grant provides a 9-step process that oil companies use to implement change in their corporate strategy. This has been included to display the time line necessary for Petrobras to initiate the new low cost strategy. (Grant, 2003)

Step 1. Planning Guidelines

The first step starts with senior managers agreeing to make a change of strategy, from differentiation to low cost, and declaring the new goals and assumptions that will be involved in the creation of the new business plan. The first part involves the external analysis which was already completed in this paper. The second part requires the senior management team to set the goals, policies and performance targets for each division. An example of a goal that applies to Petrobras' situation is to reduce the cost of extraction per barrel by 15%. **Expected time 2.5 months.**

Step 2. Draft Business Plans

Each business segment is required to create a new business plan based on the corporate strategy and performance targets. **Expected time 1 months.**

Step 3. Discussion with Corporate

Each businesses' new plan is submitted for review by senior managers to assess the proposed strategies and the new performance targets. **Expected time 0.5 months**

Step 4. Revised Business Plans

After meetings between senior managers and division managers the business plans are revised. **Expected time 1.5 month.**

Step 5. Annual Capital and Operating Budgets

The budget is forecasted based on the new business plans as decisions for the amount of capital expenditure are determined. **Expected time 1 month.**

Step 6. Corporate Plan

The corporate planning department combines the individual business plans submitted by the different divisions and completes the finished corporate plan.

Expected time 2 weeks.

Step 7. Board Approval

The Board of Directors gives the new corporate plan its approval.

Expected time 2 weeks.

Step 8. Performance Targets

The performance targets are taken from the corporate plan and used to measure the success of the company and its individual divisions. **Expected time 2 weeks.**

Step 9. Performance Appraisal

The performance appraisals are conducted to monitor the progress of the corporation and to award the performance-based bonuses. **Expected time 2 weeks.**

The total time for completion of the planning process and the start of the performance appraisals is 9 months according to Grant.

5: CONCLUSION

The purpose of this document was to analyze the current corporate strategy of Petrobras and then recommend a change if necessary. After the analysis was conducted it is concluded that indeed a change of strategy, from differentiation to low cost, is necessary for the long term success of the company. The company's success has been short term as it discovered the large reserves in its Campos Basin earlier this decade and as a result has not been able to factor in the long term effects of its differentiation strategy. The differentiation strategy was chosen to be a "Commitment to Sustainability" which was selected due to the company's unfavourable track record of environmental accidents.

The results of the analysis demonstrate the importance of a low cost strategy versus a differentiation strategy in the energy industry. The low cost strategy is preferred because it enables a company with proven reserves, such as Petrobras, to achieve a significant competitive advantage in the industry which will ultimately lead to Petrobras' long term success.

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