Abstract
Oil has been the lifeblood of the global economy for over a hundred years. Oil is directly responsible for about 2.5% of world GDP and accounts for 1/3rd of humanity's primary energy supply and the numbers grow above 50% if one includes natural gas in the calculations. The aim of this paper is to present a current overview of the industry fundamentals and to provide an insight into the key trends and challenges facing the industry while encompassing views not only from energy producers and consumers but also policy makers, traders and analysts across the global market. Given the fact that many developing and emerging economies try to take advantage of the available natural resources in order to enable and spur growth, a special emphasis is put on the future development of the oil and gas industry in these economies. Overall, our analysis shows that the industry is evolving in the context where complexity and uncertainty are managed through diversification of companies, partnerships and flexible business models.

Keywords: Oil, industry fundamentals, future development, business models

Track: Governance

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1. Introduction
Over the last decade, the future for the oil and gas industry has changed. For more than a century, we were witnessing production growth which served to supply the big Western-driven market, and competition was manifesting itself between private companies in their quest for oil and gas reserves. (Mitchell, Marcel, Mitchell, 2012). In the context of geopolitical landscape, the Organization of Petroleum Exporting Countries (OPEC) and Russia have dominated the oil and gas export environment, whereas today new suppliers are challenging their dominance (Deloitte, 2014).

Since 2005, oil prices have moved to a permanently high level which led to changes in various industries that are capturing some of the demand for transport by producing more efficient engines, vehicles, ships and aircraft, and by supplying alternative fuels. Moreover, new technologies are providing diverse but uncertain opportunities for producing ‘unconventional’ oil and gas all around the globe. Private-sector companies are seeking business success in the traditional oil-exporting countries where the industry is under state monopoly, what will gradually evolve into cooperation with the state-controlled oil or gas company.

In the following chapters this paper provides an overview of the current theoretical and practical findings, opportunities and challenges for the oil and gas industry.

2. Industry Overview: Facts and figures
Oil and gas supply 57% of the commercial energy the world consumes, and their combustion accounted for roughly the same proportion of global CO2 emissions. Oil and gas exports are more than 15% of the value of global exports and provide more than 25% of GDP in Russia, Central Asia and members of the Organization of the Petroleum Exporting Countries (OPEC).
Just over 10% of the value of the world’s stock markets is invested in the oil and gas sector (Mitchell, Marcel, Mitchell, 2012).

Exports by OPEC amounted up to 28% of total crude oil consumption in 2012, which is approximately the same as in the prior decade. While OPEC continues to be a major force in the global oil markets, increasing production in the US and other parts of the world will likely curb its power to influence crude oil prices by controlling marginal production (Deloitte, 2014). The most important factor in this power-shift is the impact of the US unconventional boom, with the nation motivated to become a net natural gas exporter by the end of this decade and with its reliance on the fall of foreign oil imports. Greater US production could also impact the decreasing imports from the country’s other major suppliers, such as Venezuela, Canada and Mexico, just as the latter two nations are believed to increase their own domestic production. If US appetite for their exports plateaus or wanes, these countries will have to consider alternative markets. Brazil and Kazakhstan also have the potential to expand global supplies.

In that context, OPEC is facing a mid-term dilemma because expectations of supply exceeding demand could eventually lead to lower global oil prices, which could create budgetary difficulties for exporting countries and pose challenges to the industry, especially for high-cost projects. OPEC’s typical response of lowering the production ceiling may create rather negative effects, such as generating less revenue for some members, further lowering OPEC’s percentage of global crude oil, and consequently reducing its influence on the global markets (Deloitte, 2014).

Russia, the second leading global oil and gas exporter, could also see its position challenged in its main gas market, Europe. Driven largely by environmental regulations and demands, European demand for natural gas is expected to grow by 17% by 2035, according to the BP Energy Outlook which does not per se translate into greater demand for Russian imports. Moreover, several European countries are keen to loosen Russia’s grip on their energy supplies. To offset slower demand growth and increased competition in Europe, Russia has turned to Asia Pacific and China in particular, targeting new markets. However, in the quest for dominance in Asia Pacific, Russia is not the only actor. Asia Pacific is a hot bed of demand growth. Between 2012 and 2035, 72% of the world’s demand growth for liquids is expected to come from Asia Pacific. Asia Pacific countries are now OPEC’s main buyers, purchasing 57% of its crude oil exports in 2012, and the region is to become even more important to OPEC since US demand is declining. Beyond OPEC, other exporting nations are also looking to Asia Pacific to absorb additional crude oil supplies from the Americas, Russia and Central Asia. (Deloitte, 2014).

Aside from the geo-political facts and figures presented by Deloitte, LUKOIL’s study shows that the demand for liquid hydrocarbons will continue to grow annually by 1.2% on average and will, in their estimate, reach 105 mb/d by 2025. The greatest surge in oil demand will come from the transportation sector, for which oil is the principal energy source (over 90%). Consumption of liquid hydrocarbons will grow in developing countries where the transportation industry is witnessing rapid growth. Experts expect to see significant growth in the number of cars as well as the development of other transportation. In addition to this, growth in demand for oil in developing countries will be further encouraged by the industrial sector. At the same time, consumption of liquid hydrocarbons in developed countries will remain relatively stable due to low rates of economic growth and further improvements in fuel economy.

Chapter 3 presents a brief overview of the current business models and strategies used in battling the trends described above.
3. Structure, Business Models and Strategies in the Oil and Gas Industry
A business model refers to the structure under which a firm generates, delivers, and captures economic, social, or other forms of value. The process of developing a business model is an integral part of the business strategy. In theory and practice the term business model is used for a variety of informal and formal concepts aimed at representing core aspects of a business, including purpose, offerings, strategies, infrastructure, organizational structures, trading practices, and operational processes and policies. Whenever a business is established, it employs a particular business model that describes modes of its value creation, delivery, and captures mechanisms employed by the firm. The essence of a business model is that it defines the manner by which the firm delivers value to customers, motivates customers to pay for value, and converts those payments to profit: it thus reflects the managerial hypothesis about what customers want, how they want it, and how a firm can organize to best meet those needs, and make a profit. Business models are used to describe and classify businesses, but they are also used by the firms’ managers to explore possibilities for further development (Macroeconomic Subgroup, 2011).

The oil and gas industry is most often divided into three major dimensions: upstream, midstream, and downstream. The upstream sector refers to exploration, development and production of oil crude or natural gas. Most upstream work in the oil field or on an oil well is contracted out to drilling contractors and oil field service companies. Midstream and downstream sectors are most often seen and understood by the public, as they embody refining, storage, distribution and marketing of petroleum products to domestic and industrial consumers.

The oil and gas industry has a business model is also peculiar because combines technology, geo-political relationships, skilled and experienced human resources, environmental protection and economics (based on economies of scale) in the high-risk pursuit of a finite but crucial commodity. All this imposes major challenges on profitability of firms in this industry which must ensure that discovered resources are used in economical and sustainable manner, where technology and cost efficiency are the key determinants of the use. Technology is also relevant with respect to the fact that new supplies are getting located further away from consuming markets. This is especially true for gas and offshore oil resources (Petrobras Annual Report, 2007). The market structure for petroleum, crude oil and gas, is characterized as an oligopoly; a few firms dominate the market, and market decisions must be made with the other dominating firms in mind (Faulkner, 2011).

Singh (2010) defined and classified the oil and gas industry strategies into two types: the common industry-wide non differentiating strategies which all oil and gas companies follow, and the differentiating strategies unique to only a few oil and gas companies. Based on the results of his 2010 study, he defined four common industry-wide strategies:

- Portfolio Management (PM)
- Financial Management (FM)
- Operational Efficiency (OE)
- Sustainability (S)

Portfolio Management (PM) strategies refer to a balanced asset portfolio respecting a diversity of geologic and geographical risks. In that manner, it is important to note that no single region contributes more than a certain percentage of production or reserves; multiple geological locations provide a mixture in reserve life, which translates into a balance in the timing of returns on investments. PM strategies also consider a balanced mix of hydrocarbons (oil and gas) and providing some measure of protection against price deterioration in a given product while keeping upstream potential through a significant rise in commodity price. Moreover, PM strategies refer to a defined portfolio of core areas and generating long-term growth opportunities through strategic acquisitions (Singh, 2010).
Operational efficiency is cost-driven and strategies refer to: increasing reserves while controlling costs of finding; growing production while controlling costs of development and sustaining production while controlling operational costs.

Financial Management (FM) strategies of the oil and gas industry include financial flexibility achieved through maximizing earnings and cash flows while controlling costs, sustained capital expenses and business growth, high shareholder returns ensured through dividends and stock buy backs, and a healthy balance sheet that can be confirmed through a low debt to equity ratio.

Sustainability strategies refer to the paradigm of corporate social responsibility. Some of the common corporate social and environmental responsibility strategies of the oil and gas companies include: employee and community strategies supporting life quality, safety, diversity, fairness, etc. Moreover, they also consider climate change strategies aimed at reducing greenhouse gas emissions, possibilities of carbon capture and storage, improving energy efficiency of processes, etc. Environmental strategies are aimed at limiting the oil and gas operations impact on air, water and soil quality and biodiversity (Singh, 2010).

Portfolio Management (PM), Operational Efficiency (OE) and Financial Management (FM) are believed to be core non-differentiating strategies; companies derive their profitability, growth, and shareholder returns based on the execution of these strategies. Sustainability strategies are no longer believed to be a differentiating factor. The talk about sustainability is more of a business imperative than a choice and the key problem lies in the fact that sustainability strategies are not integrated with the core corporate strategies. According to the author above, only few of the oil and gas companies are seeking to differentiate themselves on strategies such as: asset based leadership, enhanced oil recovery (EOR) and development of hard-to-produce reserves, such as ultra-deep offshore resources, high-pressure/ high-temperature fields, sour gas, etc. Even less companies are familiar with evolved sustainability strategies (Singh, 2010).

4. Strategies and Business Models: The way forward

Although the current global economy is struggling, the world’s population continues to grow. This growth implies that energy demand will increase. It is becoming evident that the energy industry requires long lead times for new projects, but also for reconsidering the business models in use.

With respect to the changes occurring within and outside the industry, research has shown that oil and gas companies must reassess their priorities. Four main changes/issues are considered to be of strategic importance and they refer to: (1) the increased role of specialization in the value chain; new relationships patterns between national and international oil companies; (3) alternative energy and (4) risk management (Kaushal, Walters, Pearce, 2011).

When analysing the value chain, a greater disaggregation is expected due to the different level of industry attractiveness across countries and regions, with respect to their growth dynamics. In the quest for competitive advantage, its main sources will lie in new technology, technology specialization, financial and human resources, etc. In the context of the three main dimensions of the industry, in the upstream success is probably going to stem from innovation in difficult raw-materials exploration. In the downstream, firms that focus on regions rather than countries will create more value, which implies the need for greater operational excellence that is also a crucial factor in avoiding catastrophic incidents, which can account for much of refinery operational losses. Upstream and downstream integration will continue to pay off, but only when it is applied after an in-depth review of opportunities.

As for the relationship between the national and international oil companies, it is not only changing, but neither side can be complacent for both facing the threats and opportunities that increasing globalization poses. It is predicted (Kaushal, Walters, Pearce, 2011) that in the
future, upstream actors will extend the life of reserves, enable national governments to better prepare for the post-oil era, and ensure affordable energy prices for net oil-consuming countries. The aforementioned poses increased competition for natural resources between international oil companies. This situation is likely to lead to forced restructuring of upstream operations into leaner, less complex entities with a culture of innovation, and finding partners in more difficult and unconventional oil with the technological strengths to optimize recovery in mature fields. Downstream experience can be very useful in this restructuring process given the fact that downstream players have leaner practices as a response to years of operating under margin pressures. In the downstream, the main value driver will continue to be location and excellence in operations. The cost of inbound and outbound logistics and competitive intensity help to quantify that attractiveness. In that light, a prime location is one that ensures access to the sea and to retail channels in rapidly growing markets.

The risk profile of the oil and gas industry is on an upward trajectory. Integrated players are exposed to rising environmental and financial issues. The causes are legion: the financial, environmental and safety implications of working in more challenging locations and with harder-to-extract, harder-to-process resources; increased government and societal expectations about greener operations and cleaner products; competition from substitute products; and, in many regions and of growing importance, underlying geopolitical and fiscal instability. With respect to risk management processes, there is no unified recipe. Each oil and gas company must decide on its desired risk profile and create convergence between the chosen profile and the company's participation model. Adequate risk management will surely distinguish the leaders from the followers in the uncertain years to come. An example is ExxonMobil, which has created an operational integrity management system (OIMS) to respond to the issues of reliability and integrity management (Kaushal, Walters, Pearce, 2011).

As demand for alternative energy continues to grow, major players are under pressure not only to rethink their locations but also to establish their vision of sustainable development beyond oil. What is needed is a vision of alternative-energy development that provides economic, environmental and societal rationale and which, ideally, maximizes the potential for skill transfer, such as a firm with extensive platform expertise getting into offshore-wind energy. With regard to the evolving paradigm of CSR, in order to achieve sustainability in the long run, oil and gas companies also have to consider regulatory, oil and gas companies should also consider investments in alternative energy sources; including unconventional sources, renewable energy sources, bio fuels, and ways to improve energy efficiency (PwC, n.d.)

Based on an understanding of the threat to the industry structure, current industry landscape and drivers for change, Singh (2010) proposed two different strategic options for the oil and gas companies to remain competitive: Total Life Cycle Management (TLCM) and Management of Technology (MOT). Both of the novel proposed strategic options build on current industry-wide non-differentiating and differentiating strategies. Environmental aspects are an important element of each strategy. The TLCM approach will create value throughout the life cycle of the field from: access; efficient recovery; low costs; environmental stewardship; adaptation; organizational efficiency; energy stewardship; renewals of access; community support. This will create overall long-term value by capturing the market share and providing total energy societal solutions. Management of Technology strategies will create overall value by economic development of hard to produce reserves through; R&D; Innovation; Competitive access to hard to produce reserves; project management; organizational efficiency; global deployment and integration. Based on the proposed 'New Strategic Options’ the oil and gas companies can position themselves as the: (1) Service Company, Total Energy Solutions Provider which is costs efficiency driven; (2) Technology-driven with management of big complex projects, big budgets and tight schedule and characterized by risk management.
Towards a Conclusion

The oil and gas industry has always changed, and has had a determining impact on the changes in the societies in which it operates. The great changes of the 1970s led to a new era. The combination of changes that the industry now deals with requires evolutionary rather than incremental responses, for the industry to evolve and prosper. Decision makers both inside and outside the industry need to try and understand what is happening, and how it may affect the future, to explain their strategies and to adapt to new situations as they occur. In a ever-changing world, the slowly turning super tanker is not an image that excuses inertia in oil and gas companies and those who deal with them. All who are in the industry or who are involved with it need to share clear thinking about the future.

References


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