



جامعة الجميع الذكية
EVERYONE'S SMART UNIVERSITY

Everyone's Smart University

Project (Spring 2021)

Student Name	Khaled Ahmed AlGhamdi	اسم الطالب
Students I.D	2021201154	الرقم الجامعي

Section	Date	Course Code
Master	Thursday 18 / 03 / 2021.	(PMG510)

Project Risk Management

Instructions:

- اخر موعد للتسليم هو يوم السبت 2021-05-08 في تمام الساعة 9 مساءً.
- الإجابة متاحة باللغة الإنجليزية أو اللغة العربية مع مراعاة أن تكون المصطلحات العلمية باللغة الانجليزية.
- يتم تسليم المشروع في صيغة ملف pdf مع الالتزام نموذج الجامعة ولن تقبل أي مستندات أخرى.
- يجب مراعاة أقسام البحث الرئيسية (مقدمة Introduction، دراسات علمية سابقة Literature Review، طريقة البحث Methodology، النتائج والمناقشة Results and Discussion، وأخيراً المراجع References). وان كان هناك ملحقات Appendices يتم إضافتها).
- يجب الالتزام بـ Theme موحد كما يلي:
- حجم الخط 12.
- نوع الخط Arial.
- لون الخط أسود.
- المسافة بين الأسطر line spacing 1.5
- عدد صفحات البحث (لا يقل عن ثلاث صفحات ولا يزيد عن ست صفحات).

Instructor's Name: Eng. Mosaab M. Hamed

Project:

Risk Identification and Analysis (Based on the project you chose in APM)

The objective of this report is to identify project risks, prepare a risk probability matrix, and carry out an analysis of selected risks. Referring to the project you select in Advanced projects management APM course, your task is to prepare a risk management plan that identifies potential risks in the selected stage of the project and identify risk management strategies.

From the course content and readings, you know that the overall purpose of risk planning is to anticipate possible risk events and be ready to take appropriate action when risk events occur—to eliminate or reduce negative impacts on the project.

You may wish to begin this exercise with a brainstorming about potential risks to get candidate risks “on the table” for consideration. And then identify and refine that wording for risks that have some realistic chance of occurring in this stage. For example, potential weather problems present a real obstacle to completing field data collection by the planned completion date. It is also an issue that the project manager will ultimately have to plan for, as opposed to other issues such as a major disaster (e.g., your office burning down), is not a high-enough probability event that requires much time in planning. As described below, you will select several of the identified risks and carry out a risk analysis.

You will use the distilled list of risks to make a risk probability/impact matrix. The matrix will have at least three categories (high/medium/low) for probability and impact.

Remember that it is important to name risks effectively—use words that describe the risk event and point to the impact on the project (e.g., “injury of field technician disrupts data installation work”).

After completion of the risk matrix, document a risk analysis for the selected risks. This detailed documentation for that selected risk will include:

- a description of the risk and potential impacts (schedule, quality of work, cost, etc.) on the project.
- indicators or triggers that would be monitored to help identify the risk as early as possible.
- specific risk response strategies to take.

Using probability and impact matrix calculate the Expected Monetary Value (EMV) for all risks that have the impact in terms of cost \$\$.

Best of luck...

المشروع:

التعرف على المخاطر وتحليلها (بحث مبني على مشروعك الذي اخترته في مادة ادارة المشاريع المتقدمة)

الغرض من هذا التقرير هو التعرف على المخاطر المحيطة بالمرحلة التي تختارها المرحلة من مراحل مشروعك (نفس المرحلة التي اخترت التطرق لها في مشروعك لمادة إدارة المشاريع المتقدمة Advanced project management) حيث أن مهمتك هي تحضير خطة متكاملة لإدارة المخاطر تشمل التعريف بالمخاطر المحتملة التي تحيط بتلك المرحلة وتحضير مصفوفة احتمالية المخاطر ومن ثم القيام بالتحليل لهذه المخاطر المختارة وتحديد استراتيجيات إدارة المخاطر المناسبة لكل خطر على حدة.

من محتويات المقرر والمصادر الأخرى المتاحة أصبحت تعلم الآن أن الغرض العام لمرحلة التخطيط للمخاطر هي توقع أحداث المخاطر المحتملة والتجهز لاتخاذ ردّة الفعل المناسبة عند وقوع الخطر – لمنع أو تقليل الآثار السلبية على المشروع.

قد تحبّذ بداية هذا البحث بعصف ذهني عن ماهية المخاطر التي قد تحيط بتلك المرحلة من مراحل مشروعك، وذلك للحصول على قائمة بتلك المخاطر. ومن ثمّ تحديد وتصفية هذه القائمة للوصول إلى قائمة مختصرة بالمخاطر التي لها فرصة واقعية أكبر في الحدوث. على سبيل المثال: المشاكل الجوية المتوقعة والتي تمثل عقبة حقيقية أمام اكتمال جمع البيانات من المواقع في أو قبل الوقت المحدد، هذه تعتبر مشكلة على مدير المشاريع أن يضعها في الحسبان. من ناحية أخرى، فإن المخاطر غير الواقعية مثل الكوارث الطبيعية والأعاصير (تلك التي تسبب حريقاً بمكتبك وفقدان الأوراق المهمة) ليست لها احتمالية وقوع عالية وبالتالي لاتستدعي تضيق الكثير من الوقت في التخطيط لها. كما سيتبين لك، ستقوم باختيار عدة مخاطر من تلك التي قمت بالتعرف عليها لتحليلها.

ستقوم باستخدام هذه القائمة المختصرة لعمل مصفوفة المخاطر (الاحتمالية/الأثر). المصفوفة ستحتوي على الأقل على ثلاث تصنيفات (عالي/متوسط/منخفض) للإحتمالية والأثر.

لاتنس استخدام أسماء تصف طبيعة المخاطر بصورة فعالة – قم باستخدام كلمات تصف الحادثة الخطرة وتشير الى أثرها على المشروع (مثل: إصابة أحد الفنيين في الموقع مما يؤثر على أعمال التركيب).

بعد انتهاءك من مصفوفة المخاطر، قم بتوثيق تحليلك للمخاطر المختارة. هذا التسجيل المفصل للمخاطر يجب أن يتضمن:

- وصف للخطر واثاره المحتملة (الجدولة، جودة العمل، التكلفة، الخ)
- المؤشرات والمحفزات التي يجب مراقبتها للمساعدة في التعرف على هذا الخطر قبل وقوعه
- تفصيل للاستجابة المقترحة للتصدي لهذا الخطر

باستخدام مصفوفة الاحتمالات والتأثير ، احسب القيمة النقدية المتوقعة (EMV) لجميع المخاطر التي لها تأثير من حيث التكلفة \$\$\$.

مع تمنياتي بالتوفيق..

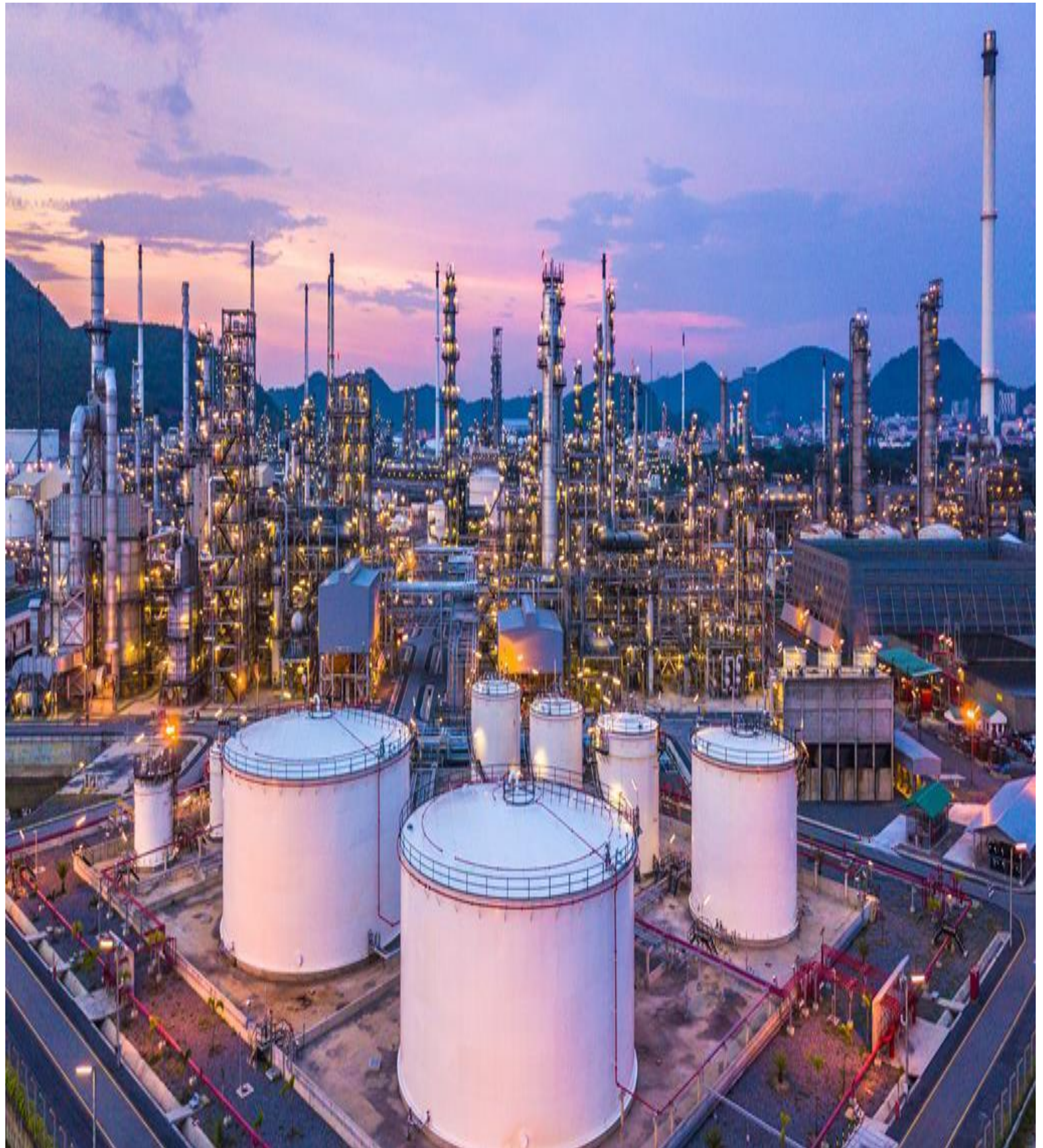


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Black & Veatch Annual Report 2019



✚ RISK MANAGEMENT PLAN

✚ INTRODUCTION:

Saudi Aramco is Saudi Arabia's state-owned oil corporation and a vertically integrated multinational petroleum as well as chemicals company. Price instability, risky practises, and unpredictable project results classify Saudi Aramco's business. Reaching reasonable risks is an essential aspect of just doing business. Saudi Aramco handles its geopolitical, organisational, compliance, as well as financial threats by reviewing them on a regular basis and responding appropriately. Business choices are taken through careful analysis of the benefits and uncertainties involved.

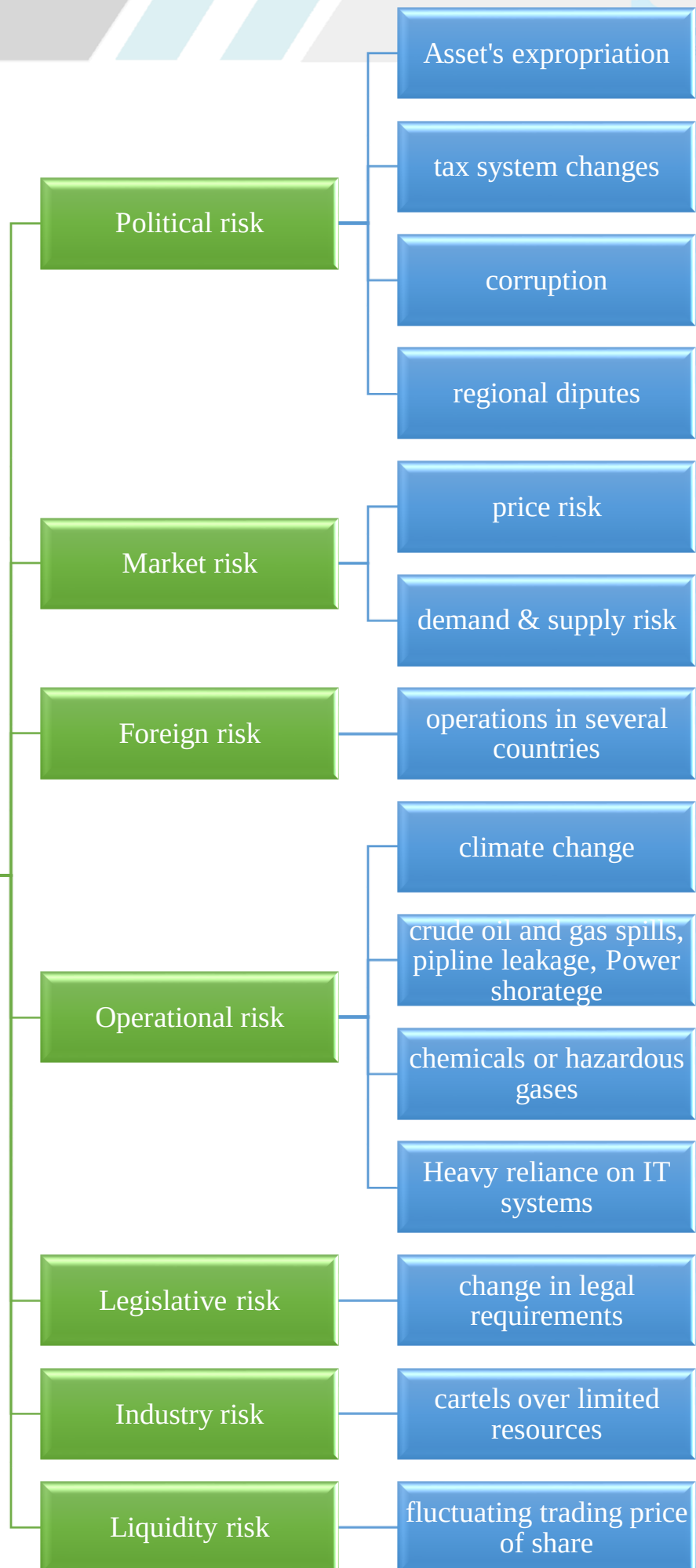
The purpose of this report is to make a risk management plan for Saudi Aramco by identifying and analyse the risks that Saudi Aramco encounters and then make risk probability matrix and mitigation techniques to reduce the probability and impact of each risk while calculating the expected monetary value (EMV) of all risk of the project.

1. RISK IDENTIFICATION

The method of identifying risks, assessing their severity, evaluating their effects, and implementing risk reduction strategies is known as risk analysis and management. Risk assessment aids in the analysis of different risks unique to an enterprise as well as the best potential responses to these risks in order to minimise or reduce their effect on a project (Cohen and Palmer, 2004).

Stakeholders in the financial sector, as well as those in private investment operations, are exposed to a variety of uncertainties by making transactions in businesses in the stock exchange or by direct investments. The following are the various threats that investors could face as a result of their potential investments in Saudi Aramco (Merna and Al-Thani, 2011).

Risk Identification



2. RISK PROBABILITY MATRIX:

A table below presents a Qualitative Risk Probability Matrix for the multiple risks found for investors considering Saudi Aramco and its related divisions as investment opportunities (Han et al., 2019).

IMPACT						
PROBABILITY		Very low 0.1	Low 0.3	Moderate 0.5	High 0.7	Very high 0.9
	Extremely unlikely (0.1)	0.01	0.03	0.05 Liquidity risk	0.07	0.09
	Very Unlikely (0.3)	0.03	0.09	0.15	0.21 Legislative risk	0.27
	Likely (0.5)	0.05	0.15 Foreign operations risk	0.25 Market risk (price)	0.35	0.45 Political risk
	Very likely (0.7)	0.07	0.21	0.35	0.49 Market risk (demand and supply)	0.63 Operational risk
	Extremely likely (0.9)	0.09	0.27	0.45	0.63	0.81

Figure 1: Risk Probability matrix for Saudi Aramco

The risks may be classified into three levels as seen in the risk matrix such as

LOW RISK	Liquidity risk: Extremely unlikely to happen, but with a medium effect on Saudi Aramco investors
MEDIUM RISK	Foreign operations risk: likely probability with low impact Legislative risk: With a high impact, there is a very unlikely probability that this could happen. Market risk (price) : likely probability with moderate impact
HIGH RISK	Political risk: It's likely to happen, and it'll have a high effect Market risk (demand and supply): very likely probability with high impact Operational risk: very likely probability with very high impact

3. RISK ANALYSIS

- ◆ Liquidity Risk: It relates to the risk of investors being willing to turn their deposits into cash when and when they see fit. As previously stated, potential buyers may be unable to invest in the firm due to its corporate practises, political climate in its home world, and geographic footprint, rendering the investors' assets less liquid in the financial markets.
- ◆ Foreign operations Risks: associated with international activities include: Saudi Aramco faces threats as a result of its operations in a number of nations. Saudi Aramco conducts a significant amount of its downstream activities outside of the Kingdom. It consist of
 - Exchange rate fluctuations in international currencies
- ◆ Legislative Risk: such form of risk that exists as a result of the nation in which the organisation resides altering legislative requirements. Changing legislative requirements in a nation would often have a direct effect on a company's business

practises and will result in an increase in the company's intervention costs in order to comply with the evolving legal requirements.

- ◆ Market risk is a form of investment risk brought about by global economic conditions. Various global economic conditions would have an effect on Saudi Aramco's investment. Price instability and demand danger are two other economic threats that will impact Saudi Aramco investment (Ramady, 2018).
- ◆ Price risk: Low oil prices are actually any oil company's greatest threat. Price instability has a major impact on oil and gas investment. The gross margins of international oil producers, like Saudi Aramco, have been drastically reduced as a result of low world oil prices. International oil markets have plummeted in recent years, losing 67 percent of their worth in 2014. Commodity market declines would have a significant impact on company earnings as well as investment valuation.

Saudi Aramco, on the other hand, is regarded as among the most productive oil manufacturers. It is rated second in terms of the lowest cost of output per gallon, at \$9.50 during 2015, while the United Kingdom needs \$52.50 per barrel. Even so, the Kingdom's spending has been burdened by the high degree of national subsidised oil use. The possibility of rising oil prices may be mitigated by eliminating or reducing oil demand subsidies.

- Supply risk
Saudi Aramco's downstream derivative businesses (oil refining as well as petroleum) rely heavily on crude oil as well as natural gas supplies to operate. The subsidiaries profit from subsidised goods, albeit only for a limited time, according to the Deputy Crown Prince, before the Kingdom removes the subsidy (Seznec, 2016). To manage this possibility, downstream subsidiary companies may use forward contracts to purchase the goods they need for output and supply contracts with a set quantity. While the forward contract is not appropriate under all circumstances, it will help to mitigate certain danger (Merna and Al-Thani, 2011).
- Demand risk
The businesses of Saudi Aramco receive a significant demand challenge. With its rapid development, China has surpassed the United States as the world's

largest importer and one of Saudi Aramco's most significant markets. As China's economic growth slows, so does its demand for petroleum imports, which reduces demand for Saudi Aramco's key supply. Despite the fact that Saudi Aramco has developed its energy-based downstream business to diversify sectors such as petrochemical and fertiliser firms, the sector still faces a significant risk of demand disruption. The drop in demand for Saudi Aramco's products would reduce the company's earnings instantly, resulting in a drop in share prices. To alleviate this possibility, the business may enter into an off-take purchasing arrangement and seek out a new market for its products.

◆ Political risk

It relates to the sort of risk that exists as a result of the political system and situations that have existed in the nation in the past, as well as those that are likely to emerge in the future. Saudi Arabia is governed by the Kingdom, which has resulted in a monarchy-style political system in the region. Company activities are usually observed to be affected by the Kingdom's evolving political policy under monarchy rule.

According to Ramady (2018), political risk deals with probability of shifts in the political economy, system, as well as governance structures, as well as the government's investment portfolio. Given that the Kingdom will retain the majority stake even after privatisation, the Kingdom's political clout seems as difficult variables to forecast. Furthermore, Saudi Aramco accounts for 90% of the country's budget. As a result, there's a good chance that state regulation will continue to influence the company's success and the protection of investor interests. Some political factors that could have an effect on Saudi Aramco investment include

- A Kingdom's expropriation of private assets of the industry

Saudi Aramco is the heir of the American corporation based in Saudi Arabia, as previously said. As Kingdom of Saudi Arabia agreed to nationalise Aramco, a business of which an American company held 50% of the stock. Instead of expropriating and seizing private properties, the KSA took a gentler approach to nationalising the business by purchasing the remaining shares with government funds. This past may be a mitigating factor for Saudi Aramco's chance of expropriation, lowering its likelihood.

Another aspect that mitigates the re-nationalization problem is the Kingdom's desire to preserve its credibility for improving its national investment environment. To minimise this danger even further, the Kingdom should ensure the protection of investors' assets in their region. Another way to alleviate this risk is to insure the investment with political risk insurance.

- Tax system changes

A Saudi arabia is not comfortable with the tax since it uses the Islamic finance framework. The amount of value-added tax that would be paid is unknown. In addition, with the implementation of value added taxation, the KSA would be able to impose payroll taxes as well as other taxes in the future. Such situation creates confusion regarding investment prospects. Investments that seem to be profitable now may diminish asset equity if they are heavily taxed in the future. This risk may be mitigated through confirming the tax rate that would be used. To reduce its tax liability, the corporation should also incorporate a tax control scheme and a transfer pricing system (Ramady, 2018).

- Regional disputes

Various wars are still taking place within Middle East. Clashes like civil war in Syria as well as Iraq, as well as Egypt's political challenges could have an indirect impact on the company's results. Furthermore, since the government owns a large portion of the stock, the Kingdom's aggressive presence in numerous clashes like Yemen, Bahrain, as well as Syria is likely to have a negative effect on the company's results (Ramady, 2018). This risk has a significant effect on the investment if the dispute escalates. The corporation should keep a careful eye on political tensions and Kingdom war operations, and insure investments to protect investors.

- Corruption

For a privatised state-owned enterprise, corruption is a big concern. Corruption would have a major impact on a company's image and market price. Petrobras, a privatised state-owned corporation in Brazil, has seen its stock price fall five years since its initial public offering (IPO) owing to a number of financial scandals, including misplaced funds and unaccounted expenditures, which are exacerbated by a lack of accountability.

In Saudi Aramco, the question of accountability is a major concern. Saudi Aramco has still published its business results reviews but not its financial reports through the years.

◆ Operational risk

Saudi Aramco faces operational risks that are common inside the oil and gas sector, such as fuel oil and gas leaks, pipeline leaks as well as bursts, water tank spills, as well as collisions containing fires, fires, losses, as well as soil collapsing; fuel shortages and faults; technical and machinery failings; transport interruptions as well as accidents; severe monsoon rains, floods, as well as rains; & humid rainstorms.

Such threats may lead to property and facility damage or loss, human accident or death, as well as environmental damages, each of which put direct effect on Saudi Aramco's activities and lead to rise liability as well as remediation costs. Furthermore, protection against total dangers, as well as some risks and hazards could not be covered by insurance. See also – Risks Associated with Inadequate Insurance. If a subcontractor is liable for the injury, Saudi Aramco's remedy to that subcontractor can be restricted by contract or the subcontractor's financial viability. Such events may also disrupt Saudi Aramco's activities, cause delays in programmes, or damage the company's image, which could also have a dramatic adverse impact on its business.

The effect of climate change on hydrocarbon demand as well as price is a very serious concern as well. Concerns about climate change and its effects may decrease world-wide demand for hydrocarbons as well as hydrocarbon-based goods leading Aramco in terms of cost and resources.

The safety and security of Saudi Aramco's IT systems are critical to the company's operations. The discovery, growth, processing, storage, as well as delivery of hydrocarbons; the processing, use, and protection of financial documents, confidential data, copyrighted material, private details, and operating data; and interactions with managers, employees, and customers are all dependent on the protection of important information as well as functional information

🚩 Risk Assessment Register

Risk name	Risk description	Impact	Probability	Risk impact	Risk response strategies
Liquidity risk	Chances of less buyers in future	Moderate	Extremely unlikely	Since there would be fewer sellers in the industry in the future, stake sales will be impossible.	Have an appointment with an investment firm to explore the various options for selling the interest in the future.
Foreign operations risk	faces threats as a result of its operations in many nations	low	Likely	Significant negative impact on Saudi Aramco's market, financial condition, and operating performance.	A sufficient resources and significant management attention is required
Legislative risk	As a consequence of the country's legal requirements, the firm's operating costs may rise.	High	Very unlikely	Changing regulatory conditions in the country can have an effect on the company's profitability.	_____
Market risk (price)	Volatility of price level	Low	Likely	The profit margins of international oil producers, like Saudi Aramco can be drastically reduce as a result of low and high world oil prices	The possibility of rising oil prices may be mitigated by lowering oil demand subsidies.

Market risk (demand and supply)	High oil demand caused by Natural disasters, political turmoil and economic factors Supply of crude oil and natural gas for manufacturing	High	Very likely	China being a world's biggest importer and essential markets for Aramco's oil production. Reduction in china's economic growth reduces the demand for its petroleum import from Saudi Aramco. Consequently, its share value declines	• Off-take buying contract • Search out new market for manufacturing • Assets allocation Supply contract with parent country as well as forward contract
Political risk	Expropriation, corruption, tax system changes, regional disputes	Very high	Likely	Since the nation is under kingdom law, changes in the political climate may have an effect on the company's financial performance.	• Appeal to government for giving guarantee regarding investment sustainability • Transparency for operations and fraud detection system • Monitoring and covering with

					insurance coverage
Operational risk	Climate change: Sensitive eco-systems, limited renewable water resources and huge reliance on fossil fuels exports leads to fear regarding climate change and ultimately demand of hydrocarbons can be reduced due to shifting towards more fuel-efficient vehicles by consumers • Reliance on operational technology system can be threaten by cyber crime	Very high	Very likely	Reduction in international demand for hydrocarbons leads to hostile impact on • Aramco's business, financial position & operations outcomes • Have to suffer costs and spend extra funds • Physical impacts on Aramco's infrastructure • Raise the likelihood of the business being pursued for damages from states, public entities, as well as others Great effect on operations and leads to substantial liabilities as well as costs • Leakage in crude oil and gas, pipeline and storage tank • electric power disruptions and failures	Diverse and balanced portfolio with technological innovation following standard operating procedures

				• transportation disruptions as well as collisions • hazardous chemicals, leakage, and leaks of poisonous or dangerous chemicals or substances • There's a chance that dedicated attackers can access to right resources might get through Saudi Aramco's networks.	
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technologies. Cyber accidents may have a detrimental effect on these or other activities, and, in the case of industrial control systems, they may cause physical disruption, injury, or death, as well as environmental harm. Saudi Aramco's networks are a high-profile priority for advanced cyberattacks by nation states, illegal hackers, and rivals, and the company fends off fraudulent efforts to obtain unwanted device access on a regular basis. However, dedicated attackers with the requisite tools could be able to effectively breach Saudi Aramco's networks (Bronk and Tikk-Ringas, 2013).

◆ Risk mitigation strategies

According to the risk matrix above, the risks that investors pose are classified into three parts, each of which may be prioritised by investors and suggested for reduction where necessary. According to the risk matrix, high risk categories (Red) should be regarded first for mitigation, accompanied by medium risk types (Yellow), as well as finally low risk types should be considered for mitigation where necessary.

To mitigate liquidity risk, accept the risk when it occur. Risk avoidance technique should be adopted to minimize political risk and legislative risk. While market risk, political risk and operational risk must be mitigated by risk limitation technique. Risk transfer technique must be adopted for foreign operations risk.

4. RISKS EXPECTED MONETARY VALUE



The expected monetary value (EMV) has become a risk assessment tool that can be used to assess and evaluate uncertainties in a project's various facets. Since it uses precise numbers and amounts rather than high-level guesstimates including high, moderate, as well as low to calculate the measurements,

Two simple numbers are used in EMV.

P – The risk's likelihood of occurrence

I – a risk's impact on the company which is further subdivided into "Ic" for cost. It is based on the following formula.

$$EMV = \sum (pi \times Ii)$$

Risk	P (Risk probability)	I (Cost impact) \$	EMV (P× I)
Liquidity risk	1%	50,000	500
Foreign operations risk	5%	-70,000	-3500
Legislative risk	3%	-250,000	-7500
Market risk (price)	5%	-200,000	-10,000
Market risk (supply and demand)	7%	-320,000	-22,400
Political risk	5%	-1000000	-50,000
Operational risk	7%	-1066000	-74620
TOTAL			-167.520

It shows that 167.520 USD are required to cover all identified risks of Saudi Aramco.

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