

*Navigating Geopolitical Turmoil:
PetroLink's Struggle Amidst Russia-
Ukraine Conflict*



ECE 9110 001 GS23

RISK ASSESSMENT AND MANAGEMENT

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PROBLEM STATEMENT- Introduction

The 2014 Ukraine-Russia war is a multidimensional crisis with its impacts flowing into geopolitical, humanitarian, and economic consequences. The Ukraine-Russia war began when Russia took control of a territory known as Crimea and assisted separatists in another part of Ukraine. This resulted in consequences such as trade bans. The battle heightened tensions among nations, prompting them to take action against one another. It based on a sensitive subject involving places that desire to be independent and how other countries react to such demands. This war indicates to the conflicts may have a significant influence on international relations and how countries engage with one another.



Figure 1: Russia-Ukraine conflict [1]

When Russia attacked Ukraine, the worldwide price of crude oil jumped from roughly \$76 per barrel at the start of January 2022 to more than \$110 per barrel on March 4, 2022. The importance of PetroLink's reliance on Russian crude supplies cannot be understated. PetroLink, a major participant in the industry of oil importation, is significantly reliant on a regular and uninterrupted supply of oil from Russia. This dependency serves as the foundation of PetroLink's operating architecture, allowing the firm to successfully supply both domestic and foreign markets with the required oil products.

PROBLEM STATEMENT- Background

The oil industry is a complex global system that ensures proper demand and supply for the oil across nations under the agreement with each other. It consists of transportation, geopolitical and market dynamics. It intends to streamline the procedures for importing oil, forecast market trends, and assure responsible resource management for a more productive and sustainable future. Reliance on Russian oil impacts the domestic and international energy markets and influences the trade across the world. Since Russia holds the power to influence the market dynamics and energy prices due to its significant oil exports, the potential of supply disruptions, geopolitical unrest, and price volatility rises. These variables can significantly affect the economy's stability and the security of the energy supply.

PetroLink is one of the most influential and prominent Russian oil importing company that holds a critical stock in meeting the energy needs of nations far and wide. It has carved its niche in the energy distribution market by its unrelenting dedication to maintaining a smooth oil supply chain operations that covers the entire process from import to provision to its customers. The company's operations go beyond being a simple player in the oil trade; instead, it serves as a link between the enormous deposits of Russian oil and the numerous industries and markets that rely on this priceless resource. If dependency on imports is to be considered, a sizeable percentage of India's imports is dependent on Russia's oil market and hence the influence Russia has globally on the oil trading.

PROBLEM STATEMENT- Escalating Threat Landscape

The war between Ukraine and Russia will adversely affect PetroLink, a platform for oil importation network optimization in several ways. Threats including disrupted supply routes, geopolitical uncertainty, market volatility, Diversion of resources, Strained Collaboration, and an increase in cybersecurity threats emanate from this war.

Now coming over to each one by one. Due to the Ukraine-Russia war, delivery routes get disrupted hence PetroLink isn't able to receive real-time data to optimize delivery routes, PetroLink's ability to assess and predict risks gets enormously impacted by the conflict. Because of the ill effects of the war, prices of the oil would escalate, leading to the increased cost at which PetroLink buys the oil and at what price it has decided to sell it.

This will force PetroLink to resort to OPEC [2] countries for importing oil. Oil-producing countries that work together to control the world's oil supply and pricing are known under the acronym of OPEC. Another dramatic threat that would be seen is the ignorance of sustainable resource practices and innovations. Big companies and organizations would shift their focusses from sustainability to the profitability of the organization.

The conflict will also act as a catalyst for the reduced collaboration between resource stakeholders under the agreement and will affect PetroLink's ability to gather and share critical data among different stakeholders. The consequences of the war impact PetroLink adversely, making it a vulnerable situation for both, PetroLink and its customers.

PROBLEM STATEMENT- Risk Analysis

Risk analysis acts as a guiding light in the complex web of global energy trade, lighting PetroLink's path ahead. PetroLink, as a firm deeply involved in the production and distribution of oil, has a host of potential challenges that might compromise its operations, financial stability, and market position. PetroLink attempts to detect, analyze, and mitigate the below risks through extensive risk analysis, as indicated below, ensuring constant flow & the global sustainability of its purpose.

Internal Risks [3]:

a. Oil Supply Vulnerability- Reliance of PetroLink on Russia for oil import which gets hindered by global conditional influence.

External Risks [4]:

a. Trade Agreement Uncertainty- Global conditions increase the underlying pressure on PetroLink's relations and hence impacts trade agreements.

Risk Name	Type	Likelihood	Consequence	Risk Level	Priority
Oil Supply Vulnerability	Internal	Critical	Critical	Critical	1
Trade Agreement Uncertainty	External	Medium	Low	Medium	3
Financial Instability & Market Competition	External	High	High	Critical	2
Reputation Damage and Trust Erosion	Internal + External	Medium	High	High	4

Table I: Risk Analysis Table

b. Financial Instability & Market Competition- The unexpected price fluctuations due to the ongoing conflict creates a ground of financial instability where PetroLink has to fight to survive in the market through proper loss vs profit analysis in the face of its competitors.

Internal+ External Risks [5]:

a. Reputation Damage and Trust Erosion- The effect on PetroLink's relations and trade affects the consumer at the end, hence making them hesitant to indulge in business with this organization.

		Consequence/Impact			
Probability	LOW	LOW	MEDIUM	HIGH	CRITICAL
	MEDIUM	1	1	1	
	HIGH			1	
	CRITICAL				1

Table II: Risk Matrix

PROBLEM STATEMENT- Need Analysis

There are a good number of critical, high, and medium dangers. PetroLink will be able to foresee potential interruptions to its operations and strategy by examining these risks. Understanding the origins and impacts of these risks helps PetroLink to build and execute effective risk-management solutions that will allow informed decision-making and help it navigate uncertain events more effectively. By proactively managing these risks, it may also protect its assets, reputation, and stakeholder relationships, contributing to its long-term performance and global sustainability in the energy trading sector.

PROPOSED SOLUTION- Risk Assessment

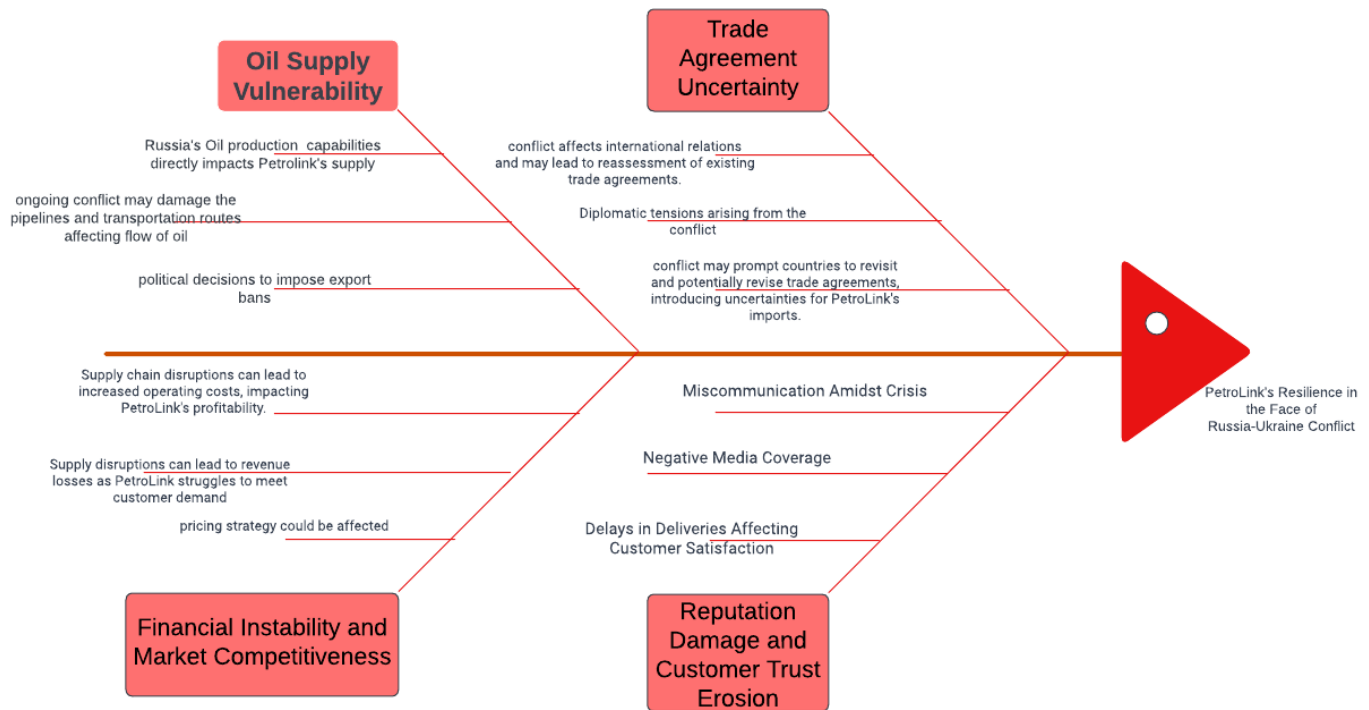


Figure 2: The FISHBONE diagram for analysis of cause and effect that revolve around risks.

It is possible to examine the four identified risks in the context of PetroLink using the "5 Whys" [6] and Fishbone Diagram [7] methodologies. These strategies help in identifying causes like geopolitical considerations and a lack of diversification for the danger of oil supply fragility by tracing the dependency on Russia and its susceptibility to global scenario. With regards to trade agreement uncertainty, the method can identify elements like shifting trade dynamics and inadequate contingency planning, illuminating causes for PetroLink's sensitivity to external pressures and trade disruptions. Moreover, these tools help in revealing factors like erratic market circumstances and insufficient financial plans for hazards in relation to the financial instability and market rivalry. Consumer trust and confidence can be brought to light using these methodologies.

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graph LR
    Root[PetroLink's Struggle Amidst Russia-Ukraine Conflict] -- Why --> OSV[Oil Supply Vulnerability]
    Root -- Why --> TAU[Trade Agreement Uncertainty]
    Root -- Why --> FIMC[Financial Instability and Market Competitiveness]
    Root -- Why --> RDCTE[Reputation Damage and Customer Trust Erosion]
    Root -- Why --> ID[Infrastructure Disruptions in Conflict Areas]

    OSV -- Why --> RUOIR[Russia-Ukraine conflict's impact on international relations]
    OSV -- Why --> PEBR[potential export bans or restrictions.]
    OSV -- Why --> MDD[market demand and supply dynamics]
    RUOIR -- Why --> PRLR[PetroLink relies on Russia for oil imports.]
    PEBR -- Why --> PDIC[Political decisions due to conflict's involvement.]
    MDD -- Why --> CGDSC[Changes in global demand and supply due to conflict-related disruptions.]
    PRLR -- Why --> IDIS[infrastructure disruptions in conflict areas may damage transportation routes for oil supply.]
    PDIC -- Why --> ADOE[Any disruption in Russia's oil production or export capabilities directly affects PetroLink's supply.]
    CGDSC -- Why --> FOAP[Fluctuations in oil availability and pricing]
    IDIS -- Why --> ADOE
    PDIC -- Why --> RAOI[could lead to reduced oil availability and instability in supply.]

    TAU -- Why --> RUOIR
    TAU -- Why --> PSAI[potential sanctions affecting imports.]
    RUOIR -- Why --> ETAI[Existing trade agreements, introducing uncertainties for imports.]
    PSAI -- Why --> CRM[Crisis-related measures affecting countries involved]
    ETAI -- Why --> SDRA[Sanctions can disrupt trade routes and agreements]

    FIMC -- Why --> DOI[disrupted oil imports]
    FIMC -- Why --> DIOC[Due to increased operating costs.]
    DOI -- Why --> RUOIR
    DIOC -- Why --> SCDD[Supply chain disruptions due to conflict]
    RUOIR -- Why --> SIO[Supply shortages impact PetroLink's operations]
    SCDD -- Why --> ICPI[Increased costs impact PetroLink's profitability and financial stability]

    RDCTE -- Why --> SCDD
    RDCTE -- Why --> LTPC[lack of transparent communication about challenges]
    RDCTE -- Why --> DNMC[Due to negative media coverage]
    SCDD -- Why --> CRDSC[Conflict-related disruptions affect supply chain operations]
    LTPC -- Why --> CAC[Challenges arising from the conflict are not effectively communicated]
    DNMC -- Why --> CRDSC
    CRDSC -- Why --> DDC[Delays in deliveries erode customer trust and satisfaction]
    CAC -- Why --> LNPC[Lack of transparency can lead to negative customer perceptions]
    CRDSC -- Why --> NMC[Negative media coverage can damage PetroLink's public image]
  
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PROPOSED SOLUTION- Risk Management

The risks that have been identified in the earlier sections, can be managed, or mitigated by using techniques and implementing elimination. The two best ways to deal with risk mitigation elimination for selection of the best strategies are each, quantitative and qualitative. For PetroLink's situation, we can use a blend of financial understanding, market analysis and decision tree analysis to aid the management of the risks. The table below can easily build a foundational basis for implying the accurate technique for each risk.

<i>Name Of Risk</i>	<i>Mitigation Strategy</i>	<i>Suggested Technique</i>
<i>Oil Supply Vulnerability</i>	<i>Selection of an OPEC supplier.</i>	<i>Net Present Value [8]</i>
<i>Trade Agreement Uncertainty</i>	<i>Diversify your trade ties and investigate new deals.</i>	<i>Decision Tree [9]</i>
<i>Financial Instability & Market Competition</i>	<i>Selection of the best OPEC supplier in terms of profit.</i>	<i>Net Present Value</i>
<i>Reputation Damage and Trust Erosion</i>	<i>Improve openness, manage your internet presence, and include stakeholders.</i>	<i>Decision Tree</i>

Table III: The risk mitigation strategy table

Application Of Techniques:

Technique 1: Net Present Value

Once PetroLink faced the oil export ban from Russia, PetroLink has turned the other oil producing countries that come under the OPEC region in order to continue its oil import for meeting consumer demands. OPEC consists of about 13 countries that export oil but not all are viable

options for PetroLink due to the opportunist global attitude of the countries. Most of countries are trying to benefit from Russia's move due to which, PetroLink is under extreme pressure to figure out the right investment, which would not hamper its trade and supply chain logistics over the span of a year. PetroLink's main source of revenue [10] has been oil import but its intricate division can be seen as below:

Factor 1: Volume of oil PetroLink has sold to consumers both domestically and globally.

Factor 2: Rate at which PetroLink buys or imports the oil from other countries/country.

Factor 3: Effect on PetroLink's as per demand for oil in various areas such as transportation, manufacturing, and energy.

Factor 4: The selling price PetroLink has set for oil delivery to consumers.

Factor 5: PetroLink's revenue that is dependent on partnerships with other nations and corporations for oil import-export.

Factor 6: The average income generated by the analysis of how much money is earned per barrel of oil.

Now, for PetroLink to be able to choose which OPEC country to import from, the NPV analysis comes into picture. By analysing what profit is generated if PetroLink resorts to importing from three main oil extracting countries- UAE, Saudi Arabia and Iraq, the decision for selection can be made easier. Apart from the factors that have been stated above, that directly influence the revenue, there are a few factors (given below) that have to be taken into consideration while calculating the NPV of different OPEC countries [11].

NPV Factor 1: The initial price of oil per barrel determines product expenses.

NPV Factor 2: Export duties affect pricing strategy.

NPV Factor 3: Monthly price increases affect purchasing costs.

NPV Factor 4: Annual consumption determines revenue.

NPV Factor 5: Political stability shapes supply risks

NPV Factor 6: Global demand patterns determine market opportunities.

Net Present Value (NPV) is a financial indicator used to assess a project's or investment's long-term profitability. It takes into consideration the time value of money. Future cash flows (revenues and costs) are discounted to their present value using a predetermined discount rate to calculate net present value (NPV). The NPV formula is [12]:

$$\text{Cash Flow} / (1 + \text{Discount Rate})^t = \text{NPV}$$

Where:

t signifies the overall cash flows throughout all time periods (t).

Cash flow is the envisioned financial flow.

The amount by which future cash flows are deducted from their current value is known as the discount rate which is 1% here.

Based on these factors, we can perform an NPV analysis as shown in Figure 4 below.

Table: UAE Oil Import Analysis (12 Months)										
Month	Initial Oil Price (\$/barrel)	Export Duty (%)	Monthly Price Increment (%)	Annual Consumption (millions of barrels)	Political Stability Factor	Global Demand Factor	Cashflow (ln \$ million)	Adjusted cash flow	Discount factor	NPV (\$ millions)
1	\$65	5%	1.50%	0.83	0.95	1.02	\$57	\$55	0.9901	\$54.35
2	\$67	5%	1.70%	0.83	0.93	1.05	\$58.39	\$57.02	0.9803	\$55.89
3	\$70	4%	2.00%	0.83	0.92	1.1	\$60.42	\$61.15	0.9706	\$59.35
4	\$72	4%	2.30%	0.83	0.9	1.08	\$62	\$60	0.9610	\$58.05
5	\$75	4%	2.50%	0.83	0.92	1.12	\$64.74	\$66.71	0.9515	\$63.47
6	\$78	3%	2.70%	0.83	0.89	1.15	\$66.68	\$68.25	0.9420	\$64.29
7	\$80	3%	2.80%	0.83	0.88	1.18	\$68.39	\$71.02	0.9327	\$66.24
8	\$83	3%	3.00%	0.83	0.86	1.2	\$70.96	\$73.23	0.9235	\$67.62
9	\$85	2%	3.20%	0.83	0.87	1.22	\$71.96	\$76.38	0.9143	\$69.84
10	\$88	2%	3.40%	0.83	0.84	1.25	\$74.50	\$78.23	0.9053	\$70.82
11	\$90	2%	3.50%	0.83	0.82	1.28	\$76.19	\$79.97	0.8963	\$71.68
12	\$92	1%	3.70%	0.83	0.8	1.3	\$77.12	\$80.21	0.8874	\$71.18
										\$772.79
Table: Saudi Arabia Oil Import Analysis (12 Months)										
Month	Initial Oil Price (\$/barrel)	Export Duty (%)	Monthly Price Increment (%)	Annual Consumption (millions of barrels)	Political Stability Factor	Global Demand Factor	Cashflow (ln \$ million)	Adjusted cash flow	Discount factor	NPV (\$ millions)
1	\$70	6%	1.80%	0.83	0.92	1.05	\$61.59	\$59.49	0.9901	\$58.90
2	\$72	6%	1.90%	0.83	0.91	1.08	\$63.35	\$62.26	0.9803	\$61.03
3	\$75	5%	2.20%	0.83	0.89	1.12	\$65.36	\$65.15	0.9706	\$63.24
4	\$78	5%	2.50%	0.83	0.88	1.15	\$67.98	\$68.79	0.9610	\$66.11
5	\$80	4%	2.70%	0.83	0.86	1.18	\$69.06	\$70.08	0.9515	\$66.68
6	\$82	4%	2.80%	0.83	0.85	1.2	\$70.78	\$72.20	0.9420	\$68.01
7	\$85	3%	3.00%	0.83	0.83	1.23	\$72.67	\$74.19	0.9327	\$69.19
8	\$88	3%	3.20%	0.83	0.82	1.26	\$75.23	\$77.73	0.9235	\$71.78
9	\$90	2%	3.40%	0.83	0.8	1.3	\$76.19	\$79.24	0.9143	\$72.45
10	\$92	2%	3.50%	0.83	0.78	1.32	\$77.89	\$80.19	0.9053	\$72.60
11	\$95	1%	3.70%	0.83	0.76	1.35	\$79.64	\$81.71	0.8963	\$73.24
12	\$98	1%	3.80%	0.83	0.75	1.38	\$82.15	\$85.03	0.8874	\$75.46
										\$818.69
Table: Iraq Oil Import Analysis (12 Months)										
Month	Initial Oil Price (\$/barrel)	Export Duty (%)	Monthly Price Increment (%)	Annual Consumption (millions of barrels)	Political Stability Factor	Global Demand Factor	Cashflow (ln \$ million)	Adjusted cash flow	Discount factor	NPV (\$ millions)
1	\$60	7%	1.50%	0.83	0.9	1.02	\$53.29	\$48.92	0.9901	\$48.43
2	\$62	7%	1.70%	0.83	0.89	1.05	\$55.06	\$51.46	0.9803	\$50.44
3	\$65	6%	2.00%	0.83	0.87	1.1	\$57.19	\$54.73	0.9706	\$53.12
4	\$68	6%	2.20%	0.83	0.86	1.12	\$59.83	\$57.62	0.9610	\$55.38
5	\$70	5%	2.50%	0.83	0.84	1.15	\$61.01	\$58.93	0.9515	\$56.07
6	\$72	5%	2.70%	0.83	0.83	1.18	\$62.75	\$61.46	0.9420	\$57.89
7	\$75	4%	2.80%	0.83	0.81	1.2	\$64.74	\$62.93	0.9327	\$58.69
8	\$78	4%	3.00%	0.83	0.8	1.23	\$67.33	\$66.25	0.9235	\$61.18
9	\$80	3%	3.20%	0.83	0.78	1.26	\$68.39	\$67.22	0.9143	\$61.46
10	\$82	3%	3.40%	0.83	0.77	1.3	\$70.10	\$70.17	0.9053	\$63.53
11	\$85	2%	3.50%	0.83	0.75	1.32	\$71.96	\$71.24	0.8963	\$63.86
12	\$88	2%	3.70%	0.83	0.73	1.35	\$74.50	\$73.42	0.8874	\$65.16
										\$695.21

Figure 4: The NPV analysis of the 3 OPEC countries

Analysis:

Iraq's lower NPV is the most appealing but due to political instability and security concerns, careful consideration must be given to its geopolitical dangers. UAE on the other hand offers a balanced solution with reasonable costs. Even though Saudi Arabia is the major player in the global oil market, The increased NPV of Saudi represents financial and geopolitical issues. The best option requires a careful analysis of costs, supply reliability, and geopolitics.

Conclusion:

Iraq is the best option form where PetroLink can import oil with the least amount of loss and most profit.

Technique 2: Decision Tree

Once the first technique is used to mitigate two of the risks, we can use the second to mitigate the remaining risks. The decision tree aids in building a solution as per the possibility basis of the occurrence of an activity i.e it is like a roadmap to an ending solution [13]. The decision tree for the risks is as shown below.

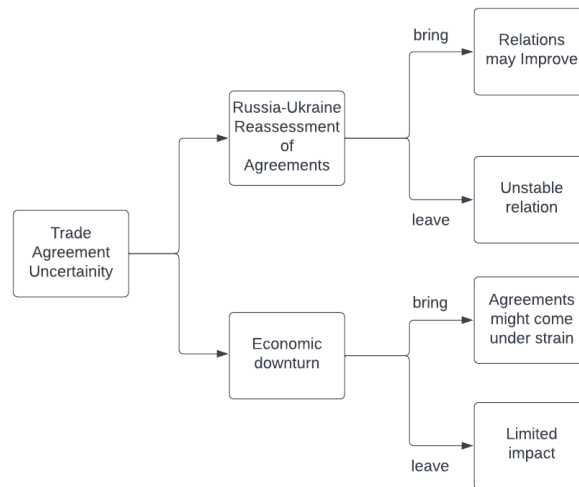


Figure 6: The decision tree analysis of trade agreement risk.

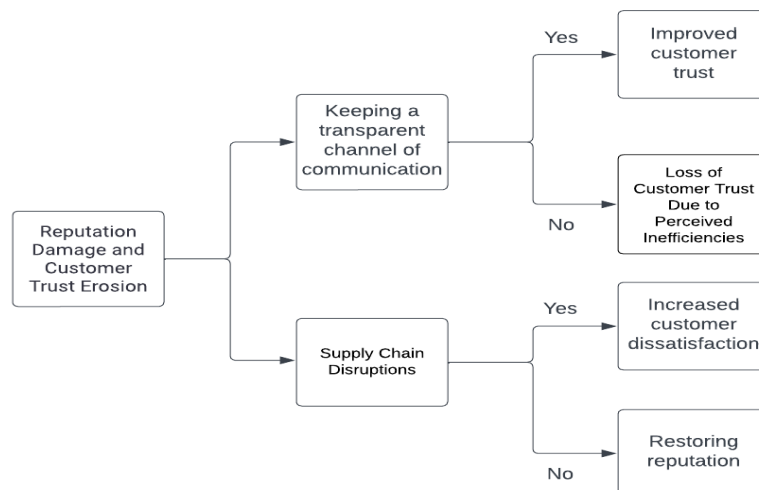


Figure 7: The decision tree analysis of reputational damage risk.

Analysis:

In order to mitigate the trade agreement risk, the most optimal solution is to perform a reassessment of the agreement for curbing the uncertainty. In order to mitigate the reputational risk, the optimal solution is to maintain transparency between the consumer and the company- communication channels. Moreover, the supply should be continuous in order to sustain consumer pool.

Conclusion:

By performing the detailed risk analysis, assessment and management of PetroLink, it is safe to say that the best strategies to help PetroLink amidst the war crisis to invest in importing oil for Iraq, reassess their trade agreements with the countries and maintain transparency in their communication channels for better consumer relations. PetroLink's main aim and way of generating revenue is through people and so, this assessment provides real time analysis of how, populational relations can make it or break it for the company.

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