Factors Affecting Damage Mitigation In Oil And Gas Transportation To Satisfying Performance Of Stakeholder

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Abstract

Oil and gas transportation shows different characteristics compared with other commodities. Moreover, the legal aspects of transporting this type of commodities are different and consistent with the commodities transported. As a result of the particular and hazardous nature of oil and gas, the legal aspects of oil and gas transportation are present, and it is necessary to pay particular attention to them to reduce the dangers and risks of this type of transportation and facilitate and accelerate trade. Moreover, the paper aims to confirm the statistical method of the confirmatory factor analysis Level 1 and Level 2 of investigating factors influencing the mitigation of oil and gas transportation damage. The operationalized projects in oil and gas are among the projects associated with various stakeholders. For this purpose, however, the paper considers 35 experts of stakeholders in oil and gas. The paper's confirmatory factor analysis showed that ten factors influence damage mitigation.

Moreover, the validation results based on Cronbach's alpha were 0.7, which is an appropriate value. Furthermore, the findings showed that the critical factors include "Dispute management," "cost," "Insurance," "Environmental Circumstances," "Safety measures," "Packaging and labeling," Utilizing domestic fleet," "Compilation of legal agreements," "International and domestic conventions and regulations," and "Risk analysis." Ultimately, organizations' competence to adapt to stakeholders' expectations and mutual relationships significantly affects their results and performance.

Keywords: damage, oil & gas, performance, stakeholders.

Introduction

In recent years, numerous researchers have concluded that Stakeholders may influence the organization's performance, objectives, development, and sustainability. Stakeholders are beneficial when they help the organization achieve its objectives; on the contrary, they conflict with the organization when they oppose its missions. Moreover, stakeholders have the power to be both a threat to the organization and an organization's benefit. Stakeholders have an essential role in the strategic functions of the organization, and their presence on the board of directors enables the organization to provide its two main objectives (i.e., stabilization of those in need and increasing the competence to compete in the industry. However, they find that project success relates to cost, time, and quality and includes effective management and consideration of stakeholder satisfaction (Beach, 2009).

Furthermore, to reach their objectives, stakeholders show an irrefutable effect on the project to understand their expectations and requirements and attempt to fulfill their demands; successful project managers establish optimal relationships with project stakeholders.

Operationalized projects in oil and gas include a diverse range of stakeholders who influence the project in different ways. Stakeholder management is about the relationship

between an organization and its stakeholders; the projects operationalized in oil and gas are among the projects related to various stakeholders (Aaltonen, 2010). The stakeholders of this industry always have concerns about the transportation of hazardous materials, including oil and gas. Transportation, however, is one of the main pillars of economic development in any country. Oil and gas run the industries; therefore, oil and gas transportation is critical globally. Countries attempt to pay attention to the different and varied demands of the stakeholders with legal aspects(Akbari & Gholamveisy, 2023).

Moreover, countries' weak or strong position in establishing laws or including some elements and legal requirements in contracts related to the transportation of oil and its products affects obtaining a favorable result, gaining profit, accelerating, facilitating business measures, oil operations, and environmental circumstances.

Therefore, it is necessary to examine the various aspects of the transportation of these materials. One of the main aspects is the damage mitigation of transportation in oil and gas materials. In addition to its obstacles and problems and numerous financial and life risks, it is not economically viable either. This paper studies the critical factors affecting the parties' interests and ways to reduce damages since they may influence the organization's performance, objectives, development, and sustainability.

Literature review

Oil and Gas Transportation

One of the world's most essential oil and gas consumption is providing heat and fuel. However, oil and gas are the origin of petrochemical products (Szilas, 2010), which means oil and gas and their derivatives (which are still harmful, hazardous, and different from other commodities).

In international trade, it is not customary for sellers or buyers to personally provide transportation facilities; therefore, they conclude a transportation contract with transport operators or vehicle owners. Considering the complexity of the transportation route, the type of vehicle for transportation, and the possibility of the presence of

operators and their cooperation with each other, the proposed five types of transportation methods (Green & Jackson, 2015).

Various methods of transportation

Roads

This method includes beasts of burden, the primary method of transportation by humans, and, subsequently, road transportation. Furthermore, the Industrial Revolution and the invention of the steam engine brought a massive transformation in terms of the rapidity and range of transportation operations in the regions. Even nowadays, because of the expansion of requirements and the importance of rapidity in the transfer of commodities, the issue of transportation is constantly changing and evolving according to the requirements (Green & Jackson, 2015).

Railways

Among the transportation methods, rail transportation (using railways and locomotives) is one of the safest ways to transport oil, gas, and their products. Despite the mentioned advantage, however, the market share in some countries, such as Iran, emphasized the development of road transportation; consequently, it did not benefit from the advantages of rail transportation and increased the costs for transporting each kilometer of oil (Jaffery et al., 2014).

Maritime Transportation

Sea routes in cargo transportation have various advantages, including an enormous capacity for transportation, low transportation costs, and safety, and merchandise trade is in this way by ships with various characteristics, capacities, and applications under the title of transportation contract or ship rental (Siddiqui & Verma, 2015). However, oil and gas transport by ships, pipelines, or a combination of these methods(Greene, Jia, & Rubio-Domingo, 2020).

Air transport

Air transportation has expanded day by day with the development of the aviation industry and the development of the air fleet, and these days, the transportation of heavy and bulky commodities by airplane has reached 400 tons. This method of transportation is mainly for transporting passengers and furniture, and it is faster than other methods

of transportation, but its cost is similarly higher(Button & Taylor, 2000)

Pipe transport

Pipe transport means transporting materials through a long tube. Frequently, this method is utilized to transfer gases and liquids; moreover, the pipes transfer compressed air. However, the importance of this method of transportation is more a result of the transportation of oil and natural gas, which moves these materials by pumping them into the pipe. Reliable pipelines require little maintenance costs and are not affected by weather conditions. The transportation branched into the national pipeline, which means transportation from the point of origin to a destination within the border of a country, and the international pipeline, which means transportation from the point of origin to a destination between two or more countries or from parts of the sea bed (Green & Jackson, 2015).

Composite transport

According to an article of the MTC Convention, combined transportation means transporting commodities through at least two different methods based on a combined transportation contract from the place of delivery of the commodities to the operator to another place (Lukács, Koncsik, & Chován, 2021).

Stakeholder theory

Stakeholder theory is one of the organizational management theories. The Stanford Research Institute first proposed the stakeholder concept in 1991. Furthermore, the stakeholder theory is a combination of organizational and social theories. The theory is more of a broad research tradition that combines philosophy, ethics, political theories, economics, law, and organizational and social sciences so that stakeholders pay attention to and be accountable to numerous more parts of society. However, there are numerous definitions based on different disciplines for stakeholder theory. The similarity of all of them confirms their involvement in one (Aaltonen, Jaakko, & Tuomas, 2008).

It is an exchange relationship (interaction), which means that the firms affect the stakeholders and influence the firms/companies. They have interests in the firms instead of shares. The stakeholders include shareholders, employees, vendors, Customers, creditors, neighboring firms and the public(Gholamveisy, Homayooni, et al., 2023).

The stakeholder relationships are an exchange (interaction), and the group of stakeholders has helped advance the firms' existential objectives. Their interests are expected through encouragement and creation using this analytical framework; the public may be a corporate stakeholder because by paying taxes, they provide the national infrastructure for the operations of the firms (Aaltonen & Kujala, 2010)

Stakeholder theory and organizational performance

To identify the beneficiaries of micro-investment organizations and their role in the strategic decision-making process, Mori (2010) concluded that the beneficiaries have an essential role in the strategic functions of the organization, and their presence on the board of directors helps the organization to provide its two main objectives (i.e., financial stabilization of the deprived).

In addition, based on the findings of this research, rationality (focusing on information and using analysis and techniques) is more, political behavior (utilizing power, forming coalitions, personal benefit, and negotiation), and Intuitive thinking (personal judgment, employing of inner feeling and past experiences) leads to more efficient decisions and optimal performance (strategic decisions, social performance, and financial performance) in the strategic decision-making process if all stakeholders may influence the organization or are affected by it; subsequently, the number of groups whose interests include in the calculations shall be infinite. Therefore, it is necessary to limit the number or type of beneficiary to reach the balance. However, the beneficiary theory at this stage does not hold any stand toward the beneficiary groups (Arshad & Razak, 2011).

Factors affecting mitigation damage in oil and gas transportation

1. **Compilation of legal agreements**: creating detailed and complete legal agreements that clearly define the rights and duties of organizations and parties and agree on resolving disputes(Office, 1989).
2. **Risk analysis:** Conduct risk analyses to identify and evaluate the potential legal and financial risks in oil and gas transportation (Li, Chen, & Zhu, 2016).
3. **Insurance:** considering written legal plans to prevent legal and financial concerns caused by accidents and law violations (Thornton, 1918).
4. **Dispute management:** considering dispute management policies and methods, such as negotiations and out-of-court agreements, to bring about a peaceful resolution of disputes (Maniruzzaman, 2009).
5. **Safety measures:** taking appropriate safety measures in organizations and promoting adherence to safety standards in oil and gas transportation (Yu et al., 2019).
6. **Cost**: Rail transportation is the most economical and widely applied method of transporting commodities. However, pipeline transportation requires less maintenance and may not be affected by weather. Pipeline transportation is the only economical solution to transport a large amount of oil or natural gas to other locations, and compared to railways, it has a lower unit cost and greater portability (Gallo et al., 2010).

Although building a pipeline under the sea is possible, most of the oil is transported in the marine through tanker ships because of lack of technology and high cost. However, in residential areas, these lines are laid underground at a depth of one meter. Therefore, following the pipeline and rail transportation, road transportation is less expensive, and finally, air transportation is known as the most expensive transportation method (Pirog, 2005).

7. **Utilizing domestic fleet:** Some countries require the exporter or importer to use the domestic fleet, so they use Incoterms group C2 as an importer, and they must use Incoterms group F3 as an importer. For example, in Iran, to

transport more than 500 tons, 100 road tons, and 500 kilos by air, it is necessary to obtain a permit from the Road Transport and Road Transport Organization and the Ministry of Roads and Urban Development, and rail transportation excludes from this requirement (Thomas & Dawe, 2003).

8. Environmental circumstances: Environmental pollution caused by the transportation of hydrocarbons causes damage to people and the environment of countries, and countries may not neglect the environment to gain economic profit (Gossen & Velichkina, 2006).

The main emphasis of governments and international organizations is to prevent damage and harm to the environment, and the accidents related to oil and gas shippers in the last century indicate the creation of a regime of responsibility in this regard (Dalsøren et al., 2007). However, with the expansion of oil and gas transportation, an integrated look from the outside to the inside is necessary so that while reducing the costs of building transportation infrastructure, the principle of sustainable development, which is the missing link in energy sector projects, is taken into consideration (Alazzani & Wan-Hussin, 2013). Furthermore, high flammability, irreversible damage, and oil and gas contamination entering water, air, and land with the slightest error and incorrect locations may cause severe damage to the environment and, in addition, impose substantial costs on the affected country.

9. Packaging and labeling: From the point of view of transportation, commodities include three primary groups: packaged commodities, unpackaged commodities, and bulk commodities. Moreover, bulk commodities include two categories: dry bulk and liquid bulk, where liquid bulk commodities include oil, LNG, gasoline, and diesel. According to the rules of Incoterms, the seller must, at his own expense, Pack the commodities for shipping unless it is customary in a particular business to ship that type of commodities sold without packaging (Anderson, 2009).

10. International and domestic conventions and regulations: Since the transportation industry preceded the oil and gas industry, there are more laws generally and for all factors of commodities in the discussion of transportation, which later, with the emergence and discovery of the

importance of oil and gas and the requirement to transport oil, oil and gas derivatives and the rules of transportation of energy shippers and flammable materials were created in the heart of these rules (Gao, 1998).

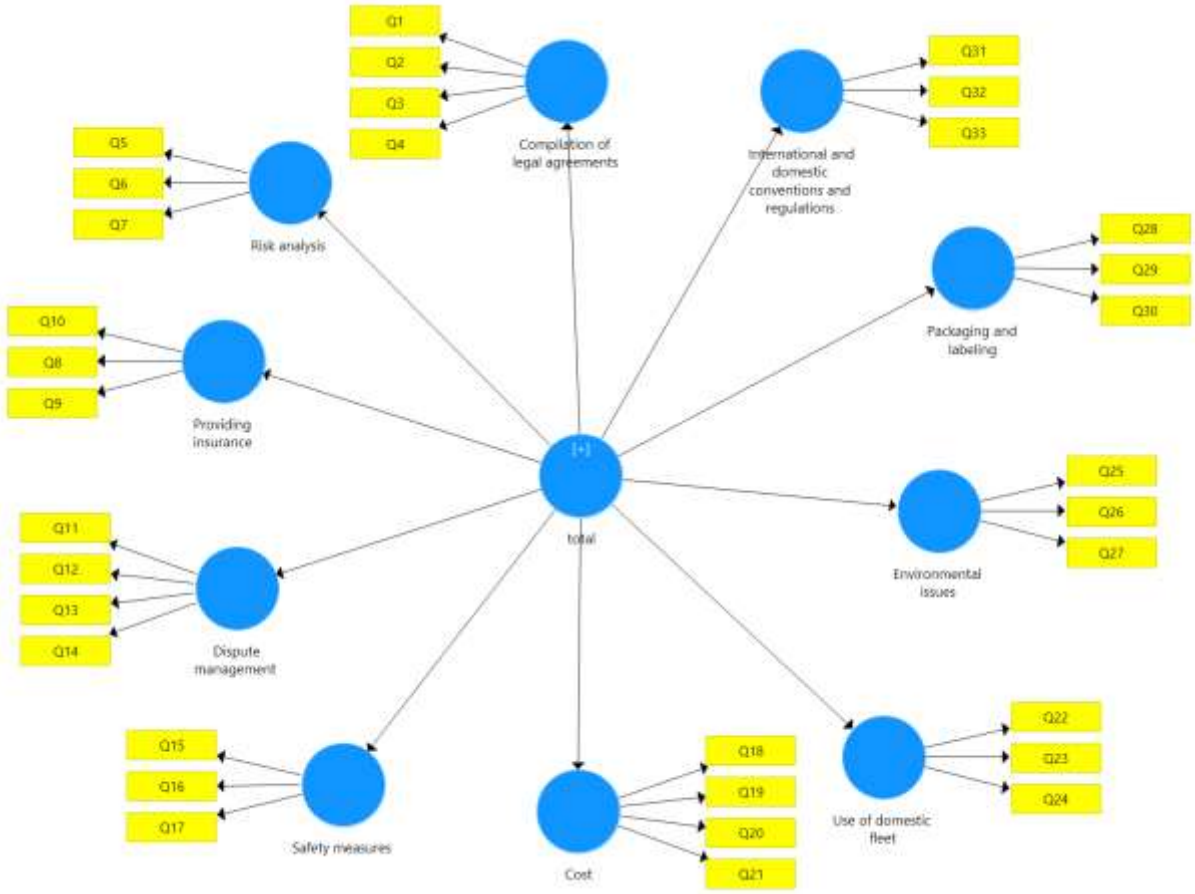

Figure 1. Conceptual model

Related works

A study, "Assessment of Environmental Damage to Atmospheric Air during Development of Oil and Gas Fields," identified the primary environmental effects of gas and oil production and their detrimental effects on the environment following studying the ecological state of the production (Gorlenko & Timofeeva, 2019). Moreover, the parameters affecting the production environment are well studied, and the fields mostly damage the atmosphere by releasing hazardous gases such as carbon monoxide, nitrogen, and natural gas. The authors estimated the economic harm to atmospheric air caused by field development. It was

discovered as a result that the Yarakta field harms the atmosphere's economy the most.

Another paper, "Enhancing Oil and Gas Industry Emergency Response Systems to Reduce Environmental Damage (Kostyuk et al., 2020)" outlines the critical concerns with reducing environmental harm by enhancing reaction mechanisms to human-caused incidents at risky oil and gas production facilities. The problem of the engineering and technical factors in the system "man - technical environment - industrial environment - environment" is revealed, and safety risk factors at a hazardous production facility in the oil and gas industry are recognized. The hierarchical analysis method is applied to identify the most significant risk factor. The deployment of a designed mobile emergency response system, which allows for a halving of reaction times to emergencies, is suggested as the problem's solution.

The microscale stochastic model allows upscaling to forecast the multi-sized granule transport behavior in naturally fractured reservoirs, according to the study by (Liu et al., 2023). Optimal plugged fractures are at/or below the granule size in the model solution. When preventing permeability, damage brought on by granule retention and crack-clogging multi-sized suspended granules exhibits significant advantages over mono-sized suspended granules. With increased fracture network connectivity, the concentration of retained granules and the rate of permeability damage decrease. The model performs the size-exclusion suspended granule flow experiment. The experimental data and the model-based predictions for the history of permeability changes and retained granule concentration demonstrate optimal agreement.

Though it contributes significantly to the overall number of oil and gas pipeline incidents, third-party intrusion is one of the least quantitative aspects considered during the pipeline hazard assessment stage (Cui, Quddus, & Mashuga, 2020). Human behavior may not predicted by a probabilistic risk assessment and applied to purposeful conduct. The game theory was modeled to malicious infiltration and unintentional third-party damage (Bayesian Network) to study the mechanism of pipeline failure because of the

unique incentives of third-party damage. This project may develop risk assessment models to identify threats, rank risks, and decide which integrity plan must apply for various pipeline segments, considering the pipeline risk resulting from third-party damage(Gholamveisy, 2021b).

Methodology

Since this research examines the Factors affecting transportation damage mitigation in oil and gas to satisfy the Organization's Stakeholders, The research in this research is qualitative and quantitative from the point of view of practical purpose. The following aims to design and develop a causal model. In addition, the data collection method is a non-experimental (exploratory) type of research because it studies a subject that has little information about it, and the researcher may not intervene in the conditions of the subject, according to the fields of being the subject of research (among the fields of management and law). However, the number of experts is limited, and on the other hand, because of the combination of the interview method with the questionnaire, theoretical saturation is achieved through the answers(Gholamveisy, 2021a).

Research model

The hypotheses are caused by the purpose of the research, solving the problem, proving and validating, the desire and purpose of the stakeholders (including the organization that is the party to the research contract), and so on. The researcher always tries to find a scientific and accurate model to answer the assumptions and objectives of the research. This paper was formed in line with some questions and aims to answer the following assumptions:

Factor Analysis

The indicators are classified so that they are finally limited to two or more factors that are the same set of variables; in other words, the indicators applied in the research are two or more categories based on their common characteristics and, accordingly, the established relationships among the factors analyzed. Lastly, the primary purpose of the research, which is the relationships between the research variables, is calculated.

Pre-test

Before doing the factor analysis, one must ensure whether the available data suits the factor analysis. For this purpose, we use KMO indicators and Bartlett's test. According to the value of the significance level, we may conclude that the desired data are suitable for sampling.(Heidari & Gholamveisy)

Sampling

However, to ensure the adequacy of the collected sample, two criteria were applied, namely KMO and Bartlett's test. Table 1 shows the results.

Table 1. The results of sampling adequacy applying two tests, KMO and Bartlett

Dimension	No. of indicator	KMO	Bartlett
Compilation of legal agreements	4	0.851	000.sig = 0
Risk analysis	3		
Providing insurance	3		
Dispute management	4		
Safety measures	3		
Cost	4		
Utilizing domestic fleet	3		
Environmental circumstances	3		
Packaging and labeling	3		
International and domestic conventions and regulations	3		

The optimal limit for the KMO test is greater than or equal to 0.6, and the two tests approve for all aspects, as Table 1 exhibits.

Fitness of the Model

This paper applies the structural equation modeling method with the partial least squares approach to test the model's fit and analyze the data. Accordingly, reliability, convergent, and divergent validity criteria tested the model's fitness. Cronbach's alpha and composite reliability were applied to

test reliability. However, the value of the two is greater than or equal to 0.7; consequently, the reliability of that measurement model is acceptable. Furthermore, two criteria test the validity of the questionnaire: convergent validity and divergent validity.(Hasanali & Gholamveisy, 2023)

Furthermore, the extracted mean-variance criterion was applied to evaluate the convergent validity, for which the acceptable value is greater than or equal to 0.5. Moreover, the difference between the variables compared with other indicators in the research model. This work calculates the AVE root of each variable with the values of the correlation coefficients between the first-order variables. For this purpose, a matrix forms in which its central diameter values are the root of each variable's AVE coefficients, and the lower values of the primary diameter are the correlation coefficients between each variable and other variables (Holland, 1999)(Gholamveisy & Heidari, 2023). The results of these criteria are according to Table (2).

Table 2. Reliability test of the research tool

Dimensions	Cronbach's alpha	Composite reliability	AVE
Compilation of legal agreements	0.896	0.790	0.560
Cost	0.719	0.839	0.637
Dispute management	0.724	0.821	0.609
Environmental circumstances	0.847	0.907	0.766
International and domestic conventions and regulations	0.782	0.827	0.617
Packaging and labeling	0.925	0.792	0.529
Providing insurance	0.895	0.935	0.827
Risk analysis	0.914	0.810	0.590
Safety measures	0.878	0.817	0.599
Utilizing domestic fleet	0.839	0.752	0.617

Reliability and validity

Upon collecting the questionnaires from the statistical sample, two criteria of Cronbach's alpha and composite reliability using Smart PLS analyze the questionnaire, and the optimal limit for both criteria is greater than or equal to 0.7. Moreover, Table 2 exhibits the results of the AVE index.(Gholamveisy, Momen, et al., 2023)

As it is clear from the above Table, all the combined reliability values of the research constructs are more significant than 0.7. Similarly, the AVE value for the constructs is more significant than 0.5, confirming that the reliability and validity of The convergence of the research model are acceptable.

Divergent validity

The divergent validity was then estimated by comparing each variable's AVE root with the values of the correlation coefficients between the first-order variables. For this purpose, we form a matrix whose central diameter values are the square root of the AVE coefficients of each variable, and the lower values of the primary diameter are the correlation coefficients between each variable and other variables (Hair, Ringel, and Sarsett, 2011)(Nabavieh et al., 2019). Table 3 shows the values.

Table 3. Divergent validity

symbol	1	2	3	4	5	6	7	8	9	10
Compilation of legal agreements	0.749									
Cost	0.066	0.798								
Dispute management	0.276	0.314	0.780							
Environmental circumstances	0.071	0.277	0.207	0.875						
International and domestic	0.024	0.139	0.127	0.066	0.786					

conventions and regulations										
Packaging and labeling	0.025	0.247	0.253	0.635	0.290	0.728				
Providing insurance	0.499	0.161	0.512	0.214	0.093	0.275	0.909			
Risk analysis	0.447	0.109	0.126	0.047	0.076	0.026	0.208	0.768		
Safety measures	0.143	0.569	0.400	0.100	0.219	0.152	0.190	0.103	0.774	
Utilizing domestic fleet	0.066	0.465	0.300	0.543	0.125	0.418	0.123	0.069	0.198	0.785

First-order factor analysis

Following library studies and specifying each of the dimensions of the research as well as data collection, it is the turn of the first-order factor analysis through a set of structural equation modeling tests. However, the prerequisite for the test, sampling adequacy, is examined before setting structural equation tests to perform the first-order factor analysis(Gholamveisy & Heidari; Gholamveisy, Homayooni, & Sekhavat, 2023).

Finally, the primary research model was inserted in SmartPLS to run the first-order factor analysis. As Figure 1.4 shows, the components are displayed using signs and letters.

Significance value and factor load

The first step examines each factor or manifest variable's significance value and factor load with its corresponding latent variable. Fig. 2 displays the significance model and factor load model for the research model, respectively.

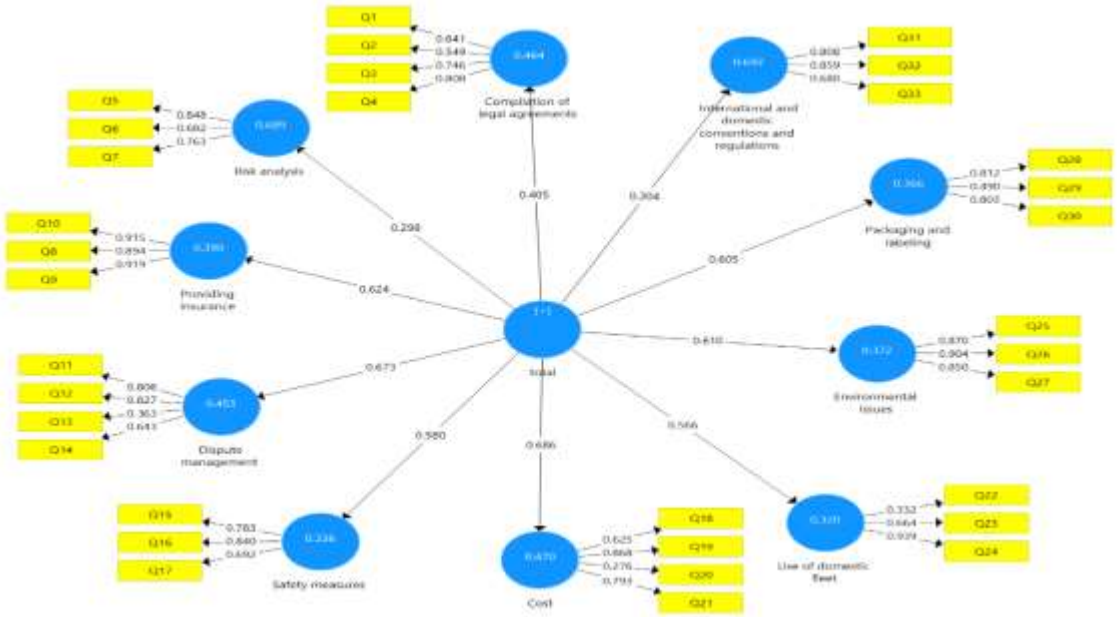

Figure 2. Standard estimation model for research factors

After examining the model applying the first-order confirmatory factor analysis method, second-order factor analysis was performed to measure the general concept of damage mitigation in oil and gas transportation.

The optimal limit for numerical significance is somewhat greater than or equal to 1.96; however, the optimal limit for numerical factor load is somewhat greater than or equal to 0.5. Condition any indicators that do not achieve the optimal level of significance and factor loading, then it is eliminated, and the significance values and factor loading are re-tested. Table 4.4 shows the t-value and path coefficient for the factors.

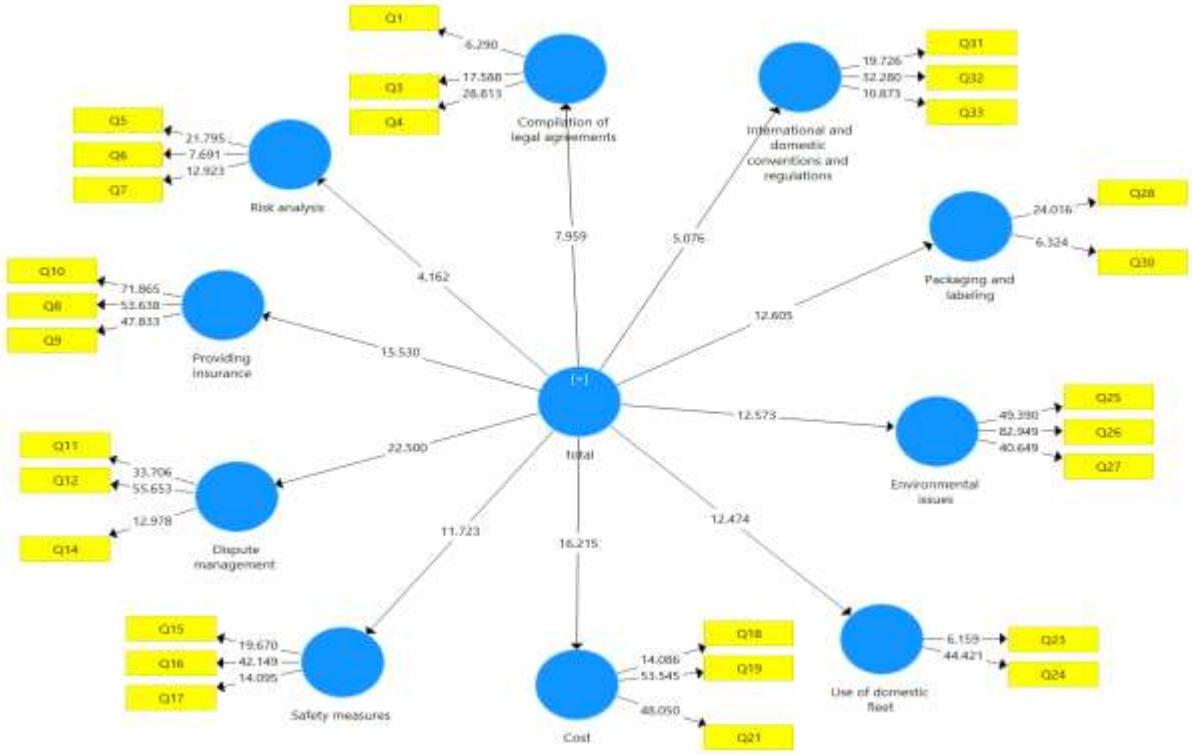

Figure 3. Meaningful model for research factors

Table 4. Examining the significance values and path coefficient of the factors

Dimensions	t-value	Path coefficient	rank
Compilation of legal agreements	7.959	0.411	8
Risk analysis	4.162	0.301	10
Providing insurance	15.530	0.633	3
Dispute management	22.500	0.690	1
Safety measures	11.723	0.583	5
Cost	16.215	0.662	2
Utilizing domestic fleet	12.474	0.571	7
Environmental circumstances	12.573	0.604	4
Packaging and labeling	12.605	0.578	6
International and domestic conventions and regulations	5.076	0.308	9

Table 4.4 shows that the significant value for all the model factors is higher than the standard value. As a result, the ultimate model was confirmed following testing of the second-order factor analysis.

The Table shows the model's ranking based on factor path coefficients. Dispute management factors mean establishing policies and methods of dispute management, such as negotiations and out-of-court settlements, to resolve disputes. However, it is the first rank of the highly effective factor for influencing reducing damage to transportation oil and gas.

Generally, disputes include four categories in the energy and power sectors:

- Inter-governments,
- Inter-firms and governments,
- Inter-firms, and
- Inter-individuals and firms.

Transportation costs

Transportation costs are among the most critical global trade and commerce factors for business owners and any domestic and international transportation company. Reducing costs related to domestic ground transportation and moving commodities and passengers impacts economic growth and increases business opportunities. Oil and gas transportation through the pipeline is one of the economical and cost-effective transportation methods— subsequently, the companies transport materials through rail, road, and air.

Transportation Insurance

There are insurance and compensation firms, and because of the high risks of transporting this type of material and causing pollution, the means of transportation, the insurance covers the cargo and environmental damage caused by the materials.

Environmental circumstances

Environmental pollution caused by the transportation of hydrocarbon materials causes damage to people and the environment of countries, and countries have started to

create a regime of responsibility for environmental circumstances and have considered the principle of sustainable development and suitable locations. However, environmental pollution caused by such incidents may be transferred from the territorial sea of one country to another country and cause damage to people and the environment of that country. Consequently, governments should not provide an interpretation of sovereignty that is against the principles of international law and at the cost of harming the environment to benefit from economic benefits. Therefore, throughout the history of international law, the principle of the responsibility of governments to prevent transboundary pollution caused by their economic interests is recognized in international documents and opinions, and now it may be said that this principle has become an international custom.

Safety Measures

One of the cases of particular and high sensitivity is the fuel supply through the petroleum and gas products fleet. Ignition may cause accidents and sometimes unfortunate fires; therefore, any transportation method used to move fuel may be considered hazardous, and this is where regulations come in to monitor fuel transportation as much as possible to reduce such risks. Establishing standards that specify that all apparatuses and machines used to transport and move fuel must have these standards. Tankers and oil tankers, fuel trucks, train wagons, and oil tankers must have specifications that minimize the risk of fuel leakage.

Packaging and labeling

Hazardous commodities should be placed in packages of suitable quality so there is no possibility of leakage from any package. They must be able to withstand the natural conditions of air transportation, including vibration, changes in temperature, and humidity or pressure. From the point of view of packaging, hazardous commodities are placed in one of the following packaging groups, depending on the severity and degree of danger they have:

Domestic fleet

Some countries require the exporter or importer to use the domestic fleet by term C or F.

Compilation of legal agreements

As oil and gas rights hold numerous differences with international trade rights, oil, and gas transportation rights, particularly maritime transportation rights, similarly show particular features compared to transportation contracts. On the one hand, however, these features may be seen in the practical necessity of using particular contract forms, the limitation of the choice of the contracting party, and the unique conditions, of which compliance with technical conditions, the condition of compliance, the condition of sovereign immunity, and the condition of limiting the liability of the ship owner are rich examples. On the other hand, however, oil and gas maritime transportation characteristics are based on domestic and international safety standards, particular Incoterms, World Trade Organization requirements, and international legal restrictions. Finally, the features are related to the necessity of using specialized labor, different costs, import facilities, and particular losses caused by the maritime nature of oil and gas transportation.

International and domestic conventions and regulations

Convention on international commodities shipment by road, including any vehicle shipment contract, is contracted to earn wages. Moreover, the place of receipt of the commodities and their delivery in the contract is in two countries, and at least one of the two parties is a convention member.

Risk analysis

Pipe failure factors include third-party factors (catastrophes, vandalism, war), corrosion (internal or external), structural defects during construction or installation, operational defects (system failure), and human error (operation or lack thereof). Proper maintenance and natural hazards (earthquake,)

Conclusion

Forming firms, institutions, and organizations aim to realize objectives. However, among these objectives is providing services and generating value for the customers and beneficiaries of the organization (company). Moreover, knowing the stakeholders wholly and correctly is one of the main parts of strategic decision-making. Critical stakeholders in the organization hold direct control, and their demands manifest in its objectives.

However, the organization's objectives reflect the expectations and tendencies of the critical stakeholders, and the key stakeholders exercise all the power through the organization's governance structure to achieve the objectives. Moreover, the calculations showed the influence factor of reducing damage to oil and gas transportation. Accordingly, ten legal aspects of oil and gas transportation are essential and valuable. Because of the heavy and sometimes irreparable damage they cause to the environment, they require their particular equipment and packaging.

It is necessary to consider these aspects, particularly in concluding contracts. These critical factors, however, include dispute management, cost, insurance, environmental circumstances, safety measures, packaging and labeling, utilizing domestic fleet, Compilation of legal agreements, International and domestic conventions and regulations, and Risk analysis.

Reference

Aaltonen, K. (2010). Stakeholder management in international projects.

Aaltonen, K., Jaakko, K., & Tuomas, O. (2008). Stakeholder salience in global projects. International journal of project management, 26(5), 509-516.

Aaltonen, K., & Kujala, J. (2010). A project lifecycle perspective on stakeholder influence strategies in global projects. Scandinavian journal of management, 26(4), 381-397.

Akbari, N., & Gholamveisy, S. (2023). Commercialization of the saffron brand and the key problems arising from International law via mixed method. Remittances Review, 8(4).

Alazzani, A., & Wan-Hussin, W. N. (2013). Global Reporting Initiative's environmental reporting: A study of oil and gas companies. Ecological indicators, 32, 19-24.

Anderson, L. (2009). Hazardous chemicals-risk classes for packaging, labelling and transportation: hazardous waste. ReSource, 11(4), 38-43.

Arshad, R., & Razak, S. N. A. A. (2011). Corporate social responsibility disclosure and interaction effects of ownership structure on firm performance. 2011 IEEE Symposium on Business, Engineering and Industrial Applications (ISBEIA),

Beach, S. (2009). Who or what decides how stakeholders are optimally engaged by governance networks delivering public outcomes? 13th International Research Society for Public Management Conference (IRSPM XIII),

Button, K., & Taylor, S. (2000). International air transportation and economic development. Journal of air transport management, 6(4), 209-222.

Cui, Y., Quddus, N., & Mashuga, C. V. (2020). Bayesian network and game theory risk assessment model for third-party damage to oil and gas pipelines. Process Safety and Environmental Protection, 134, 178-188.

Dalsøren, S. B., Endresen, Ø., Isaksen, I. S., Gravir, G., & Sørgård, E. (2007). Environmental impacts of the expected increase in sea transportation, with a particular focus on oil and gas scenarios for Norway and northwest Russia. Journal of Geophysical Research: Atmospheres, 112(D2).

Gallo, A., Mason, P., Shapiro, S., & Fabritius, M. (2010). What is behind the increase in oil prices? Analyzing oil consumption and supply relationship with oil price. Energy, 35(10), 4126-4141.

Gao, Z. (1998). Environmental regulation of oil and gas. Environmental Regulation of Oil and Gas, 1-652.

Gholamveisy, S. (2021a). DISCOVERING HIDDEN CLUSTER STRUCTURES IN CITIZEN COMPLAINT CALL VIA SOM AND ASSOCIATION RULE TECHNIQUE. JOURNAL OF MECHANICS OF CONTINUA AND MATHEMATICAL SCIENCES, 16, 79-92. https://doi.org/10.26782/jmcms.2021.07.00007

Gholamveisy, S. (2021b). GASOLINE CONSUMPTION PREDICTION VIA DATA MINING TECHNIQUE. JOURNAL OF MECHANICS OF CONTINUA AND MATHEMATICAL SCIENCES, 16, 74-84. https://doi.org/10.26782/jmcms.2021.09.00007

Gholamveisy, S., & Heidari, H. Designing a Hybrid MCDM Model for Risk Management of Supply Chain.

Gholamveisy, S., & Heidari, H. (2023). Economic Evaluation of Solar Energy Use Using the PSO Algorithm.

Gholamveisy, S., Homayooni, S., & Sekhavat, M. (2023). International Journal of Applied Sciences: Current and Future Research Trends (IJASCFRT) The Impact of Social Networks on E-Commerce.

Gholamveisy, S., Homayooni, S., Sekhavat, M., & Bazrgary, R. (2023). A Hybrid GRA-VIKOR Approach for Prioritization of Sales Management Outsourcing Risks (Case: energy company). Remittances Review, 8(4).

Gholamveisy, S., Momen, A., Hatami, M., Sekhavat, M., & Homayooni, S. (2023). The effect of perceived social

media marketing activities on brand loyalty. Apuntes Universitarios, 13(3), 105-118.

Gorlenko, N., & Timofeeva, S. (2019). Assessment of environmental damage to atmospheric air during development of oil and gas fields. IOP Conference Series: Materials Science and Engineering,

Gossen, L., & Velichkina, L. (2006). Environmental problems of the oil-and-gas industry. Petroleum Chemistry, 46, 67-72.

Green, K. P., & Jackson, T. (2015). Safety in the transportation of oil and gas: Pipelines or rail? JSTOR.

Greene, S., Jia, H., & Rubio-Domingo, G. (2020). Well-to-tank carbon emissions from crude oil maritime transportation. Transportation Research Part D: Transport and Environment, 88, 102587.

Hasanali, M., & Gholamveisy, S. (2023). The influence of Digital and Social Media Marketing on brand loyalty with The mediating role of brand awareness and brand attitude Case: Merooj company. Remittances Review, 8(4).

Heidari, H., & Gholamveisy, S. A systematic review of construction material caused by demolition: A global Perspective.

Jaffery, S. H. I., Khan, M., Ali, L., Khan, H. A., Mufti, R. A., Khan, A., Khan, N., & Jaffery, S. M. (2014). The potential of solar powered transportation and the case for solar powered railway in Pakistan. Renewable and Sustainable Energy Reviews, 39, 270-276.

Kostyuk, A., Tumanov, A., Tumanov, V., & Zybina, O. (2020). Improving Emergency Response Systems in the Oil and Gas Industry to Reduce Environmental Damage. E3S Web of Conferences,

Li, X., Chen, G., & Zhu, H. (2016). Quantitative risk analysis on leakage failure of submarine oil and gas pipelines using Bayesian network. Process Safety and Environmental Protection, 103, 163-173.

Lukács, J., Koncsik, Z., & Chován, P. (2021). Integrity reconstruction of damaged transporting pipelines applying fiber reinforced polymer composite wraps. Procedia Structural Integrity, 31, 51-57.

Maniruzzaman, A. (2009). The issue of resource nationalism: risk engineering and dispute management in the oil and gas industry. Tex. J. Oil Gas & Energy L., 5, 79.

Nabavieh, A., Cyrus, K. M., Gholamiangonabadi, D., & Gholamveisy, S. (2019). Assessing productivity changes using the bootstrapped Malmquist index: the case study of the Iranian construction industry. International conference on industrial engineering and operations management, Bangkok, Thailand,

Office, U. N. S. (1989). Basic Methodological Principles Governing the Compilation of the System of Statistical Balances of the National Economy (Vol. 2). UN.

Pirog, R. L. (2005). World oil demand and its effect on oil prices.

Siddiqui, A. W., & Verma, M. (2015). A bi-objective approach to routing and scheduling maritime transportation of crude oil. Transportation Research Part D: Transport and Environment, 37, 65-78.

Thomas, S., & Dawe, R. A. (2003). Review of ways to transport natural gas energy from countries which do not need the gas for domestic use. Energy, 28(14), 1461-1477.

Thornton, W. W. (1918). The Law Relating to Oil and Gas: Including Oil and Gas Leases and Contracts, Production of Oil and Gas, Both Natural and Artificial, and Supplying Heat and Light Thereby, Whether by Private Corporations Or Municipalities, Regulating Gas Companies, Insurance, Negligence, Transportation, Explosives, Forms of Oil and Gas Leases and Contracts, Etc., with All Federal, State and Ontario Statutes Pertaining to Natural Gas and Oil (Vol. 1). WH Anderson Company.

Yu, L., Yang, E., Ren, P., Luo, C., Dobie, G., Gu, D., & Yan, X. (2019). Inspection robots in oil and gas industry: a review of current solutions and future trends. 2019 25th International Conference on Automation and Computing (ICAC),