

**PONTIFICIA UNIVERSIDAD CATÓLICA DEL PERÚ
ESCUELA DE POSGRADO**



Consulting Report – Transgas Shipping Lines SAC

THESIS TO OBTAIN THE DEGREE OF MASTER IN BUSINESS

ADMINISTRATION

GIVEN BY

PONTIFICIA UNIVERSIDAD CATÓLICA DEL PERÚ

PREPARED BY:

Aréstegui Farfán, Eddy Jacinto

Advisor: Sandro Sánchez Paredes

Surco, October 2016

Acknowledgments

I would like to express my gratitude to Sara Boulet, Halima Hassan, Pakanan Manoonsilp and Zhisong Feng who were the team members I worked with to accomplish this project. Special thanks to the University of Victoria, Maastricht University and Centrum Graduate Business School for all the knowledge acquired.

In addition, a special gratitude to the company Transgas Shipping Lines SAC, to Mario Muñoz for all the cooperation and collaboration during the whole time of the project, and the Professor Sandro Sánchez for his support.

To my family for all the love, support and patience.



Abstract

Transgas Shipping Lines is a Peruvian company founded in 1991, the company's core business is the operation and management of maritime transport ships; the company transports LPG, petrochemicals and hydrocarbons in the organization's 13 owned vessels. In order to keep being competitive in the market, the company is looking for improvements their operations in the logistics department.

After several meetings at the company's office, some improvement opportunities were identified and after discussing them with the head of logistics a key problem was defined. The key problem was that the roles and responsibilities within the logistics processes were not clearly defined. A qualitative and quantitative analysis of this key problem was conducted in order to determine how it was affecting the company and the performance of the departments involved. This analysis lead to the conclusion that the company was losing money due to the delays on delivery of consumables to the vessels, loss of reputation, rework, etc.

Solutions were assessed having in consideration six criteria: (a) cost/investment, (b) feasibility, (c) effectiveness, (d) ease of implementation, (e) reliability, and (f) ease of follow up. The chosen solution will define roles and responsibilities, provide training to employees, and implement a reward and punishment policy; and will be implemented in five phases before the end of the year 2017. This will help the company improve the performance of employees, increase their productivity, give a better service to their clients and align all employees to the company's goals, mission and vision. It is key that the human resources department gets involved in the whole process of implementation and a quality control team or system is applied in order to succeed on the implementation of the proposed solution.

Resumen Ejecutivo

Transgas Shipping Lines es una empresa peruana fundada en 1991 bajo el nombre de APM Engineers. La actividad principal de la empresa es la operación y gestión de buques de transporte marítimo; la empresa transporta GLP, petroquímicos e hidrocarburos en 13 buques que son de su propiedad. Con el fin de mantener su competitividad en el mercado, la empresa está buscando mejorar sus operaciones en el departamento de logística.

Después de varias reuniones en las oficinas de la empresa se identificaron algunas oportunidades de mejora y después de discutir con el jefe de logística se definió un problema clave. El problema principal era que las funciones y responsabilidades dentro de los procesos logísticos no estaban claramente definidos. Un análisis cualitativo y cuantitativo de este problema fundamental se llevó a cabo con el fin de determinar la forma en que este problema estaba afectando a la empresa y a las áreas implicadas. Este análisis concluyó que la compañía estaba perdiendo dinero debido a las demoras en entrega de consumibles a los buques, pérdida de reputación, re trabajo, etc.

Las soluciones se analizaron considerando seis criterios: (a) costo/inversión, (b) factibilidad, (c) efectividad, (d) facilidad de implementación, (e) confiabilidad, y (f) facilidad de seguimiento. Con la solución propuesta se definirá roles y responsabilidades, se proporcionará entrenamiento a los empleados, y se implementará una política de reconocimiento y castigo; se implementará la solución en cinco etapas antes del final del año 2017. La implementación de este proyecto permitirá a la empresa mejorar el desempeño de los trabajadores, incrementar su productividad, brindar un mejor servicio a sus clientes y alinear a sus trabajadores con las metas, misión y visión de la empresa. El involucramiento del departamento de recursos humanos y la participación de un equipo de control de calidad son claves para el éxito de esta solución.

Table of Contents

List of Tables	vii
List of Figures.....	viii
Chapter I: General Situation of the Organization.....	1
1.1 Company History	1
1.2 Key Success Factors in the Industry	2
1.3 Porter’s Five Forces	3
1.3.1 Threat of new entrants – medium	3
1.3.2 Threat of substitutes – high.....	4
1.3.3 Bargaining power of buyers – high.....	4
1.3.4 Bargaining power of suppliers - low.....	4
1.3.5 Industry rivalry – high	5
1.4 Competitiveness of the Organization.....	5
1.5 External Analysis: PESTE	6
1.5.1 Political	6
1.5.2 Economic	7
1.5.3 Social.....	8
1.5.4 Technological.....	9
1.5.5 Environmental.....	9
1.6 Opportunities and Threats.....	10
1.6.1 Opportunities.....	10
1.6.2 Threats.....	10
1.7 Internal Analysis: AMOFHIT	11
1.7.1 Administration and management	11
1.7.2 Marketing.....	12

1.7.3 Operations	13
1.7.4 Finance	14
1.7.5 Human resources.....	15
1.7.6 Information technology.....	16
1.8 Strengths and Weaknesses	17
1.8.1 Strengths	17
1.8.2 Weaknesses	18
1.9 Conclusion	19
Chapter II: Key Problem	20
2.1 Problem Definition.....	23
2.2 Problem Description	24
Chapter III: Literature Review	27
3.1 Introduction.....	27
3.2 Problem Solving in Companies	27
3.2.1 Fundamentals	27
3.2.2 Key performance indicators	34
3.3 Human Resources role in Procurement and Inventory Management	36
3.4 Shipping Industry.....	42
3.5 Conclusion	43
Chapter IV: Qualitative & Quantitative Analysis	45
4.1 Qualitative Analysis: McKinsey Seven S's	45
4.1.1 Strategy	45
4.1.2 Structure.....	45
4.1.3 System.....	46
4.1.4 Staff.....	48

4.1.5 Style	50
4.1.6 Shared values	50
4.2 Quantitative Analysis: Cost Analysis	51
4.3 Conclusion	52
Chapter V: Root-Cause Analysis of the Problem	54
5.1 Fishbone Analysis	54
5.2 Root Causes	55
5.2.1 Lack of follow up.....	55
5.2.2 Inefficient AMOS system	55
5.2.3 Lack of experience and AMOS system training	56
5.2.4 Lack of effective communication	57
5.2.5 No clear responsibilities and lack of reward/punishment policy	58
5.2.6 Inefficient order process	59
Chapter VI: Assessed Solution Alternatives.....	61
6.1 Criteria	61
6.1.1 Cost/investment.....	61
6.1.2 Feasibility.....	62
6.1.3 Effectiveness	62
6.1.4 Ease of implementation.....	63
6.1.5 Reliability.....	63
6.1.6 Ease of follow up	64
6.2 List of Alternative Solutions	64
6.2.1 Definition of clear roles, responsibility and reward andpunishment policy	64
6.2.2 Ensure adequate resources	65
6.2.3 Provision of training sessions	66

6.2.4 Assign employees to follow up.....	66
6.2.5 Review procedures.....	67
6.2.6 Change system.....	67
6.3 Evaluation of Solution Alternatives.....	68
Chapter VII: Proposed Solution.....	70
7.1 Proposed Solution for Implementation.....	72
7.1.1 Step 1: definition of clear roles and responsibility, and provision of adequate resources.....	72
7.1.2 Step 2: provision of training sessions for all employees.....	73
7.1.3 Step 3: implementation of reward and punishment policy.....	74
Chapter VIII: Implementation Plan & Key Success Factors.....	75
8.1 Implementation.....	75
8.1.1 Phase I: review and define roles and responsibilities.....	75
8.1.2 Phase II: review workforce and assign roles.....	77
8.1.3 Phase III: gap analysis of employees vs. role requirement.....	78
8.1.4 Phase IV: training.....	78
8.1.5 Financial cost for phase IV.....	80
8.1.6 Phase V: implement reward and punishment policy.....	80
8.2 Key Success Factors.....	82
Chapter IX: Expected Outcomes.....	87
Chapter X: Conclusions & Recommendations.....	90
10.1 Conclusions.....	90
10.2 Recommendations.....	92
References.....	93
Appendix A: Organizational Structure and Financial Statements.....	99

Appendix B: Interviews Summary.....103

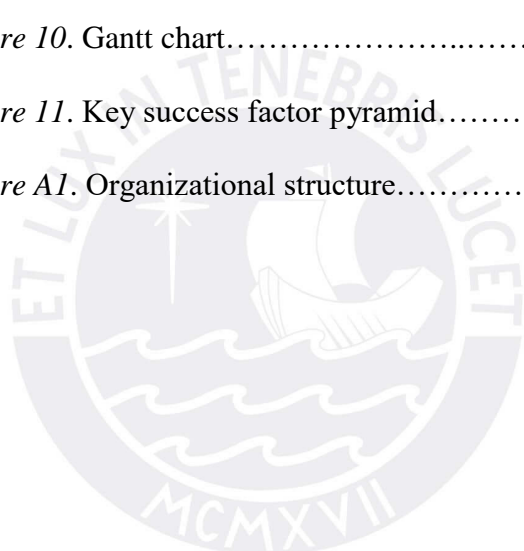


List of Tables

Table 1. <i>Stakeholder’s Engagement Assesment Matrix</i>	38
Table 2. <i>RACI Matrix</i>	39
Table 3. <i>Communication Matrix</i>	40
Table 4. <i>Kaizen, Kaizen Events, Traditional Improvements</i>	42
Table 5. <i>Transportation Modes Comparison</i>	43
Table 6. <i>Evaluation of Solution Alternatives</i>	69
Table 7. <i>Example Template of Current Roles and Responsibilities</i>	76
Table 8. <i>Example Template of Re-Defined Roles and Responsibilities for Each Department</i>	76
Table 9. <i>Example Template of New Roles and Responsibilities for Employees</i>	77
Table 10. <i>Example Template of Gap Analysis</i>	78
Table 11. <i>Estimated Cost of Training Sessions</i>	80
Table 12. <i>Template for Employee’s Performance Assessment</i>	81
Table 13. <i>Framework to Provide Score in each Criteria</i>	81
Table 14. <i>Income Statement</i>	100
Table 15. <i>Balance Sheet (Part 1)</i>	101
Table 16. <i>Balance Sheet (Part 2)</i>	102
Table 17. <i>Interviews Summary</i>	109

List of Figures

<i>Figure 1.</i> Porter's five forces.....	5
<i>Figure 2.</i> Company meeting analysis.....	23
<i>Figure 3.</i> Literature mapping	28
<i>Figure 4.</i> Problem solving steps.....	30
<i>Figure 5.</i> Holistic framework for problem solving in small firms.....	31
<i>Figure 6.</i> 4P's cycle.....	33
<i>Figure 7.</i> McKinseys' 7s framework.....	34
<i>Figure 8.</i> Supply chain decision-making framework.....	41
<i>Figure 9.</i> Fishbone diagram.....	54
<i>Figure 10.</i> Gantt chart.....	85
<i>Figure 11.</i> Key success factor pyramid.....	86
<i>Figure A1.</i> Organizational structure.....	99



Chapter I: General Situation of the Organization

1.1 Company History

Transgas Shipping Lines is a Peruvian company founded in July of 1991 with the initial name of APM Engineers. The core business of the company is the shipping and transportation of LPG (liquefied petroleum gas). At first, the company only shipped the LPG between the Coastline of Peru and occasionally to Ecuador and Chile, but since 1998 they expanded their operations to other markets like the Caribbean, west coast of South America and Asia. The company has actually 13 vessels between gas tankers, oil tankers and container tankers to provide different services to all their clients.

The company's mission is "to give an adequate dynamism to the permanent modernization of our vessels, and to expand our activities reaching new markets, our personnel is committed to a continuous improvement; to this effect, the Top Management impels personnel's training and development, in order to constitute an integrated and efficient work team for Quality Management, Safety, Handling and Protection in the service we offer to our clients in Commercial Maritime Operations" (Transgas, 2016).

The company's vision is to be "Leaders in the transportation of LPG and Petrochemicals and hydrocarbons in South America and the Caribbean, with presence in ports of Asia and North America" (Transgas, 2016). The company's values are: team work, loyalty, comradeship, environment protection, operational safety and order and discipline.

In order to give the best service to their clients and to achieve operational efficiency and international standards to be competitive in the markets, Transgas Shipping Lines manages their vessels under the International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code). The company actually has the following certifications: ISO 9001:2000, ISM Code, ISPS Code and the SMC Code.

Transgas operational activities are divided into two main services; ship management and ship maintenance. Both activities are extremely related to each other because the ship cannot sail if the major maintenances haven't been done or if they have not supply the ship with the parts and consumables needed to do the minor maintenances while the ship is sailing.

Ship management consists in the operation and transportation of the commercial products on board from port A to destination port B, making the requirements and paperwork needed in order to be able to operate and navigate in national and international seas, make sure the ship has the appropriate personnel for the ship to operate and finally, the ship management also have to ensure that the ship and crew comply all the international safety and operational standards in order to be competitive in the national and international market.

Maintenance is in charge of doing all the minor and major maintenances according to the annual maintenance plan of each vessel and the captain of each ship is responsible of making the requirements of materials and special maintenance services that have to be done while the ship is at the port. Maintenance works close to ship management because without the right maintenance the vessels would not be able to sail.

1.2 Key Success Factors in the Industry

Analyzing the industry, Peru has different main ports being Callao Port the most important one with two main operators in the present. This will make the company able to use these ports and increase their capacity on the future. The continuous growth of Peruvian economy also helps the company to expand their barriers and offer their services in international markets which is what they are doing at the moment.

A factor for an industry to success is the environment in which the company is offering their products. As mentioned before, the continuous growth of Peruvian economy in the last years make the Peruvian industries grow in a similar rate. The different free trade

agreements accomplished by the three last Peruvian governments had favored the industry in which Transgas offers its services that are the transportation of goods from one port to another, and to do the maintenance of their own vessels and not own vessels.

The strategy used by a company to enter and to offer their products in an industry is also a key success factor. In the case of Peru, there are not many companies that offer the services that Transgas does, that are the ship management and the ship maintenance. Since Peru is not a big market comparing to the main ports in the world, Transgas is expanding worldwide offering services in different countries in South America and the Caribbean. This expanding strategy is a key success factor for any company in this industry. They should be able to offer a service that complies all the international standards with a fair price and the best quality. This will make the company competitive not only in the Peruvian market but also in the international market.

1.3 Porter's Five Forces

In order to properly examine Transgas' competitive advantage within the maritime shipping industry, the following section will use Porter's five forces model as a tool for analysis. The five elements that will be explored, as seen in Figure 1, are: threat of new entrants, threat of substitute products or services, bargaining power of suppliers, bargaining power of buyers, and rivalry among existing competitors.

1.3.1 Threat of new entrants – medium

- New players require large capital to set up the business. They have to acquire new vessels in order to operate. In gas transportation, specific requirements of vessels will be needed.
- Profit margin is high which could call the attention of new companies.
- Government restriction is low.

1.3.2 Threat of substitutes – high

- Customers are willing to switch to alternative modes of transportation such as train or truck if price rate, transit time and cost factor are reasonable or better.
- Alternative ways of transporting product can be more efficient.
- Substitute's service to the client can be better.
- Pipelines can transport the same product as vessel and in a continuous flow.
- Trust and reputation in company could be damaged if customers decide to switch to other substitutes.

1.3.3 Bargaining power of buyers – high

- There are competitors and substitutes that can provide same service with a competitive price. If customers can find better price and/or quality of service, they could switch to new operators.
- Switching cost is low, the buyer might choose a different company than Transgas due to the high volume of products they want transport from one port to another and they can demand a lower price.
- Processing of documentation needs to keep improving to satisfy customers. Lacking fast process might damper quality of service.
- Customers have the upper-hand to demand

1.3.4 Bargaining power of suppliers - low

- Suppliers of disposable items has minor effects on vessels operation.
- Transgas has its own vessels which have cut out hiring the service of the other companies.
- Profit of suppliers is not high; because of the number of goods Transgas buys they have the power for asking lower prices diminishing the supplier's profit.

1.3.5 Industry rivalry – high

- There are many competitors in shipping business such as Transtotal Agencia Maritima S.A., Transmeridian Sac, Taylor Ian Chille S.a, Petroleos Del Peru Petroperu Sa, Moller-Maersk, etc.
- Cost leadership is high in order to be leader in the market.

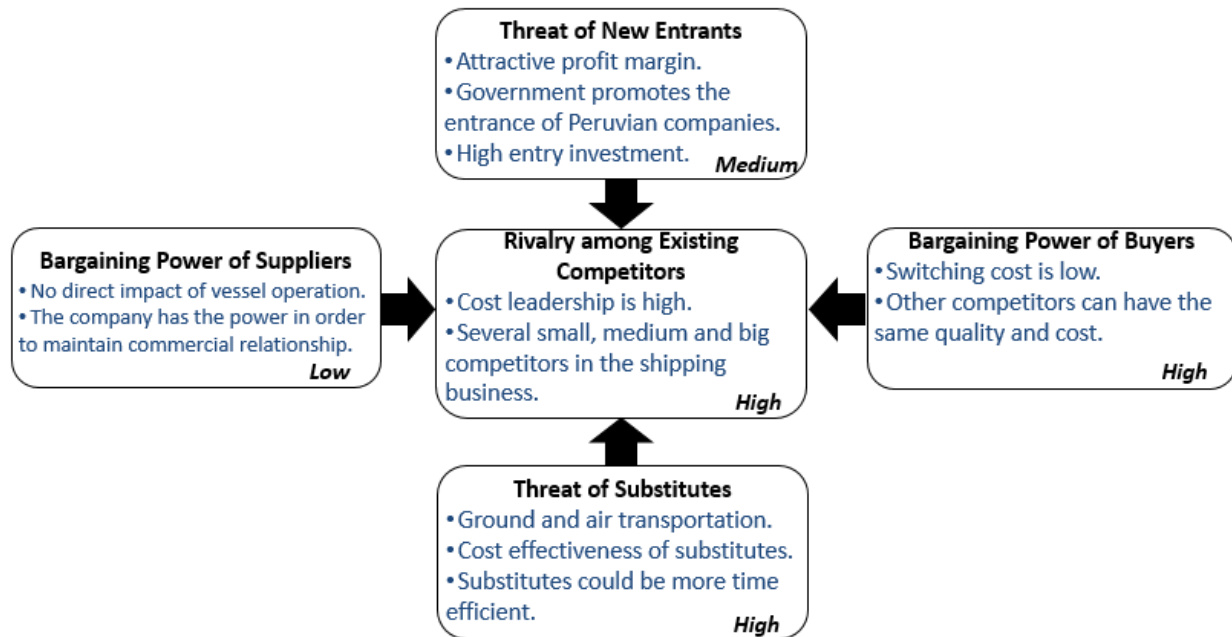


Figure 1. Porter's five forces analysis. Adapted from "The Five Forces That Shape Strategy", M. Porter, 2008, *Harvard Business Review*, 86, p. 4.

1.4 Competitiveness of the Organization

Transgas is, at the moment, one of the leaders in the Peruvian market in the maritime good transportation industry with the ship management and operations and the maintenance of the vessels. They differentiate from other companies because they have international accreditations (ISO, ISM code, etc.) that proves to their potential and actual clients that they operate with quality and that the good they want to take from Port A to Port B will be managed with safety and quality and will not be damaged or lost.

Transgas also has the competitive advantage that they have been in the business for 25 years now and they have the expertise and know how on how the business works. Transgas also have an own fleet of 13 vessels that can carry different products like containers, LPG, petroleum crude, and other chemical products so they have diversified they services to different fields and now they do not only offer this services in Peru but also in different countries in South America and the Caribbean. This might be the most valuable competitive advantage of Transgas because the entrance barrier for any company that wants to enter the industry is that they need to buy or rent their own fleet.

1.5 External Analysis: PESTE

The Republic of Peru is divided into 25 regions and the province of Lima. Lima city is the capital of Peru and it is located on the central coast of South America. Peru will be analyzed using the PESTE framework. This framework is used to analyze the external environment and the effect it has on Transgas Shipping Lines S.A.C. PESTE is a mnemonic, which denotes P for Political, E for Economic, S for Social, T for Technological and E for Ecological. This following section will contain a full description of the above.

1.5.1 Political

The industry in which Transgas Shipping Lines operates in Peru is regulated by the entities of the Peruvian government. The first entity is the Ministerio de Transporte y Comunicaciones that regulates the shipping industry in which the company operates because, as mentioned before, they transport mainly LPG from one destination to another. The second entity that regulates the business of Trangas is the Ministerio de Producción which is the one in charge of regulating the product that the company transports, where it comes from, the volume they transport and from where to where. These two government entities are the ones in charge of promoting the industry in which the company operates because the Peruvian government wants to make Peru a port hub in the region in the future. The recently signed

Free Trade Agreements with USA, Thailand, Singapore, among others plus the creation of the Pacific Alliance and the Andean Community, and the agreements with the European Union have made the necessity to increase the shipping industry on Peru due to the fact that the commercialization of products between regions is increasing.

According to the Ministerio de Transporte y Comunicaciones (2015) in their report Plan Estratégico Nacional Exportador: PENX 2025, the goal of the country is to promote export and to do it they need to promote the domestic and local shipping companies in order to create a sustainable growth on the country's economy. This is why they give incentives and regulate the companies asking them to have vessels that carry the Peruvian flag or they can operate other ships without the Peruvian flag but only for six months. There is an established percentage of the crew members that need to be Peruvian citizens, also to ensure that the growth is spread into the country's population.

Finally, the new government of Pedro Pablo Kuczynski is focusing on the promotion of the extracting, manufacturing and shipping industries that are the industries that contribute more to the GDP of the country, among other minor industries. Transgas Shipping Lines can take advantage of this and ask for loans to get more vessels in order to increase their operations and offer more and better services to their usual clients and to potential new clients.

1.5.2 Economic

According to the World Bank (2016), Peru is one of the fastest-growing economies in the world with a 2012 GDP growth rate of 6.3%. According to Focus Economic, the Peruvian economy is the 7th largest in Latin America, which experienced structural changes in the last three decades. The service sector is the main contributor to the country's GDP contributing close to 60% of GDP. Telecommunication and financial services are the main branches of the service sector. There has been a favorable external environment, prudent

macroeconomic policies and structural reforms in different areas, which in turn has created high growth, and low inflation in Peru. As a result, there has been a reduction in poverty rate from 55.6 percent to 21.8 percent between 2005 and 2015. After a deceleration in 2014, the GDP growth of the country recovered in 2015 from 2.4 percent to 3.3 percent. In 2016, it is expected that the economic growth to be similar to 2015 and it is expected to grow to an average of 3.8 percent in 2017-2018 (World Bank, 2016).

Due to this economic factor and the trade agreements that Peru has, the industries have been growing in a steady rate most of the years. Transgas has also grown taking advantage of this factors. According to UNCTAD (2014), the world maritime commerce and transport increased in 3.6% in 2013 and will keep increasing in the future years due to the high demand of raw material in countries like USA, China, UK, etc. that need to acquire raw material from other countries to supply their industries with raw material.

1.5.3 Social

Peru is one of the most cultural diverse countries in South America. They have been successful in preserving their ancient culture for thousands of years and mixed it with the new immigrants' cultures like Asians and Europeans. More than half of the population in Peru lives on the coastal areas of Peru while the rest live in the mountain areas, having more than 10 million people living only in Lima the capital of the country. The economic growth of the country is being reflected by the increasing middle class in Peru and that can be more evidenced in Lima. Peru has different ports along its coast. According to the Sistema Portuario Nacional (2016), the main ports of Peru are Callao, Paita, Salaverry, Chimbote, San Martin, Matarani and Ilo.

Due to the nature of the industry that has intensive manpower, many job positions depend on the capacity of the ports and vessels. One of the main reasons that government is promoting this industry is because, companies like Transgas that are forced by law to have a

minimum percentage of Peruvian employees benefit the different regions because the employ the local population.

1.5.4 Technological

It is also important to consider the technological factor in the external environment. Peru's technological environment provides many opportunities in the market. In the 1990s, the Peruvian government played an important role in shaping the technological environment faced businesses in the year 2000 and beyond. The Peruvian government created a law to support Peru's transformation into a more IT-friendly environment; this in turn has helped Peru become a more inviting information technological environment for business and this has continued to progress.

Technology is now used in the industry to calculate better shipping routes, have a more accurate lead or delivery time, to be able to be more cost and time efficient. This with the use of different automated systems or ERP enable the company to have better procurement methods and practices and have better policies regarding to inventories, people management, material requirements, etc.

1.5.5 Environmental

Environmental factors should also be analyzed when analyzing the external environment of a company. The principal environmental problems in Peru are air pollution, water pollution, soil erosion and pollution and deforestation (Nations Encyclopedia, n.d.). Air pollution is a problem especially in Lima due to vehicle and industrial emission. In recent times, there has been progress in addressing these issues. The Peruvian environmental ministry has been put in place to regulate and develop laws to decrease the amount of pollution created and also making policies to decrease deforestation rate as well. Due to these domestic and international existing regulations, the company has to comply different international standards and regulations in order to be able to operate.

1.6 Opportunities and Threats

After doing the PESTE analysis the following opportunities and threats have been identified.

1.6.1 Opportunities

- The maritime shipping industry in Peru has gradually become more important in South America, the company should target more ports in the region.
- Increasing demand is predictable, which is a great opportunity for Transgas to further expand.
- Due to the predictable demand, Transgas can ask for loans and increase their fleet in order to offer more services to more clients.
- The company can take advantage and improve their reputation with local and international clients by saying they comply all environmental regulations and that they promote the country's economy growth by hiring local population.
- Offer their transport services to companies on countries that have trade agreements with Peru.
- Adequate use of technology can lead to increase efficiency in the company.

1.6.2 Threats

- Internationalization causes that more foreign competitors try to enter Peruvian market and competition and price wars can begin.
- Some of TRANSGAS's suppliers are international companies based in the North America and Asia, due to the shipping time of spare parts that might delay the sailing of a vessel. Competitors may have their vessels operating at the moment the client requires it.
- With more competitors, the bargaining power of the buyers is also getting stronger.
- Development of new pipelines to transport petroleum and LPG.

1.7 Internal Analysis: AMOFHIT

1.7.1 Administration and management

At the moment, with the entrance of the new CEO to the company at the beginning of the present year, the company is making new efforts to have a better control on their expenses and trying to have a better structure. As shown of figure A1, the company's structure is changing from the structure they had on 2015 to the new one in order to have a more dynamic and better organized company. Now, the CEO has the managers directly below him and they report directly to him. These managers have also a team below them that support them and worked between departments in order to get good team cohesion. The CEO is supported by the DPA, the designated person ashore, who is the person in charge of communicating the vessels with the offices, and the Strategic Information Management department.

The company has two kinds of employees, the office employees and the crew members of each vessel. The office employees are the ones belonging to the different departments the company has like Gestión Contable, Gestión de HSQE, Gestión de Operaciones Comerciales, etc. The crew members belong to the department of Gestión de Gente de Mar, the manager of this department is Juan Carlos Jimenez. This department is in charge of the management of the crew of the vessel that consists on a captain, two pilots, chief engineer and the crew.

Transgas Shipping Lines owns 13 vessels at the moment, each of them has a captain that is responsible for the operation, maintenance and transportation of it. There are two types of workers on the vessel, deck personnel and the machinery personnel. The captain will report the vessel status to the DPA periodically and update the AMOS System. The deck personnel include a master, the pilots, cook and firemen; and the machinery personnel are the chief engineer, a first engineer and the mechanics and operators.

The daily operations of the company are very related to the procurement and logistics department and they depend on whether the vessels have the consumables and materials required for sailing from one port to another in order to deliver the product, which is mainly LPG. These consumables are for maintenances, daily operations, food for the crew, personal protection equipment, etc. and the procurement of these materials are under the responsibility of the head of logistics and procurement who is Mario Muñoz, who has a team of five people that support him.

1.7.2 Marketing

The department of Gestión de Operaciones Comerciales is the one in charge of maintaining the relationship of the company with the clients and the one in charge of finding new potential clients. Since this industry is a very specific industry and the operation and maintenance of vessels must be done by very specialized and prepared people, the company boosts this aspect and show their clients that they have now more than 25 years in the market and they are operating without complications complying their client's needs. This department is also the one in charge of obtaining the updates and current international standards like the International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code). ISO 9001:2000, ISPS Code and the SMC Code.

The company uses these international certifications and their experienced crew in order to offer their services to international clients. By showing these qualification, Transgas Shipping Lines, is entering new markets on the region and trying to get more clients on important ports of the world like Chinese ports, USA ports, etc. The goal of the company is to be a leader on the region on the maritime transport of LPG, petrochemicals and hydrocarbons, and they are taking the first steps to do it.

Quality is a very important aspect on a company in order to provide a service with international standards to the clients and Transgas Shipping Lines is aware of this. A way of

marketing the company is through the quality they offer and the mouth to mouth of the good services they offer. This is why the company in the new structure they are implementing on 2016 has a department called Gestión de Control Interno that is in charge of the quality among the whole organization.

1.7.3 Operations

The core operations of the company are divided in two. The first operation of the company is the operation of the vessels, and the second one is the maintenance of the vessels (Appendix B). The core operations of the company are these two, all of this is executed by very skillful crew members and experienced management teams. The operation of the vessel consists on the transport of product, mainly LPG, from one port to another and deliver the product without any problem, loss and on time. The maintenance of the vessels involves the minor, medium and overhauls that the vessels' engine, parts, machinery, etc. needs. Most of the maintenances are done by the crew members but some overhauls and big maintenances are subcontracted and suppliers to them if they a specialized job like the repair of a main engine. Both of these main activities, as mentioned before, are very dependent on the procurement and logistics department. If this department does not have the pieces, consumables, materials, contracts with suppliers, etc. on time, the sailing of the vessels can have delays and this will cost money to the company because the vessel has to stay longer at the harbor waiting for materials or the company has to pay a penalty for not delivering the product on time on the destination (Appendix B).

All these operations are supported by an IT department that makes possible that the AMOS system works properly and the procurement and logistic team can actually visualize the material requirements on time, ask for quotes, generate and send the purchase orders and finally receive the materials and deliver them to the vessels at the port. The HSQE department also plays a key role in the company, due to the industry, safety and quality

standards must be high in order to have no accidents and obey the Peruvian law and in other cases international laws. The Internal Control department is the one in charge of assuring that all the processes of the company are being done by each department and is the one of applying quality standards and KPI to each department.

A lack of attention on the daily operations is that when the company was asked to show the document of the written procedures they use on the procurement department they were not able to show them. It was concluded that the company does their operations and processes in a very informal way and that they do not have written procedures on the procurement department which leads into a lack of efficiency and a low performance of employees since they don't have a defined way to do their daily tasks.

1.7.4 Finance

The company's finance department is going through a change of management and they are making reforms in order to be more transparent in the expenses of the company. By doing this the company will know where they should put more effort in order to diminish the losses or increase the profit that is being generated by each department. Also, the finance department should interact more with other departments like the procurement and logistics department in order to have better control of the budgets of each vessel. Nowadays, the budget of each vessel is very flexible and in order to modify them the captain just need to ask for a higher budget due to different events that occurred. This is how the organization controls the budgets, which is a very informal way and is one of the main concerns that the new CEO has.

The finance department will also need to work directly with the procurement department and the department of Gestión de Gente de Mar in order to make a plan to calculate the cost of stocks and not used materials on each vessel and the cost of repetitive requirements of unnecessary materials. At the moment, there is no cost assigned to the

materials that are over required and the ones that are at the vessels without being used; because no crew member, not even the captain, knows how much material they have on the vessel's warehouse.

Due to the fact that the company is a maritime shipping company and owns different vessels they cannot do their accounting the way a regular organization does it, this was retrieved from the interviews done to the company (Appendix B). They have to do a separate balance for each vessel and how much profit and how much expenses it produced during the whole year, and after this is done with each vessel they consolidate everything in one final report. This is done this way in order to have a better control on each vessel, how much profit each kind of vessel is making, and to be able to track why a determined vessel is not being as productive as expected.

1.7.5 Human resources

Due to the fact that Transgas Shipping Lines has two kinds of employees, the company have two different departments in order to control and administrate the employees and the human resources roles. They have the department of Gestión de Control Interno that focuses on all the employees at the offices, this department is in charge of recruitment and management of the office personnel and the quality control on the organization. The department of Gestión de Gente de Mar is the one in charge of the recruitment and administration of all the crew members.

Human resources in Transgas Shipping Lines is not involved on the daily operations of the organizations. They do not work properly and collaborate with key departments like the procurement and logistics department. Human resources should be in charge of ensuring that all employees have the resources and training they need in order to achieve the goals and objectives they are given. Also, after determining it with the head of each department, they should assign the goals and objectives to every employee and this should be written on their

contracts and job descriptions. This processes are not done by the human resources department at the moment.

The main evidence that human resources is not working properly on the company is that the roles and responsibilities are not defined either assigned to employees on any department. This is a critical factor, especially on the procurement and logistics department that is the main support on the two core operations of the company as it was mentioned before. Is roles and responsibilities are not defined on the procurement and logistics department it can lead to miss communication and deliver the wrong material or consumables to the ship, or into delays of delivering material and both outcomes will end up in a monetary loss for the company. Finally, there is no reward and punishment policy established on the company in order to motivate the employees to accomplish their tasks.

1.7.6 Information technology

The information technology system that Transgas Shipping Lines use is the AMOS system. The AMOS is an operational software used by the control the budgets, activities, maintenance, etc. of each vessel. The AMOS system is not being well used by all the employees there is only one AMOS specialist at the offices. There is now specialist of the AMOS system on the vessels and this makes the operations harder and poorly efficient when there are troubles with the system on board.

Access to the Internet is also limited on the vessels, when the ships are sailing there are points when they do not have any Internet connection and this delays the requirement of materials and consumables and also delays communications on follow up to urgent materials. This poor Internet connection also produces that the requirements introduced on the system are not updated or replicated on the AMOS system server and therefor it does not show on the computers on the offices of Transgas which also leads into delays.

The captain of the vessel is the only person that has access to a personal computer, so in theory he is the one in charge of doing all the updates and requirements on the AMOS system but sometimes he delegates this duty to any of the crew members that are not experts on the AMOS system and this makes the process and the use of technology inefficient. In the case of Transgas Shipping Lines, the technology is not being used properly in order to have a better communication with the crew members. As mentioned, the captain is the only one with access to a computer so he is the only one that has an email account and all communications with other crew members like the chief engineer has to be done through the captain.

The language is also an issue in the AMOS system because most of it is in English and when they send the purchasing orders and request of quotations to suppliers, some suppliers do not know the language and they take a longer amount of time in order to reply with the quotations and this makes the process of procurement slower.

1.8 Strengths and Weaknesses

1.8.1 Strengths

- Skillful crew members and experienced management team.
- Great relationship with major suppliers: Transgas has credit in many major suppliers which allows them average 30-days payment duration.
- Flexible financial policies: It is easy for the director of logistics management department to negotiate the budget and cost of supplies within a short time.
- Multiple quality certifications: Transgas Shipping Lines has the following quality certificates: ISO 9001; ISM Code, certificate for gas and oil vessels; ISM Code, certificate for gas carrier, chemical tanker and oil tanker; ISPS Code, certificate for fleet; SMC Code, certificate for gas vessels. All these certifications make sure that Transgas could operate competitively in many fields.
- More than 25 years on experience in the industry.

1.8.2 Weaknesses

- Few management members are managing too many crew members and other on-site employees. This weakness further caused some inefficient management behaviors and loses control to the on-board activities.
- AMOS system is not working very efficiently. The system itself is not user-friendly. Too many menus and items following by even more submenus caused the difficulty to use this system. Also, it is very hard to track information in the system, for example, it is able to show the cost of certain item for each order but it is not able to show the average cost for that item for a certain period of time. This caused the inconvenience for the financial employee to do any estimation.
- Weak Internet accessibility on the ships. This caused the external reason for the crew member to not update information in the AMOS system in time.
- Poor inter-organizational communication. The employees on the land cannot contact with the crew member efficiently. Only the captain has one email address for them to contact.
- Poor internal management policies. There is no policy for the crew members to follow. They will not be punished if they do not update the usage of materials in time. They are no incentives for the crew member to follow what the managers told them to do.
- Delay problem. Punctuality is the most important successful factor in the shipping industry. Transgas is facing delay problems which are caused by different factors.
- Not well established processes and procedures.
- Not well identified responsible employees for each process.

1.9 Conclusion

After making an internal and external analysis on the company and the company's environment, it can be concluded that the company has the qualities and competitive advantages to be the leader in the industry plus the know-how and expertise that they have by being in the market for 25 years. In order to maintain their actual status as one of the leaders in the industry and to grow to other international markets the company needs to boost the strengths and opportunities they have. Transgas, as any other company in the world, has some processes to improve and in order to do it they have to pay more attention on how they are performing right now and try to implement a continuous improvement method that enables them to expand and diversify their services to be available in different markets.

The company also has the ambition to expand and be a regional leader in the maritime transportation of goods industry, this is the first step for a company to grow and Transgas has already taken it. From now on they will have to focus on how to improve their processes and how to apply the best world standards not only in their core operations but in the support ones like human resources, procurement, logistics, etc. Transgas has the technical skills and know-how of the business; they need to improve the support departments in order to generate value on each of the steps of their processes.

Chapter II: Key Problem

As described in the previous chapter, Transgas Shipping Lines is a maritime shipping company. In order for the company to run efficiently, it is necessary for all the various parts of the business to operate systematically. One department that is essential for the proper operations of the company is supply chain management. More specifically, the management of procuring materials that are used on the ships by the crew members, also known as consumables. The mission of this project is to identify a problem occurring with regards to the logistics/procurement department, and implement an action plan to address the problem. In order to identify the problem, it is necessary for there to be a difference between two situations, a real one and a desired one. It is also necessary for someone to be concerned about the difference in the two situations.

As mentioned on the previous chapter the weaknesses of the company were that they don't have established procedures or processes, no roles and responsibilities identified and a poor inter-organizational communication. The focus of this chapter will be on that subject that may affect the procurement of consumables and therefore the operation or maintenance of the vessels. Responsible employees for each task or chore must need to be identified in order to be able to propose a solution to the key problem, and see if the responsibility is from the personnel on the offices or the responsibility is from the crew members or the captain.

In order to identify and define the key problem that the company was facing on the procurement and logistics department, three initial meeting were schedule with the company. On the first meeting, the client explained that the organization did not have any inventory management procedure implemented. The current situation of inventory management involved short time periods to gather ship orders in the small warehouse, and attempting to efficiently coordinate orders and deliver the orders to the ships. Since the ships are only docked for small time periods, there is a cost of delay when the orders are not delivery on

time or if the orders are missing items. Furthermore, the warehouse does not hold any safety inventory in case a supplier is unable to deliver a product. It was important to question the cost of delay that this problem was incurring, however, a true cost of delay could not be provided. Following the first meeting with the client, many questions needed to be asked. Since the company had no evidence available to illustrate the cost of delay caused by the lack of inventory management, there was no substantial proof to make the no inventory management procedure a problem.

During the second meeting with the client, the client explained step-by-step how they order the consumables for the vessel. During the discussion with the client, it was explained that the step of selecting suppliers was very tedious for the organization. It involves contacting three different suppliers and requesting quotations for the ordered products. This involves a lot of time and communication among various individuals, such as the logistics department, the finance department, the ship crews, and the external suppliers. Furthermore, it was also brought up that there is a lack of accountability with regards to ship supply budgets, which is part of the supplier selection step. For example, if an order placed by a ship is over the ship's supply budget, the budget could easily be adjusted by the logistics and finance department. This demonstrates that there is nobody who is held accountable for remaining within the confines of the budgets. The discussion during the second meeting demonstrated that the selection of suppliers was an issue since there was excessive time and communication required to fulfill the steps and the excessive amount of time spent on this also leads to unnecessary adjustments to the budgets, and links to an illustrated lack of accountability with regards to ship budgets.

During the third meeting, the client was questioned for evidence regarding the costs associated to the selection of suppliers. The client was not able to provide any evidence that showed the costs associated to it. The discussion with the client led to a third issue being

identified with regards to inventory management. The third topic was linked to the lack of inventory updating onboard the ships. Once orders are filled and delivered to the ships, the crew is supposed to update the online inventory management system with an updated quantity of supply. Currently, the system is not being updated, and this missed step trickles down the entire process. For example, the ship needs to complete a project that requires ten rolls of tape. A crew member checks the AMOS system and sees that there are only three rolls on the ship, and therefore orders seven rolls. The logistics department approves the order since the AMOS system is only showing three rolls of tape. When the seven rolls arrive to the ship and are placed in storage, it is discovered that there are already twelve rolls of tape on board, however, since the system was never updated upon delivery, excessive amounts of rolls were ordered.

This situation clearly presents a problem since there is supply in excess onboard the ships and a not updated inventory on the AMOS system. As previously mentioned, it is essential to have hard evidence to prove that the problem presented in the third meeting is a serious problem. Evidence was requested from the client, however, the only evidence available would require a complete audit of the AMOS system and the supply on the ships. There is clearly a cost associated with not updating the inventory system, however, this cost has not been properly determined. Furthermore, based on the discussion with the client, there is also a lack of accountability with regards to the not well defined process. Multiple reasons have been given for the lack of updating, including poor internet connection on the ships, nobody onboard is specifically responsible for the updating, and that there is only one computer available for the updating. Figure 2 summarizes the conclusions and analysis of the first three meeting with the company and the head of the logistics and procurement department. This figure will be used to define the key problem.

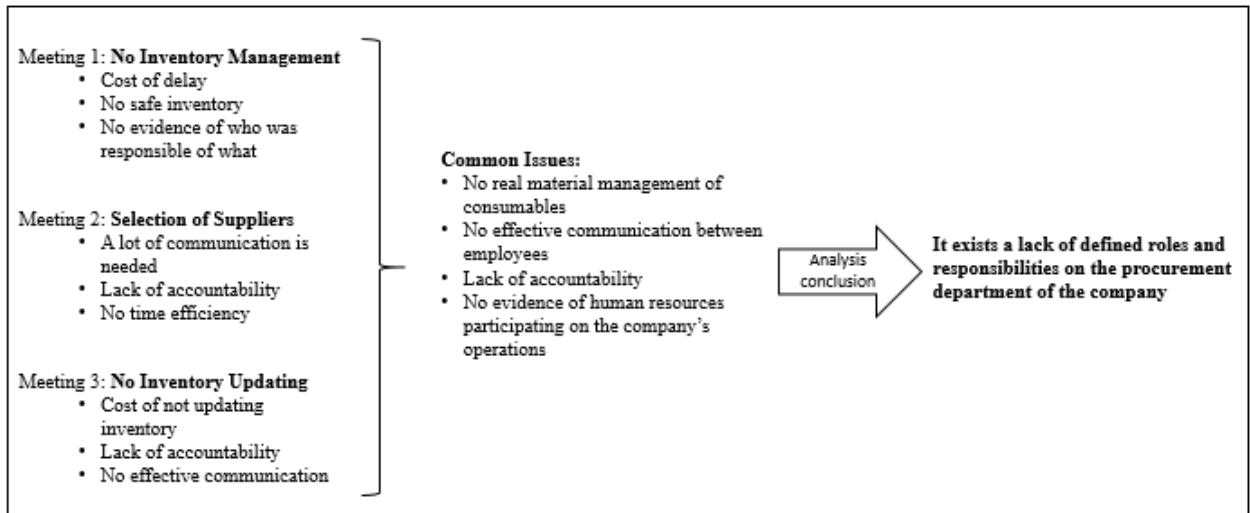


Figure 2. Company meetings analysis.

In order to be able to make a proper definition of the problem on the procurement department a further analysis has been made on Chapter V. This analysis was done taking in count the main symptoms that were evidenced during the meetings with the company and by the observations made on the visits to the company's offices. The Ichikawa diagram was used as the main tool to define the problem identified on the procurement department and to determine the root causes of it. Six main causes were identified on Chapter V as the main reasons why the procurement department has this problem: The reasons are: (a) lack of follow up, (b) inefficient AMOS system, (c) lack of experience and AMOS system training, (d) lack of effective communication, (e) no clear responsibilities and lack of reward/punishment policy, and (f) inefficient order process.

2.1 Problem Definition

The problem identified after discussing on the meetings with the client is that there are not defined roles and responsibilities within the procurement and inventory management of consumables on the procurement and logistics department of the company. These was evidence due to several reasons like: (a) no real-time management of consumables, (b) no effective communication, (c) lack of accountability, (d) human resources not involved on the

daily company's operations, etc. The client agreed that this was the main problem on the procurement department and that it was urgent to work on it.

2.2 Problem Description

Based on the meetings conducted with the company, the reasons for these problems were linked to various aspects, such as lack of accountability, perceived high costs, no effective communication, among others that are going to be further analyzed on Chapter V. The company's problem main symptom is that there is no real material management. This is also evidenced on the discussions with the client, when they mentioned the no safe inventory, the costs of delays and not updating inventory. There is a lack of effective communication between all parties involved in daily operations of the procurement department. Finally, based on the analysis of Figure 2, there is an issue with human resources management and their work with other departments. The individuals involved in the procurement department's operations are potentially poorly managed, they do not have clear what they should do and there is also a lack of reward system in place to encourage continuous improvement. The three symptoms are no real inventory management, lack of effective communication, and no involvement of human resources department, these are then further linked to one key problem: the roles and responsibilities within the procurement and logistics department are not well defined.

The key problem that needs to be addressed by this project is that roles and responsibilities within the procurement and inventory management of consumables are not defined on the procurement and logistics department. The following sections will describe the key problem in more detail, with regards to substance, location, ownership, magnitude, and time perspective.

Substance: The structure of the roles and responsibilities of individual employees are not clearly defined or effective. The daily operations of the procurement department not being done effectively, and this is linked to the lack of defined roles and responsibilities within the process. The crew members and the office employees are not able to agree who is in charge of updating the inventory on the AMOS system, and this leads into not having an updated inventory, due to the lack of roles and responsibilities assigned. This represents a high cost to the company due to the stock cost of materials that are on the vessels' warehouses, the repeated orders and the over required and acquired materials that cannot be returned to suppliers. Also, it involves the human resources department that should be involved on the daily operations of the company, especially on the procurement department that has been proved to be the key support for the company's daily operations success. Not well trained employees might be also a reason for this problem, this will be furthered discussed on Chapter V.

Location: This problem was identified and located on the logistics department, more specifically on the procurement area of the logistics department. This key problem also affects various departments, such the finance department, the human resources department, operations department t and the ship crews. It also affects various physical units, including the offices, the warehouse, and the ships. The problem also affects external relationships with suppliers and the perceived reputation that clients have of the company that is represented as an intangible asset.

Ownership: Internally, the problem affects all levels of employees, from top managers to ship crew members. It is believed that all individuals affected by the problem are aware that the problem exists; however, it is only the head of procurement and logistics that has been given the task to address the identified problem and solve it. Based on interviews with the head of logistics and procurement and different employees of the procurement

department, the crew members could represent some difficulties whenever a solution wants to be implemented. The new CEO of the company wants to solve this problem and others that the company has, counting with the support of the CEO as the sponsor of this project is good for the owner of the problem and it is key factor for its success.

Magnitude: This problem holds high importance with regards to high costs and lost time, however, the quantitative evidence to prove this is unavailable because there is no actual way to calculate how much the company is losing due to over stock and not used materials unless they audit the materials and consumables on the ware houses of each vessel. The problem will only continue to cost the company more time and money as time goes on without addressing the problem. If the problem is address, the company will gain efficiency, which will reduce costs and increase time available to other tasks. The problem also involves the low performance of the employees, since they do not have clear roles and responsibilities some employees need to wait for exact orders of their bosses in order to start their daily operations or tasks.

Time Perspective: Based on interviews, this key problem has existed since the beginning of the organization and there has been no attempt to solve it in the past. The problem is observed frequently on the daily operations of the company. Currently, the problem is stabilized, but as mentioned, the costs will continue to increase as time goes on. The goal of the company is to solve this problem in no more than two years, in order to still being competitive in the future.

Chapter III: Literature Review

3.1 Introduction

This section will address the main topics of the document; a research of literature in books, academic publications and journals has been made in order to have a better understanding of them. Main definitions will be given on this chapter but they will be deeply touched on future sections during this document where some frameworks had been applied. This section will mention the frameworks that will be used on the document and why they adjust more into the company's current situation and why other frameworks that are very well known are not used on this opportunity.

The literature reviewed on this chapter was obtained and collected from Centrum Católica library, online data base, online databases like ProQuest, which was the mainly consulted data base, and EBSCOhost, among others have been consulted. Most of the publications or papers obtained are from the year 2000 and on. Also, the majority of the literature reviewed was in English, but due to the fact that the company is a Peruvian company the topics of human resources were consulted in books written in Spanish and one of them focused on the Peruvian perspective.

The chapter is divided into three main parts: (a) Problem solving in companies, (b) Human resources role in procurement and inventory management, and (c) Shipping industry. A mapping of the literature describe is shown on the next page.

3.2 Problem Solving in Companies

3.2.1 Fundamentals

Problems are present everywhere, in every person daily life, in every company or organization, etc. Thinking that a company has no problems is thinking that perfection exists,

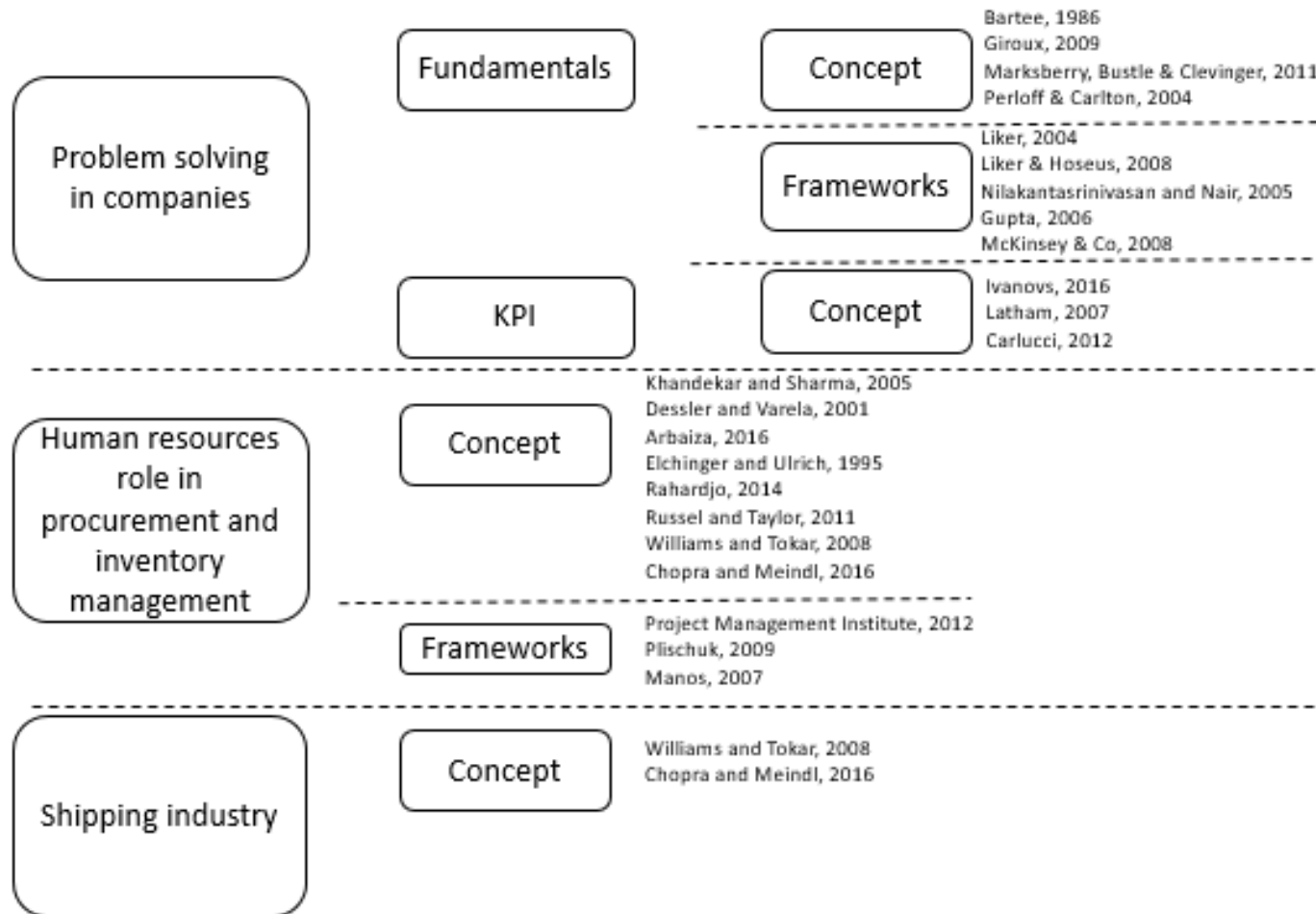


Figure 3. Literature mapping.

but this definition is relative to every person. A problem can also be perceived as an opportunity of improvement or to learn new things. In order to understand better what is a problem some definitions will be presented. A problem is a situation, person, or thing that need attention and needs to be dealt with or solved (Cambridge Dictionary, 2016). This definition is too general in order to apply it to a company or a consulting project in an organization. In easy words, a problem in a company or organization can be defined as the difference or gap between what the company wants and what they now have, or how they want to do things and how they do them now, or the actual state and the desired state.

According to Bartee (1986), problem solving is the activity associated with the change of a problem state to a solution state. In other words, problem solving is taking action in order to diminish the gap or transform the actual situation into the desired situation. Problem solving can have many different approaches or steps, despite the differences between many authors, these steps can be simplified into five common or main steps as it is showed on Figure 4. The steps are: (a) Problem identification, (b) Problem analysis, (c) Identification of the best solution for the problem, (d) Implementation of the solution, and (e) Results evaluation.

Also, the way small organizations or companies assess problems is different than the way big conglomerates or medium companies' asses their problems. This difference is due to the fact not only because the number of employees but the different hierarchical levels that exist on big companies and the specialized teams they have for each department in order to solve a determined problem.

In a small company, usually the manager is the owner and also the decision maker that needs to solve a problem and that can be influenced by many different factors. According to Giroux (2009), the problem-solving capacity of the decision maker can be influenced by

different factors such as: (a) emotions, (b) the desire for self-efficacy and determination to succeed, (c) intuition, and (d) attributions of coincidence, luck and destiny.

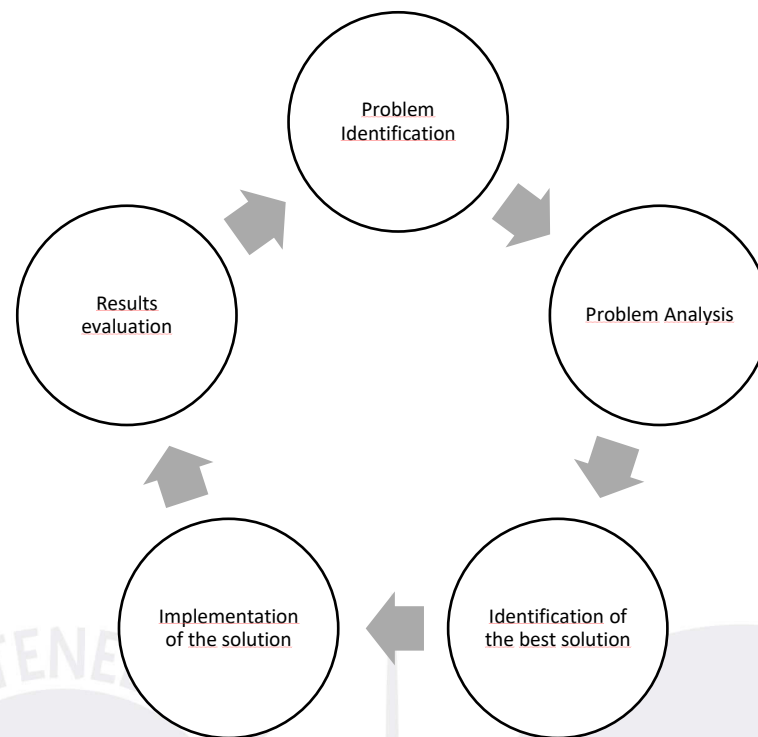


Figure 4. Problem solving steps.

All these factors can affect the perception of a problem in a company where there is only one person in charge to solve it and its ability to assess the problem will be different than if he or she has a team to discuss with. As it is shown on Figure 5, the outcomes of the problem resolution and the solution of the problem are affected by the different factors that influence the problem solver or the decision maker. This framework can be also applied in our daily life for every problem a regular person has, because people is always influenced by emotions, the expected outcomes they want for every decision they make, intuition, believes, etc.

For big companies, there are other different frameworks and tools to use, also as mentioned before they have specialized teams to assess the problems and to discover

problems before they are evidence and before they have a big impact on the company's performance.

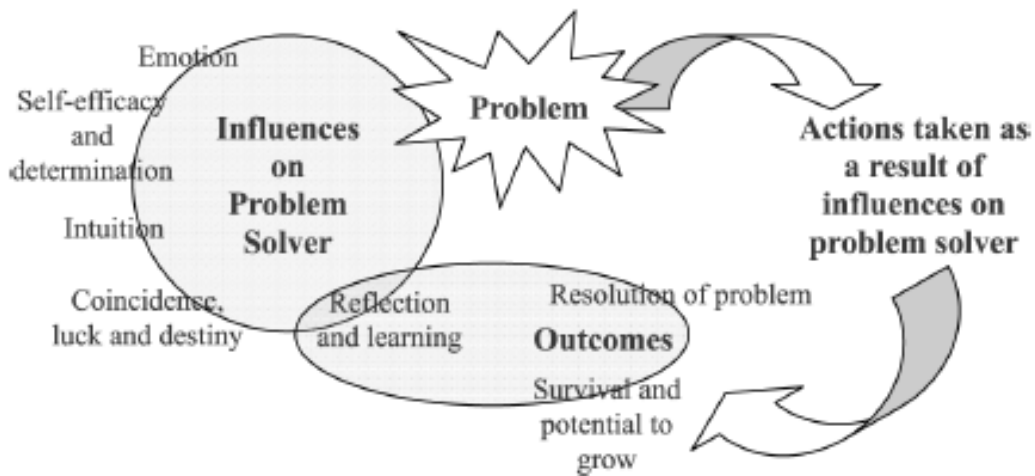


Figure 5. Holistic framework for problem solving in small firms. Adapted from “Problem solving in small firms: An interpretive study”, I. Giroux, 2009, *Journal of Small Business and Enterprise Development*, 16, p. 174.

As mentioned before, problem solving methods and practices are crucial for every company, and according to Marksberry, Bustle and Clevinger (2011) “problem solving is one of the most critical aspects of an organization. Effective problem solving can reduce the bottom line, increase productivity and decrease defects”. This means that if the company has a well-developed process or framework on how to assess a problem they can solve it faster and in a more effective way that may benefit even more the company than what was initially expected. A structured problem-solving approach has a direct correlation to an organization's performance and the ability to repeat successful outcomes (Perloff and Carlton, 2004).

The most common used methods or frameworks to analyze and solve are problem in big companies are: (a) The Toyota 8 step problem solving method, (b) the Deming cycle, (c) define-measure-analyze-improve-control (DMAIC), and (d) the McKinsey 7s. Toyota's framework has mostly used in manufacturing and massive production companies but can still be applied to any industry if some aspects are modified. Toyota's eight steps are: (a) clarify the problem, (b) break down the problem, (c) target setting, (d) root cause analysis, (e)

develop countermeasures, (f) see countermeasures through, (g) monitor results and processes, and (h) standardize successful processes.

According to Liker (2004) the emphasis that Toyota makes on their people is one of the main reasons why its problem-solving process is successful. In a later study, Liker and Hoseus (2008) mentioned that Toyota's 8 step problem solving process is effective because the focus of supporting Toyota's culture and the enhance on the soft skills of their workers. Toyota's method also uses two of the most famous tools for root cause analysis which are the fishbone diagram or Ichikawa diagram that will be used later on the consulting report, and the five-why method to link problems and find their root causes.

The Deming cycle also known as the PDCA cycle is a model used for continual process improvement and it teaches organizations to plan an action, do it, check how it is being performed and act or take action based on the learning obtained of the previous step (Johnson, 2016). This tools have been used for years in every kind of industry and made Deming a guru on continuous improvement. The continuous improvement cycle of Deming also gave birth to different approaches and variations of it. One of the more famous ones is the 4P's cycle, this cycle incorporates approaches from Shewhart, Ishikawa, Juran, Taguchi and Deming (Gupta, 2006). Figure 6 shows how the 4P's cycle works.

The DMAIC is a structured problem-solving method. It has five phases that are: (a) define, (b) measure, (c) analyze, (d) improve, and (e) control. "Each phase builds on the previous one, with the goal of implementing long-term solutions to problems" (Berardinelli, 2016).

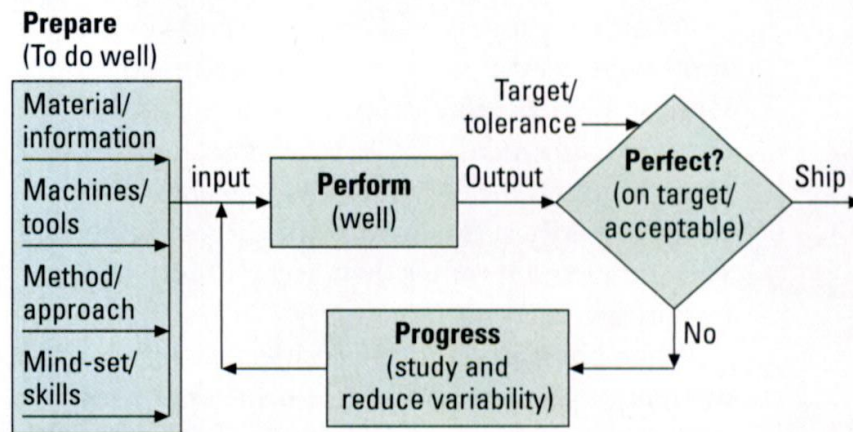


Figure 6. 4P's cycle. Adapted from "Beyond PDCA-A new process management model", P. Gupta, 2006, *Quality Progress*, 39, p. 48.

The DMAIC is such a sophisticated problem solving method that requires more effort than other frameworks that sometimes due to the problem nature it does not worth to use it.

According to Nilakantasrinivasan and Nair (2005), the true value of DMAIC can be realized only when it is used to identify root causes for problems and derive solutions to overcome the root causes. This means that a wrong use of the DMAIC will not generate the expected value in order to justify the effort on using it. "One of the most common failure modes for DMAIC is when it is used in situations in which either the root causes are obvious or the problem is trivial. Such problems are referred to as pseudo problems, and solving them using DMAIC will neither justify the investments of time or effort nor utilized the best of DMAIC"

(Nilakantasrinivasan and Nair, 2005). This is why this framework was not used during the consultancy report but was considered at the beginning when the root causes were not known but after the first three meetings with the company the causes were clearly identified and the Ishikawa diagram was used.

Finally, the McKinsey 7s methodology is used to have an analysis of the whole organization in order to obtain a general and specific image on how the company is doing at the moment. The model can be also used to identify the needs and strengths of the company.

This model has been used to make a qualitative analysis of Transgas Shipping Lines in order to be able to have a better assessment on the problem that was identified. The 7s framework is a watershed model that addresses the critical role of coordination, rather than structure in organizational effectiveness (McKinsey, 2008).

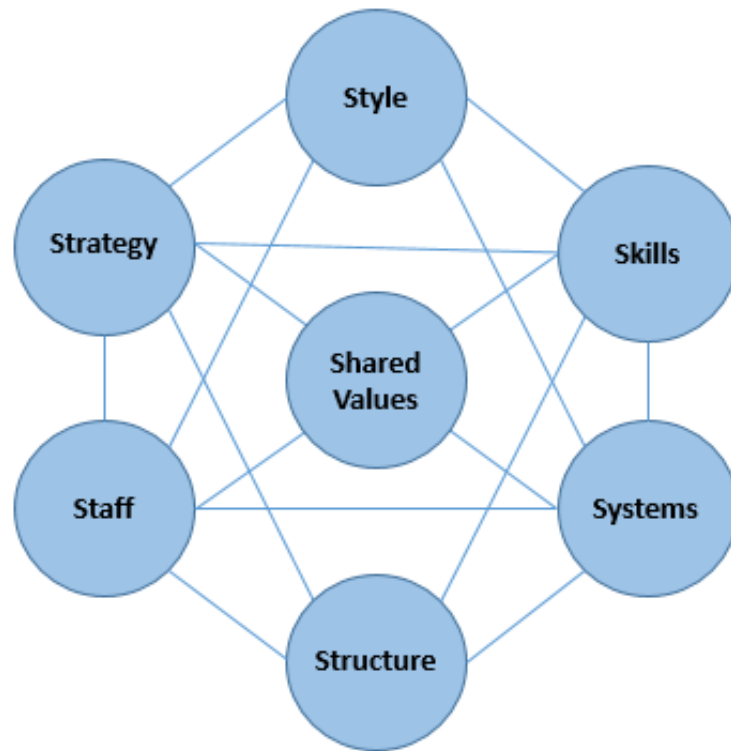


Figure 7. McKinseys' 7s framework. Adapted from "Enduring Ideas: The 7-S Framework", McKinsey & Co., 2008. <http://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/enduring-ideas-the-7-s-framework>

3.2.2 Key performance indicators

According to Ivanovs (2016), key performance indicators are measurement practices that businesses or companies can establish in order to assess the outcome of an individual business improvement tactic. KPI can be equally distributed among all departments in a company and some of them can be shared between departments. This last practice of sharing KPIs between departments is used to make sure that all departments are going on the same direction and pursuing the company's goal or objective. This is also to align all departments into the company's vision and corporate strategy and long and short-term goals. Decision

makers and top management should be involved on the creation of the KPIs and they are responsible to communicate them and the expected outcome they want from every employee and from each department where the KPIs are being implemented. “Top management should ensure the KPIs fit the company’s strategy and goals. Make sure all decision makers understand the KPIs relevant to them in detail (even if it requires training) and make sure there are rules that all areas or departments of the operation follow” (Latham, 2007).

If more than one department is involved in one process or operation of the company the top management should create new, effective and creative KPI in order to follow the company’s strategy and goals. According to The New Zealand Medical Journal (2004), new approaches to measuring performance may be required to serve new strategies, which focus on the effectiveness of multidisciplinary teams working together. This medical approach on creating multidisciplinary teams that work together under the same KPI is also applied on some industries nowadays having outstanding outcomes due to the different perspectives on problems and different ways of assessing problems of a team composed by different specialists.

Companies are now creating performance measurement systems (PMS) that are made as their name say to measure the whole performance of a department or the whole company. In order to have a successful performance measurement system the selection of the criteria or KPIs that are going to be used is critical. This system will help decision makers to take action if a problem appears in the company because they will easily know which department or area they should address due to the constant evaluation of the KPI. According to Carlucci (2010), “the selection of performance indicators is one of the major tasks in designing a PMS. Performance indicators are the heart of a PMS and represent indispensable means for making performance base management decision about program strategies and activities.”. This is why top management and decision maker need to come with a reasonable number of KPIs that

make them capable of measuring the performance of the company. There is no exact number, but they should not be an enormous amount of KPIs that at the end will take a big amount of time and effort to be analyzed and will not benefit the PMS either the company.

3.3 Human Resources role in Procurement and Inventory Management

The role of human resources (HR) in companies has been changing during the years. First, HR was only seen as a group of people inside the company that was in charge of recruiting the required number of employees for each position to make sure that the company can operate. They were not in charge on training, wages, performance assessments, career development, job position planning when the company grows, etc. Nowadays this perception of human resources has changed; now having a well-established and developed human resources department can be a competitive advantage towards competitors or substitutes, because talent can be retained in the company. Developing a critical mass of employees who are knowledgeable or skilled in a particular technology may constitute a potential source of competitive advantage for the company (Khandekar and Sharma, 2005). This is why the human resources management is playing a key role on every department of a company. Also, there is a growing belief that for companies to survive they need to have world-class human resource competencies (Khandekar and Sharma, 2005).

According to Dessler and Varela (2001), human resources management refers to the practices and policies needed to handle matters that have to do with personal relationships of managerial function; it is in charge of recruiting, train, asses, wages and remuneration, and offer a safe working environment with ethics and fair treatment to the employees of the organization. Therefore, human resources should be in a constant communication with all departments of a company to be able to have an updated mapping of the necessities of each area and determined if the talent they have or the number of employees is the required to meet the company's goal or if it fits the company's corporate strategy. Due to this, manpower

planning is another specific role that HR plays in a company together with the managers and leaders of each department, and the top management of the company must make sure that this happens. According to Arbaiza (2016), manpower planning guarantees to the company that all basic processes of talent management, position analysis requirements, wages, training & development, and the performance assessment and KPI work in an integrated way.

Human resources department should be dynamic and able to adapt and change quickly in order to support the company to satisfy the market necessities. According to Elchinger and Ulrich (1995), an organization needs to do the following activities: (a) develop global leadership, (b) develop organizational core competence, (c) create a strong internal organization, (d) become authority of rapid change, (e) have customer orientation, (f) learn to use the organization's culture as a competitive advantage, and (g) develop and improve the business continuously.

If the company succeeds on this, they will have a strong human resources system that will give them a competitive advantage and the ability to adapt to environmental changes in the market or industry. Finally, according to Rahardjo (2014), human resources should comply the following roles: (a) role as strategic partner, (b) role as administration expert, (c) role as employee fighter, and (d) role as changing agent.

There are different tools, frameworks and matrixes that can be used by human resources and the other departments in order to have well defined the roles and responsibilities, the communication processes, stakeholder's matrix, etc. The stakeholder's matrix is made in order to have a better understanding of the power, and impact that a stakeholder can have in a project, or in a company's operation.

According to Polonsky and Scott (2005), organizations that address their stakeholder's interests will perform "better" than firms that do not address these groups' interests. By assessing the interests of these groups the company will be able to develop strategies in order

to enhance the opportunities and diminish the risks. There are two different kind of strategies that can be taken by the company, aggressive strategies and cooperative strategies.

“Aggressive strategies feature some form of forceful attitude or behavior toward stakeholders in an attempt to alter other stakeholders’ behavior. Cooperative strategies feature supportive attitudes or behaviors towards its stakeholders” (Co, & Barro, 2009). Table 1 shows an example of a stakeholder’s engagement assessment matrix.

Table 1

Stakeholder’s Engagement Assessment Matrix

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
Stakeholder 1			C	D	
Stakeholder 2	C			D	
Stakeholder 3				CD	

This matrix is very useful to identify and classify all stakeholders and the attitude towards the project or operation of the company, stakeholders can be inside the company like top managers or stockholders. As it can be evidenced, the level of compromise of the stakeholder is divided into five stages. The letters C and D are used for the following:

- Letter C: To indicate the current state of the stakeholder
- Letter D: To indicate the desired state for the stakeholder.

Having this, the company can develop different strategies for each stakeholder in order to bring them to the desire state in which the company will get the biggest benefit from them.

Another matrix that is used frequently is the role and responsibility matrix. The responsibility matrix is used to define clearly which person or employee is in charge or doing what action. A variation of the role and responsibility matrix which is also very used

nowadays is the RACI matrix. According to the Project Management Institute (2013), the RACI matrix will help to organize a project and make sure everyone knows what is happening with it. The RACI matrix will map out who is responsible, accountable, consulted and informed. Table 2 shows an example of a RACI matrix.

As it can be seen on the RACI matrix the person responsible is the one in charge of doing or completing the task, the accountable person is the one in charge of making decisions and take actions on the task, the consulted person is the one who will be communicated with regarding decisions and tasks and the informed person is the one that must be updated with on the decisions and actions taken.

Table 2

RACI matrix

Activity	Ana	Ben	Carlos	Diana	Eduardo
Create charter	A	R	I	I	I
Collect Requirements	I	A	R	C	C
Submit change request	I	A	R	R	C
Develop test plan	A	C	I	I	R

Note. Adapted from *Project management body of knowledge* (p. 262), by Project Management Institute, 2013, Pennsylvania, USA: Project Management Institute.

Another tool frequently used is the communication matrix. This matrix is similar to the RACI or responsibility matrix, but this matrix is used to define who should be communicated during the processes. Table 3 shows how the communication matrix works.

The responsibility matrix and the communication matrix have been used on the analysis of Transgas Shipping Lines because they were the ones that fit the most for the consulting project on the company. These two matrixes where missing on the processes and were proposed as part of the solutions.

These matrixes will help to identify and define roles, responsibilities and communications in the procurement and inventory management on the company that both belong to the logistics department. The procurement area is in charge of purchasing good and services from suppliers. According to Russel and Taylor (2011), “a key element in the development of a successful partnership between a company and a supplier is the establishment of linkages. The most important linkage is information flow; companies and suppliers must communicate – about product demand, about costs, about quality, and so on- in order to coordinate their activities”.

Table 3

Communication Matrix

Project	Client	Manager	Technical Team
Project Scope	A	A	A
Schedule updates	I	A	A
Technical reviews	R	R	A
Meetings	I	A	A
RFIs	A	I	I
Changes	A	A	A

A = Approval required

R = Review and comment

I = For information only

Note. Adapted from *Project management body of knowledge* (p. 439), by Project Management Institute, 2013, Pennsylvania, USA: Project Management Institute.

This was the case of the company that did not had a well-established policy on the communication with its suppliers. Cross-enterprise teams between the company and the suppliers should be implemented in order to have a better coordination between the processes.

According to Williams and Tokar (2008), the objective of inventory management if to have and keep enough inventory to meet the customer demand and also best cost effective.

During the meetings with the company it was evidenced that all employees were not familiar with the IT systems they use to keep inventory updated. “Why is there an inventory management problem? Experts agree that it’s a combination of many things ranging from outdated business models to lack of IT expertise in management to heightened consumer expectations, lack of investment in or leveraging of the right software tools and appropriate best practices” (Baker, 2004).

After this analysis, we can evidence that the inventory management and procurement management can affect the transportation and the logistics of the company. According to Chopra and Meindl (2013), the competitive advantage of the supply chain depends on six cross functional drivers as shown on Figure 8.

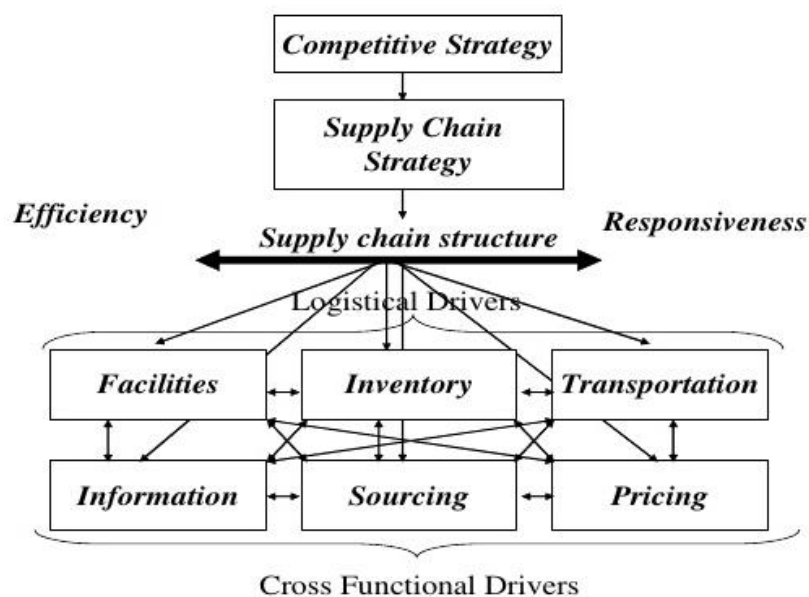


Figure 8. Supply Chain Decision-Making Framework. Adapted from “Supply chain management: strategy, planning, and operation”, S. Chopra, & P. Meindl, 2013, *Pearson*, p. 44.

Another framework or philosophy used on inventory management and in all process of the company is the Lean philosophy, which is used for continuous improvement. This methodology consists on making little improvements step by step in order to achieve a bigger goal in a longer period of time. According to Polischuk (2009), if all employees are involved

on the Kaizen process and they apply the 5s properly, the results would be greater than the ones expected at the beginning in most of the cases. To have a successful lean project, leadership is very important and the Kaizen leader must be very communicative and have clear goals in order to lead the project to success.

According to Manos (2007), there are many quantitative benefits that can be obtained by using kaizen or kaizen events, this benefits might include: (a) money saved, (b) time saved, (c) shorter distance traveled, (d) fewer people required, (e) reduced lead time, (f) fewer steps in a process, and (g) reduced inventory.

Table 4

Kaizen, Kaizen Events and Traditional Improvements

Type of improvement	Kaizen	Kaizen events	Traditional improvements
Large or small scale improvements	Small, steady improvements over time	Big, fast, simple improvements in three to five days	Dramatic, one-time, complex, technologically based
Who is affected	Individuals or groups	Team based	Top-down approach
Costs	Low cost	Low cost	High cost usually
Buy-in potential	Good because employee(s) came up with the ideas	Good because employee(s) came up with the ideas	More difficult because users weren't asked their opinion
Intended benefits	Can be used for any benefit, including quality of work life	Usually focused on reducing time or nonvalue added activities	Meant to revolutionize an organization

Note. Adapted from "The benefits of kaizen and kaizen events", A. Manos, 2007, p. 47 (<http://search.proquest.com/docview/214768622?accountid=28391>).

3.4 Shipping Industry

Shipping industry is important all over the world, this is how all goods are moved from one country to another. There are different kind of transportation modes that include rail, trucking, air, package delivery, water, etc. In this case the transportation method is water, because Transgas Shipping Lines operates its vessels and transport most of the times LPG from one port to another. Their main competitors in this business are the trucking and the

pipeline transporting modes. A comparison between the trucking, pipeline and water transportation will be presented. Table 5 shows all the transportation methods and their characteristics.

In order for a shipping company to be efficient and effective they must take in count the time and cost. This factors are the main factors that give a competitive advantage to a company in this industry. As it can be evidenced, for high volume of product and long distances the best way to transport a product is by water.

Table 5

Transportation Modes Comparison

Transportation modes	Water	Trucking	Pipeline
Cost	Low-cost	Low cost	High initial capital / low operating cost
Distances	Long and international distances	Domestic transports	Medium distances
Speed	Slowest shipping mode	Fast and felxible	Fast
Load	Big	Small	Continuous
Reliability	High	High	High

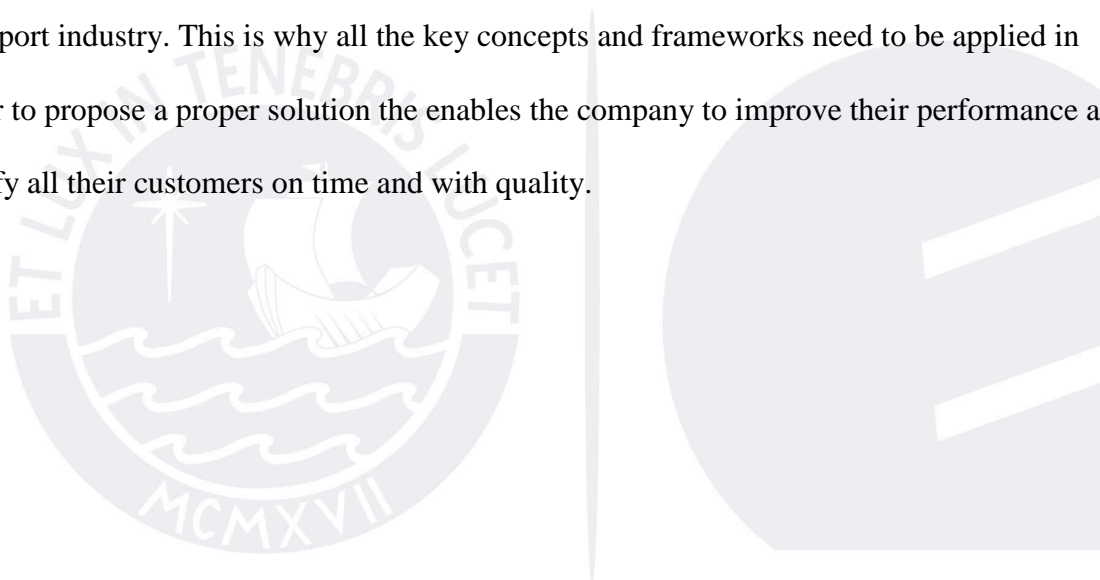
Note. Adapted from *Operations management: creating value along the supply chain* (p. 461), by R. Russell, & B. Taylor, 2011, NewJersey, USA: John Wiley & Sons.

3.5 Conclusion

In conclusion, in this chapter we have seen different methods that can be used to determine and define a problem in a company. The ones that have been used on the consulting report for the company Transgas Shipping lines have been presented and analyzed. Also, the difference between analyzing a big company and a small company had been explained in order to determine the best frameworks to use in this opportunity that where the five steps for problem solving and the McKinsey's 7s.

Additionally, the role of human resources in modern companies had been presented and what human resource management should do in the company in order to obtain a competitive advantage and how this competitive advantage and well defines roles and responsibilities can help the company to achieve their goals if every employee is aligned with the corporate strategy.

By the usage of these tools a better analysis can be done to the key problem. Different frameworks can be used to be able to find the root cause of the problem. The Ishikawa diagram is going to be used to determine the main cause of the key problem. Finally, by analyzing the different made of shipping and transportation that exists, we can evidence that the cost and time efficiency is very important in this industry and more in the maritime transport industry. This is why all the key concepts and frameworks need to be applied in order to propose a proper solution that enables the company to improve their performance and satisfy all their customers on time and with quality.



Chapter IV: Qualitative & Quantitative Analysis

4.1 Qualitative Analysis: McKinsey Seven S's

In this section, this consulting report will analyze the company based on McKinsey 7-S Model. Because the main problem identified in Chapter II is an internal problem, this part of the analysis will view Transgas as seven major component areas and focus on the activities that are aligned and mutually reinforcing to work towards organizational success. This framework is used because it analyses every part of the company and the relationship between each department. This framework can also tell how a change in one aspect can affect the other six.

4.1.1 Strategy

The mission of Transgas is to give an adequate dynamism to the permanent modernization of their vessels, and to expand their activities reaching new markets. In other words, Transgas has a basic strategy goal which is to keep the existing, gain more customers and expand to new markets. As a maritime shipping company, the No.1 task is to be on-time and maintain the transferred goods in good conditions. However, according to the diagnosis, Transgas is facing a big problem within its internal supply system. The HR problem, no roles and responsibilities assigned, communication problem and the real material management problem will cause a delay of shipping and affect the efficiency in maintaining the goods and ships. Furthermore, it will affect the value of service perceived by the customer and lower the reputation of Transgas. In this term, the existence of the main problem will make negative impact in achieving the strategic goals.

4.1.2 Structure

Transgas has a general manager coordinating the daily operation and a quality coordinator involved on each part of the service. As seen in Figure A1, there are three major departments in the organization: Administrative department, commercial department and

Fleet department. Along with the Fleet department, there are other functional segmentations: Safety Gas and Navigation, Technical, Crew members, Bunkering, Superintendence and ships. Besides, there is a consultant team involving in the insurance, legal and maritime issues.

The organizational structure is well designed, but there are still many problems within the structure. For example, during the whole interview process, the logistic manager never talked about there is supervision from the quality control manager. Another example will be that when the manager is asked what if the qualified supplier is asking a price which goes beyond the budget, the manager says he only needs to tell the financial people to adjust the budget. The first example shows that the well-designed organizational structure is not fully functioned and implemented. Furthermore, it will cause the inefficient operation within the structure. The second example indicates that within the structure, there is no regulated guideline of operation. Normally, increasing budget should be very formal and serious. However, in this case, it is very casual and informal.

4.1.3 System

The most important system involving in the supply process is the AMOS system. The crew members will put their needs into the system and the suppliers of certain items will provide the company with proposals. According to the regulation of Transgas, there must be at least three comparative proposals in order to compare and put the order. After the office members in the logistic department assess the requirement of certain supply, they will choose one supplier to make the order based on the price, quality and delivery time. All the trading data will be recorded in the AMOS system and managers could download the profile at any time. While dealing with multiple needs, the AMOS system allows users to decide the priority based on how quick does the crew member need the supplies and how urgent they are. Another important function of the AMOS system is that it allows users to manage the

inventory in this system. When orders are made and supplies are delivered, the AMOS system will automatically increase the inventory of the ordered supplies. And when the supplies are used, AMOS system allows users to manually deduct the inventory in the system.

The AMOS system itself needs a lot of maintenance and management. While showing how the AMOS system works, it took ten minutes to get into the system, obviously, there is no frequent maintenance. At the same time, the trading data that the AMOS system provided are all based on timeline. But if a manager needs a historical data of one certain item in order to make estimation or adjust the budget, the logistic employees must manually reclassify the data and do further processing. This increases the labor and opportunity cost of the real material management.

Technically, with the AMOS system, Transgas should be able to know how much of one certain supply is left in the inventory and should be able to make prediction of the lack of some certain supplier and order them in ahead. Unfortunately, an important sign of the main problem is the repeat order problem within the AMOS system. After one certain item is ordered and delivered to the ship, the AMOS system will automatically increase the number of that item in the inventory management system. However, after this item is used, the crew member seldom goes to the system and deducts the usage of that item. As a result, there are a lot of inventory unused showing in the inventory management system, but the crew member will still declare they need to order it. The reasons for the crew member not reporting the usage are consisting of two aspects. First, the poor internet accessibility on the sea which leads to the hardness of using the AMOS system. Second, the crew members think it is the officer's' responsibility to update the usage of the supplies. For the first aspect, Transgas has contacted the internet provider and made a contract in order to increase the accessibility of the internet on board. The second aspect will be further analyzed in the next part.

4.1.4 Staff

All the staff in Transgas is well trained and the crew members are all experienced. Except for the employees in the Lima office, there are two types of workers working on the vessel, deck people and machine people. The deck people include a master, pilots, cook and fireman. The master (captain) is in charge of the communication with the office and works as a general manager of the vessel coordinating the daily operation on board and the shipping route. There is one pilot who is in charge of the maintenance of the goods that are being transferred and one that is in charge of the maintenance of the daily operational equipment. The machine people includes a chief engineer, a first engineer and others workers. The chief engineer is in charge of the daily operation in the machine level and works as a general manager of the machine level. The first engineer is in charge of the daily maintenance of the operational equipment in the machine level.

Within this system, the master and the chief engineer are the only persons who can request and use the AMOS system. However, in practice, a pilot or an engineer is allowed to use the AMOS system if the master or the chief ask him to operate the system. This will also cause the repeat order problem. In one case, the master forgot that he had asked the pilot to order the tapes and the master ordered the tapes again. When the logistic people try to confirm the request with the master, the master said, we just need more tapes. In this case, the master is refusing to communicate with the office, because he could check the inventory before relying to the office. Meanwhile, it also shows that the office has no control over the on-board activities. And there is no regulation and policy regarding to the operational activities.

Within all the employees on-board, the master is the only person who has the access to the email which is for the communication with the office. So it will very hard to

communicate the request with the engineer people. At the same time, the master will not check the email everyday which leads to inefficient communication.

As mentioned in the system part, the crew members think that updating the inventory is the responsibility of the office. All the crew members are well trained about how to use the AMOS system and are told that they should update the inventory consumption in the AMOS system before the system is implemented. But the inventory information is still not updated because of the following two reasons. First, according to the previous analysis, there is a communication problem between the crew member and the office. At the same time, the office has no control over the crew member regarding to the daily operation. So it is impossible for the office to know how much is consumed on board and update in the office. Second, another important reason for not reporting the inventory consumption of the crew member is that all the crew members are very experienced employees and expert in their fields, in other words, they are the most important asset of the company. So it is very hard to let the crew members to follow the orders from the office or follow the regulation and policies made by the office while on the sea.

The worst thing is that when the inventory is not managed correctly, it will take a lot of time and work to fix it. For the crew member, even though they know that the number of inventory is not correct, they do not have the time to fix the problem. The only option left for them is to let the mistake go on and keep request when certain supplies are needed.

Except for the crew members, the office people who are maintaining the AMOS are not working in efficiency. For example, it takes them about ten minutes to open the AMOS system and there were some mistakes when the logistic manager was trying to operate the system.

In conclusion, the office staff and the crew members have lack of communication because of the poor internet accessibility on board and the lack of a formal communication

channel (email only). The office staff and the crew members are lack of trust towards each other and there is objective hardness to manage the inventory because of the already messed-up inventory management system. Above all, there is no clear responsibility definition of each staff which leads to the buck-passing problem and there is no clear regulation and punishment system for the daily operation and failure of following the policies.

4.1.5 Style

As mentioned before, although the company itself is a big organization with 13 vessels, many employees and a completed organizational structure, the style of operation is still very casual. The most obvious example will be the budget adjustment process mentioned before. At the same time, there is no strict implemented regulation and policies which leads to a serious turn-over rate of the staff. There are no clear reward or punishment policies which partly caused the crew members' inefficient behavior regarding to the inventory management.

From a positive perspective, this kind of casual working style provides the company with flexibility and quick response time. However, an efficient operational structure could also provide the company with more structured efficiency. The problem is whether the company could work along with the structure and policies. As analyzed before, the company does have a completed structure but is lack of regulation and policies. This is also the reason why the company has a casual working pattern. Considering that the company has a long-term expanding strategy, this kind of casual working pattern is not helpful for the company to achieve its strategic goal.

4.1.6 Shared Values

The shared value of Transgas is to grow the company without investing a lot of capital. Obviously, the "shared value" is not really shared across the whole organization. In the office, the staff and the managers emphasize on cutting the cost a lot and the diagnosis

process of the main problem is really about the cost. However, on the board, the crew members do not have the conscious to operate at a low cost. The repeat material requirement problem is one good example. The crew members' main value is basically to the job without investing a lot of time.

When there is conflicts about the shared value, the communication will be stuck and the trust between both sides will decrease. The cause of the diversified shared value is the unclear definition of responsibilities and roles. After all, the shared value is not something that could be told to the employees, the shared value should be established based on the regulated working pattern. All the regulation and policies should be established based on the core shared value which is to grow the company without investing a lot of capital. After, when the employees understand their roles and the responsibilities, they will automatically understand the shared value and working following the shared value. Finally, the company will meet the mission statement.

4.2 Quantitative Analysis: Cost Analysis

As the financial consequences of the main problem, there are three major cost involving in the logistic process: Loss due to the repeated order and excess of stock, delay cost and the intangible cost. Some supplies and consumables will be less functional or even useless after being stored for too long which contributes to a loss due to the repeated order and excess of stock.

According to the information provided by the company, around 0.5% of the cost of sales is because of the waste of the repeated orders, between materials on stock and the work of employees to get the material. As demonstrated in the income statement in 2015, in Table 14, the cost of sales was 32'505,972 soles in 2015. So, the waste of repeated orders cost is equal to $32'505,972 \times 0.5\% = 162,530$ soles.

The real material management problem identified in the diagnosis part may cause a delay of shipping. Because some of the supplies are critical for shipping, if the supplies are delayed, the ship could not go off the harbor on time. According to the information provided by the company, there have been six delays of consumables delivery in 2015 and the delay cost varies from US\$ 5,500 to US\$13,500. Based on these information, the delay cost in 2015 is $(5,500 + 13,500) \div 2 \times 6 \times 3.31 = 188,670$ soles.

Intangible cost is consisting of two parts: the reputation cost and the loyalty cost. The delay problem will further cause a decreasing reputation of Transgas because on-time delivery is the No.1 priority for a maritime shipping company. At the same time, the lack of responsibilities and roles will cause a difficulty for the employees to work efficiently; the internal loyalty will also decrease.

As demonstrated in the balance sheets from 2014 and 2015, in Tables 15 and 16, the intangible assets dropped from 29,683 soles in 2014 to 5,910 soles in 2015. During the financial year of 2015, there were six times delay problems. As informed by Transgas, 50% of the intangible assets is the reputation the company has among the existing customers, which contributes to $(29,683 - 5,960) \times 50\% = 11,863$ soles decreasing of the intangible assets.

In total, the direct financial cost of the main problem on the year 2015 was $11,863 + 188,670 + 162,530 = 363,063$ soles.

4.3 Conclusion

As seen on Chapter III, the importance of the efficiency of the company in its different departments, and the role that human resources plays in all of them is key in order to have a competitive advantage towards the competitors or substitutes. As mentioned on the staff analysis on the McKinsey's 7s framework, it's not enough to have well-trained and skillful crew members if they don't work together with the office employees.

Using the qualitative analysis, it can be concluded that human resources must work together with the managers of each department and the captains in order to make sure all the leaders have a clear view of what the company's corporate strategy and the common goal they have. If all the departments don't work or pull on the same direction, inefficiencies will appear. This is what is being evidenced now in the company. Communication is a key factor on the structure and the development of an organization.

Other important fact is that doesn't matter if a company has a good system like the AMOS system, if the roles and responsibilities are not well defined like is the case of Transgas Shipping Lines; the system instead of helping the daily chores will make them more difficult and might lead to rework, which is the case. In conclusion, if the values of the employees are not aligned with the company's values and the employees don't have clear roles and responsibilities inefficiencies and rework can appear, and they may create a gap on the company between the real situation and the desired situation that might lead into not being as competitive as the competitors or substitutes due to cost and time leaderships.

After that quantitative analysis it can be concluded that the company is lacking of control on their inventories, and over stock and stock of materials is usually a hidden cost in companies. This is one factor that affects the company's economy other factor is the delay on delivery of material which is caused by not having the right stock of materials. These delays also affect the reputation of the company because clients won't get their product shipped on time which can be reflected in the intangible assets and in the lower sales from 2014 to 2015. If the company solves the main problem, they will save more than 300,000 soles that they can invest in different projects of expansion.

Chapter V: Root-Cause Analysis of the Problem

5.1 Fishbone Analysis

The Ichikawa diagram has been done analyzing four main branches on the procurement department: (a) responsibility, (b) management, (c) communication, and (d) system used. This structure shows these four study sections that were agreed with the company and the head of procurement and logistics department after defining the key problem in Chapter II, that is that the roles and responsibilities on the department are not defined. After having explored all the possible causes and put them into the fishbone diagram, as seen in Figure 9, six main causes were identified in agreement with Mario Muñoz, head of logistics and procurement: (a) lack of follow up, (b) inefficient AMOS system, (c) lack of experience and AMOS system training, (d) lack of effective communication, (e) no clear responsibilities and lack of reward/punishment policy, and (f) inefficient order process. This causes will be described and analyzed during this chapter in order to explain why they are the main reasons of the problem and how are they being evidenced in the daily tasks of the procurement department.

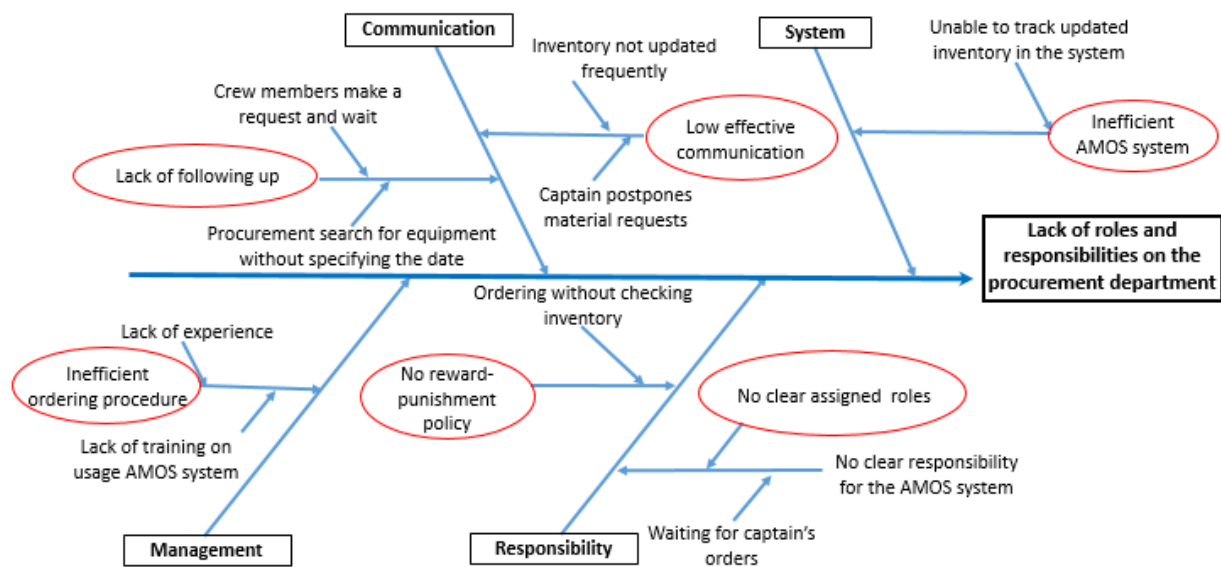


Figure 9. Fishbone diagram.

5.2 Root Causes

5.2.1 Lack of Follow Up

It is evidenced because there is no employee directly assigned to update or track the orders. When employees have made a request in the system, they have to wait for the response of the procurement department. Procurement could take one day or weeks depending on how rare the equipment or consumable is and how busy they are at the time in order to find the suppliers. Hence, it is not abnormal that some orders disappear for months without any notices. Employees who did the request usually forget some of their requests. Normally, there will not be any consequences with some delayed requests except when the ship is about to depart or urgent tasks happen. This is because current order requests are behaving like “request it and then forget it”. The problems have occurred when one day the crew needs to use the requested material but cannot find it. Employees have to start asking procurement or notify them to speed up the process. There are still chances that those requested materials are not being delivered on time. If this happens, employees have to find other solutions or even delay their tasks until they have all needed materials.

This lack of follow up could be eased by following up the requests. Assigned employees to keep communication with the procurement department should help preventing any urgent orders. Employees will also have more windows of opportunities to solve the situations in case of long waiting procurement.

5.2.2 Inefficient AMOS System

The AMOS system has been used for ordering procedure for years, some misunderstandings and frustrations are happening among employees who are involved in the usage of the system. The AMOS system could be the reason of increasing delay cost since it has served the company for all the material ordering. Inefficiency in the system might cause employees to not be able to work efficiently. Employees from procurement department

usually express their concerns and confusion about the remaining inventories in the ship. They have found that the AMOS system couldn't track the real-time inventory and it is needed to be updated only by the crew on the ships. Crew members often forget or delay to update the right inventory because they think that updating it is not their main tasks. If the system could be able to track the inventory without asking crew member to manually change the numbers, those misunderstandings will disappear and efficiency in the whole operation will increase instantly.

Hence, questioning about efficiency of the AMOS system could be the answer of many possibilities that have caused the problems to company. Asking the AMOS system provider to improve or update the system to meet all employees' requirement could be the key to fix current situation.

5.2.3 Lack of Experience and AMOS System Training

Other cause that could originate the problem is that employees who operate the AMOS system still lack of expertise when they have to use it regularly. There is also an observation which has shown that some supervisors could not remember username and password for the system. This has shown that they might have authority but did not pay attention or give priority to the system. Other employees who regularly operate the system could process orders and requests from crew. However, they still need more time with the system in order to adjust or manage all the log in on the system. The procurement team has a problem with managing the requests when there are orders that might be redundant or could not check the updated stock status. Staff in the procurement department has to double check with crew on-board which is more time-consuming. They should have come-up with a protocol or process to deal with what the AMOS system could not deliver. Lacking experience in the AMOS system could be the reason why many employees cannot get rid of some problems caused by the outdated information and communication issues.

Investigating more from the analysis, another reason that employees could not excel their skill or take long time to learn how to use the system is because there is no official training on it. Employees need to learn how to use the AMOS system in order to use it efficiently, learning by experience, trial and error or self-learning would create an unprofessional way of understanding the system, especially with this kind of sophisticated system. Both of employees from the procurement department and the crew members have to learn how to use the AMOS system by their colleagues or manuals. Despite these learning styles are useful to encourage the employee to be more eager to learn by themselves, boost relationship among coworkers and reduce cost of training, the employees should not only know “how to” but also “why” they need to do something on the AMOS system. When there are problems arising from glitch in system or from additional required process, users who are well-trained tend to be able to fix and also alleviate the problems. This is because they know in-depth question and answer of what has been missing and how to tackle the situation in a more integrated way.

Hence, lacking AMOS system training sessions to related employees could be the deeper cause of the problem that has further causing long-term problematic system operation. When there is rotation in organization that replaced new employees to take care of system, those employees will find difficulties adjusting to the system without training session. Moreover, Transgas still need to work more on assigning clear responsibilities to employees as well because no employee is assigned to train their coworkers into the use of the AMOS system.

5.2.4 Lack of Effective Communication

Communication has been a fundamental component in every company’s operation. Transgas employees can use enough communication to deliver messages that they intend to. However, as it can be seen from the analysis, there is still plenty of room to improve

communication in the organization. First of all, Transgas team should set up effective communication in order to solve ambiguous information. For example, procurement team and crew should have come up more effective communication to check latest inventories instead of keeping ask to each other. As it can be seen from current situation, when there is a problem on the AMOS system about inventory that cannot be checked on the system, one team will end-up calling the other department and double check every detail. That communication has a cost in time to procurement, and has delayed ordering processes due to uncertainty in information. This problem seems to continue because employees who are working on the ships do not understand the necessary to keep tracking inventories or have not been assigned to do it.

Second, lack of meetings between the procurement department and the crew members had made problems keep happening from time to time. Each side thinks that they have followed the system which should be enough. However, setting up weekly or monthly meetings about inventory will help not only to update inventories but also clear the air between departments as well.

Third, Transgas should have encouraged more clear the company's structure in order to set all employees on the same pages. A structure that assigns a specific working scope would help employees to minimize ambiguous tasks in all departments. If communication efficiency improves, internal communication will have less errors and also use less time to process the data. The benefits from clearer messages will speed up any current ambiguous process between two departments and will eventually alleviate cost of delay and employees' frustration.

5.2.5 Lack of Reward/Punishment Policy

As mentioned before, Transgas has an employees' structure that has not clear assigned responsibilities. When it comes to some tasks that might be considered as a minor

task or non-core task, employees tend to avoid or postpone those works because they don't want to waste their time on them. Considering the AMOS system as a software that helps process and digitize information, employees who are not related directly the system will try to stay away from it. Employees on the ship tend to response slowly on the system since the AMOS system is not their main task to deal with. They often postpone or delay the response when they have to cooperate with procurement or other departments. However, the main reason is not because they think working with the system is an extra work, it is because they have not been assigned clearly to that task or defined who will have official authority to supervise the system. Only captains hold an AMOS system account but they most of the times ask a crew member to deal with the system.

Looking deeper into the responsibility issue, there are no incentives provided for people who have to deal with the system. A captain won't decrease other tasks for them when he gives more work to a subordinate. The captain also does not provide any rewards for employees who have deal with the system. Assigning more tasks without giving any clear responsibility and proper incentive has made the crew members want to stay away from the system because they think it will not encourage their career path. There is also no punishment policy toward people who failing to work efficiently on the system. This has lower priority perception among employees who are working with the AMOS system. They could delay or ignore the problems with the system without having any obvious consequences.

Lacking incentives and punishments policy have put the problem in the area that no one wants to engage with. It is very important that Transgas should tackle this issue in order to not only improve efficiency but also changing employees' perspective toward their work.

5.2.6 Inefficient Order Process

Procedure is another cause that the company might need to be established in order to fix the current situation. The current way the company does their operations that include log

in, create and send requests, wait for response, and receive what they order are logical but not efficient enough to meet with delay cost and employees' satisfaction. In this situation, subordinates could not solve the problem. Supervisors and management team have to consider to alter some steps in order to improve procedures.

Policies and standards could be introduced to help with this cause. Management team has not provided specific policy toward procurement and procedure. Although employees can work and cooperate with others, they just follow the system without having any KPI or standard to focus on. This method might help improving inefficient order method that is now used since employees would be able to have same universal standard within company. The company could use these measurements to regulate and push employees to improve their working style without telling them directly. Moreover, policies, KPI and standards should provide long-lasting effect on the system since those tools can be applied to any employees whether they are new or not. Captains would feel the pressure from policies and have strong incentive to follow up their subordinates. Subordinates from both procurement department and ships will have to commit to some standards, KPI or policies. Although those tools may cause some complains at first, it is very promising that changing from management policy could indirectly change fundamental procedures and would eventually alleviate the problems.

Chapter VI: Assessed Solution Alternatives

This chapter provides a list of possible solutions that Transgas Shipping Lines can implement to solve the problem identified in previous chapters. After various meetings with the company, it was concluded that the problem was the lack of roles and responsibilities in the procurement department. In order to solve this problem a list of criteria was identified to assess the possible solutions for Transgas.

6.1 Criteria

The following six criteria listed below will be used to evaluate the solutions proposed to Transgas to be able to pick the ideal solution which can be used to solve the problem faced by the company. Using these criteria will help in eliminating unviable solutions and also help in coming up with a good and effective solution.

- Cost/ investment
- Feasibility
- Effectiveness
- Ease of implementation
- Reliability
- Ease of follow up

6.1.1 Cost/ Investment

This is a very important criterion that will be used to assess all the proposed solutions. It is important to assess the cost-benefit analysis of each solution. This will be used to determine if a particular solution is costly to implement and if the benefits to be derived from a solution is worth the cost. The benefit of implementing the solution must outweigh the cost of implementation. The solution has to be economical with high price/performance ratio. Money is a limited resource and therefore must be managed. The following questions will be asked before implementing any solution. Can Transgas afford it? Is it worth the amount of

money being invested? Is there any other way that is less expensive to solve the problem? If an amount of money is invested into implement the solution, how quick will it pay itself? The most practical way to do a cost-benefit analysis is to compare the investment for the implementation of the potential solution with the cost identified in the quantitative analysis part. If the investment needed is more than the cost of the main problem, then the solution will not be financially acceptable. If the investment needed is less than the cost of the main problem, the potential solution is at least financially acceptable.

6.1.2 Feasibility

This criterion will also be used to evaluate each solution. Analyzing how feasible a solution is will help in determining if the solutions are doable while taking into account all factors that might affect it. It includes economical, technological, legal, and other related factors. Checking the feasibility of a solution consist of determining if the solution is actually practicable, logical, useful, understandable and finally, do-able. Also, the solution should not be overly difficult for the intended benefits. The solutions proposed to Transgas have to be simple and direct for the desired outcome. In assessing the solutions, questions will be asked and they are as follows: Can you do it? Is there an easier way to do it? Is this solution much simpler and straightforward compared to other solutions?

6.1.3 Effectiveness

This criterion will be used to measure the degree to which each solution will be successful to produce the desired result; in this case, the desired result is to solve the problem of lack of roles and responsibilities on the procurement department faced by the company. The proposed solutions will be assessed to ensure that they can achieve the goal. This is because there are many solutions that are only partial, that help only to solve a segment of the problem while some solutions require the implementation of several solutions to be applied on the same problem. Therefore, it is important to measure the degree of scope and

superiority of each solution. The following questions will be asked in order to assess the effectiveness of each solution: Can the solution be used to solve the problem? How well does the solution help to solve the problem? Is there any better solution to the problem? All things being equal, is this the best solution?

6.1.4 Ease of implementation

This is also an important criterion to consider when implementing a solution. It is important for each solution to be assessed based on how easy it is to implement and how easy it will be for the employees to adapt to it or to work with it. The recommended solution should be implemented with minimal obstacles. The selected solution has to be very easy for Transgas to implement and therefore, the solution should be organized, seamless and holistically. In assessing if the solution is easy to implement, the following questions will be asked: Does the solution fit the problem? How easy is it to implement the solution? What are the obstacles in the way of implementing the solution? What does the company need to implement the solution? What do the employees need to implement or to apply the solution? Is there any other easier way of solving the problem?

6.1.5 Reliability

In assessing the list of possible solutions available to Transgas, reliability is an important criterion to consider as well. Reliability helps in determining how much a solution can be relied on, the accuracy and also the achievement of the solution. For a solution to continue to work over time, it is important to determine the degree of reliability, consistency and the effectiveness. For this reasons, the following questions will be asked: Will the solutions last beyond expected? Can the solution be relied upon over a long period of time? Will the solution stop working or fail at any given point in time?

6.1.6 Ease of follow up

This is also a criterion that is important to evaluate the list of proposed solutions that are applicable to Transgas. Due to the duration of the consulting project, evaluating the solutions on the basis of how it will be easy for the consultant to follow up with the company is an important factor in any consulting project. In assessing the solution to be implemented, the following question will be asked: How long can the consultant follow up with the implementation of the solution? Is there an easy way to follow up with the company?

6.2 List of Alternative Solutions

- Definition of clear roles, responsibility and establishment of reward and punishment policy.
- Ensure adequate resources.
- Training sessions.
- Assign employees to follow up.
- Establish procedures.
- Change the system.

6.2.1 Definition of clear roles, responsibility and reward and punishment policy

The management of Transgas needs to ensure that every member of the company has an up-to-date job description and this has to be as detailed as possible. This way, it will be difficult for employees not to take on their jobs. Crew members should also have a detailed job description in order to accomplish the expectations of the managers and captains.

After ensuring that everyone has a detailed description of their roles and responsibility on the procurement department in the company, Transgas should ensure that there is a reward and punishment policy in place and that employees are aware of this. When employees are aware that there is a punishment system in place and they are most likely to be punished when they refuse to get their job done or if they do not reach the goals assigned, then it may

motivate them to carry out their task in an efficient and proper way. Also, everyone in the organization needs to understand clearly what his or her roles and responsibilities are and also know the general objective of the company.

Another reason why employees do not take responsibility for their jobs is because they do not care about their work. They really do not understand how their efforts are integrated into the “bigger picture” of the company. It will be of great importance for Transgas to make sure that all employees including the crew members understand how their work ties into the larger goals of the company. Transgas should highlight the importance of what every employee does and also make them understand what the direct or indirect consequences are if they do not do their work properly.

In this case, Transgas is trying to ensure that employees at the vessels update the AMOS system to reduce the amount of unwanted materials and consumables supplied to the vessels. This in turn will help in reducing cost. When employees at the vessels understand that the not updating the AMOS system is causing the company a monetary loss, and the objective of the company is to reduce the cost and increase the employees’ performance, this will assist them in doing their job properly.

6.2.2 Ensure Adequate Resources

This is a quick action the company can take to ensure that employees carry out their roles and responsibilities. The management of Transgas should ensure that employees have the right resources that are needed to do their jobs effectively and efficiently. This is an important step in ensuring and helping people take on responsibility for their work. If they don’t have the right equipment or training needed to do their jobs, it is very easy for them to shun their responsibility.

While carrying out interviews, it was discovered that crew members decide not to update the AMOS system due to the fact that they have slow and bad Internet connection and

also only one email address is available for everyone that works at the vessel. It is recommended that Transgas provides an adequate and stable Internet connection, which is an important element in updating the Amos system. The provision of this will help in reducing the risk of shunning their responsibility. The company is already negotiating with an Internet provider to improve the connection at the vessels.

6.2.3 Provision of training sessions

This is also an alternative solution Transgas Shipping Lines can adopt to reduce the problem of lack of roles and responsibilities of the procurement department. Training is a learning process and the training of employees can help to improve the performance of the employees and also employee morale. Also, training is also a way to demonstrate to employees that they are valued well enough to invest on them.

However, before Transgas implements any training session, the management need to ensure that it will help in making employees take responsibility for their job. Hence, providing training sessions to employees on how to use the AMOS system well will help employees carry out their task without any obstruction and with efficiency and effectiveness.

6.2.4 Assign Employees to Follow Up

The crew members are the major cause of the problem faced by Transgas. Delegating an employee to follow up and ensure that the AMOS system is updated could be an alternative solution to help solve the problem. Delegating the task to follow up with the employees at the vessels will help to ensure that the task is completed and it will help improve the efficiency of workers/employees. This will also lead to effective management, supervision and control of employees. It will also improve and maintain proper communication between the ships and the office.

6.2.5 Establish Procedures

There is no written procedure on how purchasing orders are being initiated down or how the materials are delivered to the ships or for other processes in the procurement department. Procedures should be written, implemented and communicated to all employees in the department. It is important to constantly review the written procedures to be sure they are implemented or carried out effectively and to be sure that these procedures are still current and relevant to the organization. A review cycle could be implemented by Transgas; every one or two years or even frequently the procedures should be reviewed to assess if they are still suitable for the organization; this should also be established on the written document. This will help to ensure that the procedures are in line with the company and also to ensure continuous improvement in the procedures.

6.2.6 Change the System

The AMOS system is the software used by Transgas to process orders right from the initial stage to the final stage. Changing the system used might help in reducing the risk of lack of roles and responsibilities in the procurement department. However, this alternative solution should only be implemented at the last stage after all other solutions have been implemented and the problem still persists. Changing the system from the AMOS system to another system is expensive and it will involve training all employees that use this system to carry out their daily tasks in the office. There are different ways in which the new system can be implemented. It can be implemented at once; this method could be very risky as it could lead to disruption in the organization. The second method is to implement in stages, this way, while introducing the new system, the old system remains in use and it is being faded out gradually. This method is less risky. Transgas should only consider this solution if it is certain that the AMOS system is the cause of lack of roles and responsibility on the

procurement department and a change of system will lead to employees taking responsibility for their actions.

6.3 Evaluation of Solution Alternatives

Table 6 shows the different scores and weights assigned to the criteria, and it was used to evaluate the above listed alternative solutions. Different weights were assigned to the different criteria because some criteria are more important than the others according to the company. For example, cost/investment was given a weight of 5% because Transgas said they will use the resources they now have and don't invest much money on it. A weight of 25% was assigned to both effectiveness and ease of implementation because they are the most important criteria of all the six criteria according to the head of procurement. It is very important for the solution to be implemented by Transgas to be effective in solving the problem and also be very easy to implement.

- Solution 1: definition of clear roles, responsibility and establishment of reward and punishment policy
- Solution 2: ensure adequate resources
- Solution 3: training sessions
- Solution 4: assign employees to follow up
- Solution 5: establish procedures
- Solution 6: change the system

Table 6 shows the evaluation of each solution after assessing them based on the six different criteria, cost; feasibility; effectiveness; ease of implementation; reliability; and ease of follow up. Solution 1, definition of clear roles, responsibility and establishment of reward and punishment policy has the highest score of 8.5 followed by Solution 2, which is ensuring adequate resources. These two solutions are most likely to be implemented to because they have the highest score and fit into most of the criteria. The next two solutions that are likely

to be implemented is Solution 3, training sessions, and Solution 5, establish procedures.

These two solutions have a score of 5.15 and 5.05 respectively.

Solution 4, assign employees to follow up, and Solution 6, change of system are the least likely to be because they have the lowest score. This is because these solutions are expensive to implement, there is a low feasibility in the implementation of the solution, the ease of implementation and follow up is very low although and they are slightly reliable solutions.

Table 6

Evaluation of Solution Alternatives

	Cost / investment (25%)	Feasibility (20%)	Effectiveness (25%)	Ease of implementation (25%)	Reliability (15%)	Ease of follow up (10%)	Total
Definition of clear roles, responsibilities and establishment of reward and punishment policy	10	9	9	9	8	5	8.5
Ensure adequate resources	8	8	7	8	9	4	7.5
Training sessions	6	7	4	5	4	6	5.15
Assign employees to follow up	5	4	6	5	6	3	5
Establish procedures	6	5	5	6	4	4	5.05
Change the system	1	2	7	1	5	3	3.5

Note: 10 = highest and best score possible on each criterion. 0 = lowest and worst score on each criterion.

Chapter VII: Proposed Solution

This chapter provides a detailed information about the solution alternatives provided in Chapter VI and it also explains how the alternative solutions were eliminated based on different criteria explained in Chapter VI and how the final solution was determined. The list of alternative solutions provided in Chapter VI above is as follows:

- Definition of clear roles, responsibilities and establishment of reward and punishment policy
- Ensure adequate resources
- Training sessions
- Assign employees to follow up
- Establish procedures
- Change the system

Based on Table 6, three solutions shall be implemented which are solution 1, 2 & 3, definition of clear roles, responsibility and establishment of reward and punishment policy, ensuring adequate resources is available to get work done and also providing training sessions for employees. Solution 5, establish procedures, was not taken as a final solution on this project because the company was already on a tendering process with external auditors.

These three solutions were chosen because after being assessed using the criteria listed in Chapter VI, they were the solutions with the highest score.

- Definition of clear roles, responsibilities and establishment of reward and punishment policy: looking at the Table 6 provided in Chapter VI, this solution is the cheapest solution to implement out of all the proposed solutions listed. It is also a feasible and effective solution, and easy to implement and follow up. After careful analysis using the criteria, this solution got a score of 8.5 and therefore will be implemented.

- Ensure adequate resources: lack of Internet facilities is the reason why crew members decide to neglect their work. From Table 6 provided above, under the criteria of cost/investment, there was a score of 8 because it is relatively inexpensive to provide the resources needed to carry out their jobs. The feasibility, effectiveness, reliability and ease of implementation are very high because it does not require too much effort to put it in place. After assessing this solution, it got a score of 7.5 and therefore will be implemented.
- Training session: this is also a good solution to be implemented, which will improve employee's skills and assist them in carrying out their job roles and responsibility. Training sessions are expensive compare to the first two solutions provided above, regardless, it is a feasible solution. The effectiveness of this solution is not certain which is why there is a score of 4 under effectiveness, this is because even after training sessions, employees might still decide to shun their responsibilities. It is easy to follow up and to ensure that the company implements the training sessions for their employee and it is relatively easy to implement. The reliability of this solution is low. This solution scored 5.15 and will be implemented.
- Assign employees to follow up: this solution is also an alternative to solving the issue of lack of roles and responsibilities. This solution is a little expensive to implement because it involves getting a new work force/labor to carry out this job role. It is an effective and reliable solution but it is difficult to follow up and the ease of implementation is 5 because it involves recruiting new employees. Assigning an employee to follow up got a score of 5, and for this reason, this solution was eliminated.
- Establish procedures: This solution is feasible and effective. After analyzing it, it got a score of 5.05 This solution was not taken in count for this project because the

company had a parallel project and they were already working on the establishment of standardized procedures for the whole organization, including the procurement and logistics department, in order to apply the ISO standards. If the company succeeds on implementing procedures for the procurement department, the implementation of the proposed solution would be easier.

- Change the system: changing the software used in processing orders called AMOS system is also an alternative solution. This solution is the most expensive solution of all alternative solution and it is also the most difficult solution to be implemented because it takes lots of time and effort to change the system. The effectiveness of this solution is high because it can solve the problem faced by Transgas and the feasibility and ease of follow up is really low because it is almost impossible to follow up with the company to ensure that the new system solves the problem. This solution got the least score of 3.5 after being assessed using the criteria and therefore will not be implemented.

7.1 Proposed Solution for Implementation

After assessing all the alternative solutions using the criteria, it can be concluded that the top three solutions to be implemented which will help in solving the problem of lack of roles and responsibilities faced by Transgas are as follows: (a) definition of clear roles, responsibility and establishment of reward and punishment policy, (b) ensure adequate resources, and (c) training sessions. These solutions are going to be implemented in sequence in three different steps that are being describe in detail on this section.

7.1.1 Step 1: Definition of clear roles and responsibility, and provision of adequate resources

This is the first step that should be taken in solving the issue of lack of roles and responsibilities in the procurement department in Transgas Shipping Lines. Clear definition

of roles and responsibilities helps in increasing the success rate of each employee. The management of Transgas should ensure that for each position in the organization, there is a position description, which includes job description, job tasks, job functions and roles, and lastly the competencies or skills needed to perform the job, this can be done with the help of a responsibility matrix and human resources department. This job description has to be communicated to all employees to ensure that they work as efficiently as possible. When employees are aware of what they need to do, it is difficult for them to neglect their job. After the creation and communication of the job description to the employees, it is let for the employer to provide the adequate resources needed by employees to carry out their job. When a job description and the right resources are in place, it will assist employees in carrying out their job effectively and it will be difficult for them to shun their responsibility. Clear definition of roles, responsibility and provision of adequate resources is the foundation of achieving a greater efficiency and effectiveness in the procurement department in Transgas.

7.1.2 Step 2: Provision of training sessions for all employees

After the definition of clear roles and responsibilities, Transgas should provide training sessions for all employees and supervisors. Training helps to familiarize employees with the organization's rules and regulations and working conditions. Training the employees and supervisors will help in addressing the weakness recognized on the part of employees. Training will strengthen the skills and knowledge of employees on how to use the AMOS system, with this, employees can now work independently without the constant help or supervision. Compared to other alternative solution, training is the only solution that helps improve the skills of employees. Employees should be trained on the procedures on how orders are being initiated and concluded. Also, training sessions on how to use the AMOS system should be done so that employees are aware of how to carry out their jobs efficiently

and the supervisors should be trained as well. Training can be done both on-the-job and off the job. Training might be expensive but it provides the company as a whole and the employees with benefits, which will make the cost and time put into providing the training sessions worthwhile.

7.1.3 Step 3: Implementation of reward and punishment policy

After the clear roles and responsibilities of employees have been defined, Transgas has provided the employees with the adequate resources needed to carry out their individual jobs, and employees have been well trained on how to carry out their jobs efficiently, the next and last step Transgas has to carry out to solve the problem of lack of roles and responsibilities in the procurement department is to introduce the use of reward and punishment policy and it should be communicated to employees. The reward and punishment system will help to motivate employees and ensure they carry out their jobs. When employees are aware that there is a reward and punishment policy in the company they will guide their behavior according to it. Employees should be aware that they can be rewarded if they carry out their roles and responsibility above the expected performance and they could be punished if they fail to meet up with the performance expectation. The reward and punishment policy is used to self-motivate employees.

The management of Transgas is responsible for establishing the reward and punishment system, this can be done by the use of a performance balance scorecard which should be made available to all the employees, this will help in making employees sit up to carry out their job efficiently and effectively.

With the three solutions combined and implemented well, the problem of lack of roles and responsibilities of employees in the procurement department must be solved and it will help to boost the performance of employees, improve success and enhance their productivity. The next chapter provides in detail how these solutions can be implemented.

Chapter VIII: Implementation Plan & Key Success Factors

8.1 Implementation

After deciding the proposed solution, Transgas should execute the proposed solution by dividing the steps into phases. This is because the present problem must include multiple departments and different level of managers. Solving the problem all at once would result in resource overload because many parts of organization will turn into adjustment at the same time. It is recommended that Transgas start implementing the solution from the top management and keep implementing it to lower positions. There are five phases that the company should divide resource into. The following explanation will elaborate how to plan and execute the solution in most effective and efficient way.

8.1.1 Phase I: Review and define roles and responsibilities

The review and definition of roles and responsibilities is aiming to evaluate the current situation of Transgas. The objective of this phase is to redefine roles and responsibilities. In this phase, only top management and managerial level is engaged. This is because the beginning of transforming process must be made from the top level of company. Hence, employees in operational level should not engage in this phase.

The estimated time for reviewing and defining roles and responsibilities is expected to be 1.5 month (six weeks). During first and second week, top management level will set up kick off meeting with all managers about the current roles and responsibilities' issue. Managers and captains will be assigned to gather information about the AMOS system and employees who work with it. At the end of second week the top management must receive all information about roles and responsibilities of people who is involved in the use of the AMOS system and procurement. Table 7 is a guideline for gathering all information.

During the next two weeks, top management team will review all the data from managers and captains. Top managers will discuss with managers about some roles that are

missing or that are not properly assign. Each manager will explain roles and responsibilities that should be added or reduced based on their experience in their department. Redundant tasks, excessive tasks and unassigned tasks will be asked to be presented to top management at this point. Ultimately, top management team would re-define roles and responsibilities, and conclude if they need to be added or reduced. Table 8 is a template for re-defining roles and responsibilities that top management should use.

Table 7

Example Template of Current Roles and Responsibilities

Department:		Manager Name:	Date:
Number	Employee Name	Position	Roles and responsibilities
1	Jorge	Procurement staff	- Process all AMOS requirements
2			

In the last two weeks, managers and captains will discuss with the management team about their revised roles and responsibilities. The purpose of this meeting is to fine-tune the new roles with top management team and reassure that those new responsibilities are proper ones for their departments. This phase has no cost for the company because it will be done on the labor hours of the managers and employees as an internal project, and the company has not assigned financial resources for this phase.

Table 8

Example Template of Re-Defined Roles and Responsibilities for Each Department

Department:			Date:
Number	Remaining role and responsibilities	New roles and responsibilities	Redundant, Unnecessary roles and responsibilities
1			
2			

8.1.2 Phase II: Review workforce and assign roles

The estimated duration for this phase is one month. The personnel involved are managers, captains and employees in operational level. The objective is to optimize roles and responsibilities in each department. Managers and captains will use new information from top management to reorganize their departments and assign roles and responsibilities. They will decide to assign new roles and responsibilities to employees based on their past performances. Hence, during the first two weeks, they will review the tasks that should be added and reduced on each employee.

The next step would be assigning roles. Managers and captains will revise their subordinates' workload. Even though assigning new roles won't be necessary for all employees, it is solely on managers and captains to consider if they would change those roles or not. However, they have to make sure that all the redundant, excessive and unnecessary tasks would be minimized as much as possible. Table 9 could be used as a guideline for conducting the process. This phase has no cost for the company because it will be done on the labor hours of the managers and employees as an internal project, and the company has not assigned financial resources for this.

Table 9

Example Template of New Roles and Responsibilities for Employees

No	Name	Roles and responsibilities	Change
1	Eduardo	IT system Sourcing from supplier Create PO	Create minute of meeting
2			

8.1.3 Phase III: Gap analysis of employees vs. role requirement

The objective is to realize the current employees' performance and to plan to improve those performances to meet the new roles and responsibilities, and to use the gap analysis result for arranging training in Phase IV. The gap analysis will help managers and captains to find the gap between current performance and expected performance for new roles and responsibilities. Table 10 could be used as a guideline for gap analysis. This phase has no cost for the company because it will be done on the labor hours of the managers and employees as an internal project, and the company has not assigned financial resources for this.

Table 10

Example Template of Gap Analysis

Employees' name	Roles and responsibility	Lack	Gap Analysis	
			Need to improve	Competent (no need to improve)
Eduardo	AMOS system coordinator	✓	✓	
Nicolas	Checking inventory IT system			✓

8.1.4 Phase IV: Training

The objective is to train managerial level and operational level the skills needed for closing the gap, and to create new benchmark for performance's standard. Training sessions will be the driver that boosts both performance and management. In this phase, there are two sub-training sessions which are AMOS and managerial training, and operation training.

- Sub-training I: AMOS system and managerial training with a duration of three months and the purpose of making employees become experts with AMOS system and to train managers for higher management skills.

During the sub-training I, both trainings sessions for AMOS system and management skills should start at the same time. For AMOS system training sessions, Transgas will hire the AMOS specialist to train their assigned employees. The purpose of training is to increase working efficiency with AMOS system.

The management training will be carried out by CENTRUM professors. This is because professors from CENTRUM have been working with Transgas before and they would already know the company culture and key persons. Professors would train managers and captains about leadership and internal communication. The result of learning would be better understanding of subordinates, more effective communication between departments, and how to persuade their subordinates.

- Sub-training II: Operational training. Duration of three months and the purpose is to train employees to be able to cooperate efficiently among different departments. The participants will be employees who would become expert/specialist for AMOS system and all Managers and Captains will also be trained.

After sub-training I finished, managers and captains will conclude what they have learned and start to plan for operational training. Employees are expected to attend the training in order to meet their manager's standard. Since operational training would need attendance from most of employees, it is recommended that Transgas conducted the meeting on half-day during weekdays.

In Sub-training II, managers and captains should train their employee on team performance. It is important that there is at least one training session to let employees from different departments work together. Promoting cross-functional activities would help increasing understand the differences in each department. During the sub-training II, managers and captains should track their own subordinates in order to see the change before and after the training session.

8.1.5 Financial cost for phase IV

Phase IV is the only phase that need a budget for AMOS specialist and CENTRUM professor. Table 11 shows the estimated cost for training session.

Table 11

Estimated Cost of Training Sessions

List of trainer/coach	Compensation/day (Soles/day)	Duration of training (weeks)	Frequency of training (sessions/week)	Cost of training in total (Soles)
AMOS specialist	500	4 Weeks	1 sessions/week	2,000
CENTRUM Professor	1,500	6 Weeks	1 sessions/week	9,000
			Total cost	11,000

8.1.6 Phase V: Implement reward and punishment policy

- Duration: two months
- Purpose: to set up long term policy that will maintain higher standard in organization.
- Participants: All Employees

Reward and punishment policy will be established to encourage employees to meet their standards. The key element of this phase is to create clear and transparent benchmarks for all. Managers and captains will assign benchmarks related to employees' roles and responsibilities.

The following table is a template for performance rating. This phase has no cost for the company because it will be done on the labor hours of the managers and employees as an internal project, and the company has not assigned financial resources for this.

Table 12

Template for Employee's Performance Assessment

Employees' name	Criteria for employee's performance assessment					
	Training	Complete tasks on time	Response time	Problem solving	Colleague score	Overall (Max=50)
A	8	7	9	7	6	37
B	6	2	4	10	7	29
C	7	8	6	3	8	32

From Table 12, Managers and captains will keep track all criteria based on their past performance. The assessment will start from the training phase (Phase IV) and will be end at the end of quarter. Each criterion will be scored based on following framework:

Table 13

Framework to Provide Score in each Criteria

Criteria name	Framework	Scoring
Training	How well did employee perform on the training?	
Complete tasks on time	How often did employee fail to deliver task on time? Did tasks meet all standards?	Outstanding - 10 Good - 8,9 Average - 6-7 Fair - 5 Below standard - <5
Response time	How long does it usually take to response from employees?	
Problem solving	When you assign complicated tasks to employees, how well did they perform?	
Colleague score	Was there any compliments from employees	
Overall	Combine all the scores	PASS >=25 FAIL < 25

Each criterion will have a maximum score of 10. Scoring at least 5 will pass those criteria. If the employee cannot pass each criteria, managers need to send to call the employee for asking about the issues. Employees who get very high score in the chart will be encouraged to advance for higher positions. On the other hand, if there is any employee who gets lower than 25 of score, the managers will call those employees to find the root cause and set up a plan to fix the problem. Finally, a reward will be given to the three employees that get the highest scores. Three thousand soles will be given at the end of the implementation process to the three best employees. Figure 10 shows the Gantt chart of the implementation.

8.2 Key Success Factors

In order to properly implement the proposed solution in the company, and to make sure it has a positive impact on it, different key success factors had been identified and they will need to be supported by a quality control system during the whole process.

As seen in Chapter III, the importance of human resources intervention in different areas and good communication are key for a company. Knowledge transfer and training the employees is also key in a company like Transgas, if the employees know the processes and how to use properly the resources the company gives like the AMOS system their efficiency will increase. In Figure 12, the key success factors are having an established and well communicated organizational culture, access to funding for training the employees, recruitment of the adequate employees to fulfill the new roles and responsibilities created and knowledge transfer and communication.

The risks involved are that some of the employees may reject the new organizational culture or not be open to change. Other risk is that middle management will not be capable enough to communicate effectively the new organizational culture. To avoid these mentioned risks and enhance the enablers, the company should implement and define a communication plan or communication matrix.

To have the access for funding and train employees, the enabler identified is that the top management is committed and willing to invest money. Other enabler will be to show the top management a plan on how these training sessions will improve the performance of the employees, show standardized KPI and create new ones in order to show the improvement in a quantitated way. Finally, the last enabler will be a budget dedicated only for training the employees. The risks involved would be that the top management do not consider important to train the employees and assign the budget and resources to other projects.

The recruitment of the adequate employees to fulfill new roles and responsibilities will depend on different enablers. The main one is that the human resources department makes a good selection of the future employees and make sure that they understand the organizational culture of the company. The risk for this key success factor is the high turnover rate that might appear in the company due to the new organizational culture in which the new employees and old ones are not able to adapt or to comply it. This turnover risks could be diminished and the enabler could be enhanced by applying correctly the reward and punishment policy.

The risks involved are that some of the employees may reject the new organizational culture or not be open to change. Other risk is that middle management will not be capable enough to communicate effectively the new organizational culture. To avoid these mentioned risks and enhance the enablers, the company should implement and define a communication plan or communication matrix.

To have the access for funding and train employees, the enabler identified is that the top management is committed and willing to invest money. Other enabler will be to show the top management a plan on how these training sessions will improve the performance of the employees, show standardized KPI and create new ones in order to show the improvement in a quantitated way. Finally, the last enabler will be a budget dedicated only for training the

employees. The risks involved would be that the top management do not consider important to train the employees and assign the budget and resources to other projects.

The recruitment of the adequate employees to fulfill new roles and responsibilities will depend on different enablers. The main one is that the human resources department makes a good selection of the future employees and make sure that they understand the organizational culture of the company. The risk for this key success factor is the high turnover rate that might appear in the company due to the new organizational culture in which the new employees and old ones are not able to adapt or to comply it. This turnover risks could be diminished and the enabler could be enhanced by applying correctly the reward and punishment policy.

Knowledge transfer and communication enablers are team cohesion, effective team meetings, usage of analytical tools and best practices. The risk is the lack of knowledge or know-how from the actual employees of the company, miscommunication and misunderstanding between employees from different departments and not well defined communication matrixes. The key actions to avoid the risks and enhance are use the continuous improvement cycle, define schedules with deadlines, ask for feedbacks and work with visual management indicators to make sure that every employee knows what they have to do and the performance they are having.

				2017										
		Start date	End date	Responsible	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Phase I: Review and define roles and responsibilities		Month 1	Month 2	Mario Muñoz	■	■								
Phase II: Review workforce and assign roles		Month 2	Month 3	Mario Muñoz		■	■							
Phase III: Gap analysis of employees vs. role requirement		Month 3	Month 4	Mario Muñoz			■	■						
Phase IV: Training		Month 5	Month 10	Mario Muñoz					■	■	■	■	■	■
	AMOS training	Month 5	Month 6						■	■				
	Managerial training	Month 5	Month 7						■	■	■			
	Operational training	Month 8	Month 10									■	■	■
Phase V: Implement reward and punishment policy		Month 9	Month 10	HR Manager									■	■

Figure 10. Gantt Chart.

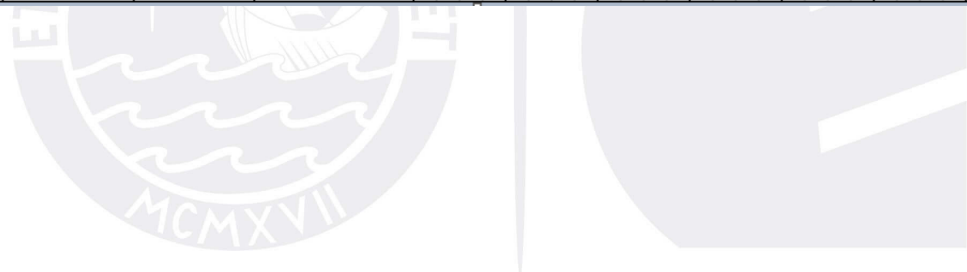




Figure 11. Key success factor pyramid.



Chapter IX: Expected Outcomes

The final outcome will be solving the main problem which is to define the clear responsibilities and roles of everyone in the organization and get the jobs done. There are six major aspects which are critical to measure the success of the outcome. First of all, the real material management should work efficiently after the recommendations are implemented. The crew members should fully understand the importance of updating the usage of the materials in the ship warehouse and update it on time. The office member should track the inventory daily and both sides should have smooth communication with each other. The reward and punishment system should be fully functioned and drive the employees to do what they should do. If these are achieved, both the crew members and the office staff will have clear idea of how much inventory they have. In such case, the usage of certain materials will become predictable and it will take less time if the predictable needs are ordered in advance. At the same time, once the real material management system is established and the inventory becomes traceable, the repeated order problem will no longer exist. Financially, it will save the cost of repeated orders and prevent the delay problems from happening.

Second, Transgas will be able to build a better relationship with the suppliers. As mentioned in the last section, a successful real material management system is able to provide the predictable orders. For those most frequently ordered supplies, long-term relationship will work better for Transgas. If the needs are predictable, it will become possible to order a large amount of supplies at once, which usually leads to a cheaper cost and better relationship with the suppliers. At the same time, it will take less time to process the order with familiar suppliers and it will be more reliable.

Third, Transgas will have a more successful organizational culture over time. There are three aspects of the successful organizational cultural: Self-motivated, team-work oriented and continuous learning. All the policies, regulations and incentive system are not

only the tools to fix the existing problems but also the tools to build a self-motivated organizational cultural. In the Key Successful Factor part, this report mentioned that a successful organizational cultural is the base of the pyramid. Policies and regulations are never sufficient to guide every detail in the organization but a self-motivating organizational culture could. With the policies and regulations, especially the performance balanced scorecard, the staff will soon understand what is the right thing to do to help the company. With the incentive system, the staff will understand that helping the company is the best way to build their personal careers, which will further contribute to their self-motivated work patterns. Once the self-motivated organization is established, staffs will have their own opinions about the operation of the company and the best advice are always coming from the front line. Except for these advantages, the solution this consulting report gave also emphasize a lot on the team works. As the employees work as a team and have a great dynamic in the team, synergy will be created within the company. Continuous training is a very important part of the recommendations. As the training programs go on, the trainee will establish their own ways of learning, which contributes to the continuous learning organizational cultural. In a word, this kind of organizational cultural will also become the most powerful weapon for Transgas to compete in its field, which drives the company to reach the strategic goals stated by the company.

Fourth, Transgas will have a better functioned company structure and a more efficient management team. Based on the solutions, managers should be able to allocate the right and sufficient resources to the right person while assigning the work. Meanwhile, the performance balanced scorecard is not only for the employees but also for the managers, so that the managers will also have to obey all the regulations and policies. Their performance will also be assessed by the performance balanced scorecard and will be rewarded or punished according to their performance. The company will also have a better functioned

structure. For example, there is a position called quality control coordinator in the company structure, as seen in Figure A1. Unfortunately, this is now an empty position. With the implementation of the recommendations, this position should have a clear definition of responsibility and role and help the company implement the KPI system. With a better understanding of what the managers should do, the whole supply system will become more adjustable, together with the continuous learning organizational culture, the efficiency of the system could be continuously improved.

Fifth, Transgas will have more suitable future employees. On one hand, the training sessions will help the employees and the manager continuously improve their personal capabilities and will help them do their jobs more efficiently. On the other hand, with the clear definition of responsibilities and roles, the recruitment requirement will be more detailed and oriented, which helps the company to recruit the right persons from the very beginning.

Sixth, the most direct outcome will be the savings on the financial cost due to the main problem. As mentioned in the quantitative analysis in Chapter IV, the total direct financial cost is 363,063 soles. The successful implementation of the recommendations should eliminate all this cost and save approximately 300,000 soles for the company per year. Besides, there will also be a countless saving on the opportunity cost for the company.

Chapter X: Conclusions & Recommendations

10.1 Conclusions

The competition in the shipping industry is very high due to the power of the clients regarding the price they want to pay and time in what they want their product to be delivered. Due to this fact, the main purpose of this documents is to find an opportunity to improve the efficiency of the company's procurement and logistics department regarding the supply of the consumable the vessels need to sail and deliver the client's products.

1. Due to the political environment that Peru offers to the company, they must take advantage of it and try to expand to more international markets. The company must enhance and boost the opportunities the market offers by using the strengths it has. Their skillful crew members and the years of experience in the market are the main pillars of the company that make them have a competitive advantage.
2. The identified key problem was the lack of well-defined roles and responsibilities in the company. This was evidenced after several meetings with the company and analyzed deeply with them. It was possible to evidence this because the AMOS system works properly and the skillful crew members were not the reason why there were problems on the company.
3. The literature consulted and reviewed was used in order to do a better and a deeper analysis on the company and how the problem could be solved. It was determined that the role of human resources inside a company is key in order to have all departments aligned and clear roles and responsibilities. The root cause analysis was helpful because the company's employees were familiar with it.
4. The analysis of the problem in the company was divided into qualitative and quantitative analysis. The qualitative analysis was used to find out how the company was operating at the moment and how the departments of the company

were interacting with each other according to the structure they had. McKinsey's 7s framework resulted to be very useful for this purpose.

5. The quantitative analysis was used to determine that the company was losing money due to the lack of clear roles and responsibilities that lead into low performance and also lost of reputation perceived by the clients that was represented in lower sales and in a loss of intangible asset.
6. In order to solve the key problem different criteria were used to determine the best solution. The criteria used were: cost/investment, feasibility, effectiveness, ease of implementation, reliability and ease of follow up. These criteria served to analyze the proposed solutions that were: definition of clear roles, responsibilities and establishment of a reward and punishment policy; ensure adequate resources; provision of training sessions; assign employees to follow up; review procedures; and change the AMOS system.
7. The proposed solution will consist on a three-step solution. Step one will consist on the definition of clear roles and responsibility, and provision of adequate resources. Step two: provision of training sessions for all employees. Finally, step three: implementation of reward and punishment policy.
8. The implementation plan consists of five phases and these phases will help to align the employees into the goals and fit into the corporate strategy. This will make the decision makers and top managers to support the implementation plan.
9. The participation of human resources is a key factor in every project and every department of a company because they will be the ones supporting the changes and helping to recruit the talent required or make the employees to fit into the positions and roles required on the company.

10.2 Recommendations

Additionally, to the proposed solution given to Transgas Shipping Lines in order to tackle the key problem identified, the following recommendations will help the company to improve their performance, maintain their competitive advantage and keep being leaders in their industry. The first recommendation is for the CEO of the company; the second, third and fourth recommendations are for the HR manager and the rest are for the logistics manager and the head of procurement.

1. Managers should have weekly meetings in order to establish and present their necessities from other departments in order to achieve their goals and the common goal of the company. They should establish cross departmental KPIs in order to have a better control on how the company is working.
2. Human resources department should involve more in the daily company's operations in order to know if the departments have the employees, resources and the talent they need to accomplish the expected goals of the company.
3. Human resources should establish a communication protocol on the organization, determine which is the formal way of communicating between departments and train the employees on effective communication skills. By doing this, employees will improve their performance while working with personnel from other departments and daily operations will be done faster.
4. Human resources department should implement a career development program on the company in order to motivate the employees and show them what could be the next step on their professional career or the new responsibilities they could have in the organization if they accomplish the goals of their actual job position.
5. Logistics department should organize a monthly or weekly stock control on every vessel in order to have a well-defined control of how much money is being wasted

or not properly used by the company. Until now, there is no way to calculate how much the over request of materials and the consumables in stock are costing to the company.

6. Develop and implement a quality management system for the whole department in order to be able to control the process in an efficient way. Use the ISO standards that the company actually has but they do not put in practice.
7. Future projects to eliminate the no control of consumables inventory on every vessel should include the implementation of a bar coding system that will automate update of inventories and the hiring of a storekeeper on each vessel.

If the company takes these recommendations into account plus the implementation of the proposed solution, Transgas Shipping Lines would be able to overcome the actual problem and all the consequences it has with them. It is expected that this project will eliminate the low efficiency and performance of the employees, improve communication between departments, define the roles and responsibilities on the procurement department and finally, keep updated the inventories of consumables on every vessel.

References

- Arbaiza, L. (2016). *Dirección de recursos humanos: El factor humano* [Human resources management: The human factor]. Lima, Peru: Universidad ESAN.
- Baker, S. (2004). *The inventory management challenge - management briefing: The inventory management challenge*. Bromsgrove, England: Aroq Limited.
- Bartee, E. M. (1973). A holistic view of problem solving. *Management Science (Pre-1986)*. Retrieved from <http://search.proquest.com/docview/205791043?accountid=28391>
- Berardinelli, C. F. (2016). To DMAIC or not to DMAIC? *Quality Progress*, 49(1), 36. Retrieved from <http://search.proquest.com/docview/1762043854?accountid=28391>
- Bernstein, J. (2000). *Information Technology in Peru - Analysis: Impacts on Business*. Retrieved from <http://www.jsbernstein.com/initeb/impacts.html>
- Cambridge University Press. (2016). *Cambridge Dictionary*. Cambridge: Cambridge University Press. Retrieved from <http://dictionary.cambridge.org/dictionary/english/problem>
- Carlucci, D. (2010). Evaluating and selecting key performance indicators: An ANP-based model. *Measuring Business Excellence*, 14(2), 66-76. doi:<http://dx.doi.org/10.1108/13683041011047876>
- Co, H. C., & Barro, F. (2009). Stakeholder theory and dynamics in supply chain collaboration. *International Journal of Operations & Production Management*, 29(6), 591-611. doi:<http://dx.doi.org/10.1108/01443570910957573>
- Chopra, S., & Meindl, P. (2013). *Supply chain management: strategy, planning, and operation*. Boston, MA: Pearson.
- Crampton, P., Perera, R., Crengle, S., Dowell, A., Howden-Chapman, P., Kearns, R., Southwick, M. (2004). What makes a good performance indicator? devising primary care performance indicators for New Zealand. *The New Zealand Medical Journal*

- [Online], 117(1191). Retrieved from
<http://search.proquest.com/docview/1033751955?accountid=28391>
- Dessler, G., Varela, R., & Pineda, L. E. (2011). *Administración de recursos humanos: enfoque latinoamericano* [Human resources management: latinamerican perspective] Mexico D.F., Mexico.: Prentice-Hall.
- Eichinger B, Ulrich D. (1995) Are You Future Agile? *Human Resources Planning*; 18(4): 30-41.
- Focus Economics (2016). *Peru Economic Outlook*. Retrieved from <http://www.focus-economics.com/countries/peru>
- Foreign & Commonwealth Office – UK Government (2015). *Overseas Business Risk – Peru*
 Retrieved from <https://www.gov.uk/government/publications/overseas-business-risk-peru--2/overseas-business-risk-peru>
- Giroux, I. (2009). Problem solving in small firms: An interpretive study. *Journal of Small Business and Enterprise Development*, 16(1), 167-184.
 doi:<http://dx.doi.org/10.1108/14626000910932944>
- Gupta, P. (2006). Beyond PDCA-A new process management model. *Quality Progress*, 39(7), 45-52. Retrieved from
<http://search.proquest.com/docview/214765105?accountid=28391>
- Harris, R. (2012). *Criteria for Evaluating a Creative Solution*. Retrieved from
<http://www.virtualsalt.com/creative.htm>
- Ivanovs, A. (n.d.). *How to pick the best KPIs for your business*. Retrieved from
http://www.huffingtonpost.com/alex-ivanovs/how-to-pick-the-best-kpis_b_10305896.html
- Johnson, C. N. (2016). The benefits of PDCA. *Quality Progress*, 49(1), 45. Retrieved from
<http://search.proquest.com/docview/1762043658?accountid=28391>

- Khandekar, A., & Sharma, A. (2005). Managing human resource capabilities for sustainable competitive advantage: An empirical analysis from Indian global organizations. *Education & Training*, 47(8), 628-639. Retrieved from <http://search.proquest.com/docview/237077552?accountid=28391>
- Latham, S. (2007). Setting uniform key performance indicators. *Pulp & Paper*, 81(9), 21. Retrieved from <http://search.proquest.com/docview/209824017?accountid=28391>
- Liker, J. (2004). *The Toyota Way*. New York, NY: McGraw-Hill.
- Liker, J. and Hoseus, M. (2008), *Toyota Culture – The Heart and Soul of the Toyota Way*. New York, NY: McGraw-Hill.
- Nations Encyclopedia (n.d.) *Peru - Environment*. Retrieved from <http://www.nationsencyclopedia.com/Americas/Peru-ENVIRONMENT.html>
- Manos, A. (2007). The benefits of kaizen and kaizen events. *Quality Progress*, 40(2), 47-48. Retrieved from <http://search.proquest.com/docview/214768622?accountid=28391>
- Marksberry, P., Bustle, J., & Clevinger, J. (2011). Problem solving for managers: A mathematical investigation of Toyota's 8-step process. *Journal of Manufacturing Technology Management*, 22(7), 837-852. doi:<http://dx.doi.org/10.1108/17410381111160924>
- McKinsey & Co. (2008). *Enduring Ideas: The 7-S Framework*. Retrieved from <http://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/enduring-ideas-the-7-s-framework>
- Mollar-Maersk, A. (2015). *Shipping Industry Analysis*. Retrieved from <https://www.ukessays.com/essays/economics/shipping-industry-analysis-a-p-mollar-maersk-economics-essay.php>

- Nilakantasrinivasan, N., & Nair, A. (2005). DMAIC failure modes. *ASQ Six Sigma Forum Magazine*, 4(3), 30-35. Retrieved from <http://search.proquest.com/docview/213849955?accountid=28391>
- Perloff, J. and Carlton, D. (2004), *Modern Industrial Organization*. Englewood Cliffs, NJ: Prentice-Hall.
- Polischuk, T. (2009). What's lean mean? *Package Printing*, 56(2), 30-32. Retrieved from <http://search.proquest.com/docview/224553240?accountid=28391>
- Polonsky, M. J., & Scott, D. (2005). An empirical examination of the stakeholder strategy matrix. *European Journal of Marketing*, 39(9), 1199-1215,1221. Retrieved from <http://search.proquest.com/docview/237028412?accountid=28391>
- Porter, M. (2008). The Five Competitive Forces That Shape Strategy. *Harvard Business Review*, 86(1), 78-93.
- Project Management Institute. (2013). *A guide to the project management body of knowledge (PMBOK guide)*. Pennsylvania, PA: Project Management Institute, Inc.
- Rahardjo, S. (2014). New roles of human resources in facing the changing challenge of business environment. *International Journal of Management Research and Reviews*, 4(4), 464-470. Retrieved from <http://search.proquest.com/docview/1525827155?accountid=28391>
- Russell, R. S., & Taylor, B. W. (2011). *Operations management: creating value along the supply chain*. New Jersey, NJ: John Wiley & Sons.
- Shore, H. (2015). *The Importance of Defining Employee Roles*. Retrieved from <https://www.linkedin.com/pulse/importance-defining-employee-roles-howard-shore>
- Sistema Portuario Nacional. (n.d.). *Información Preliminar de Puertos a nivel Nacional*. Retrieved from <http://www.mincetur.gob.pe/newweb/Portals/0/PUERTOS.pdf>

UNCTAD. (2014). *Development in International Seaborne Trade*. [online] Retrieve from:

http://unctad.org/en/PublicationChapters/rmt2015ch1_en.pdf

Williams, B. D., & Tokar, T. (2008). A review of inventory management research in major logistics journals. *International Journal of Logistics Management*, 19(2), 212-232.

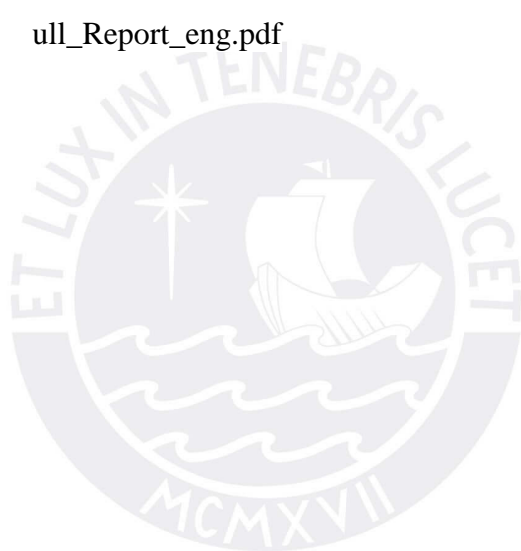
doi:<http://dx.doi.org/10.1108/09574090810895960>

World Bank. (2016). *Peru Overview*. Retrieved from

<http://www.worldbank.org/en/country/peru/overview>

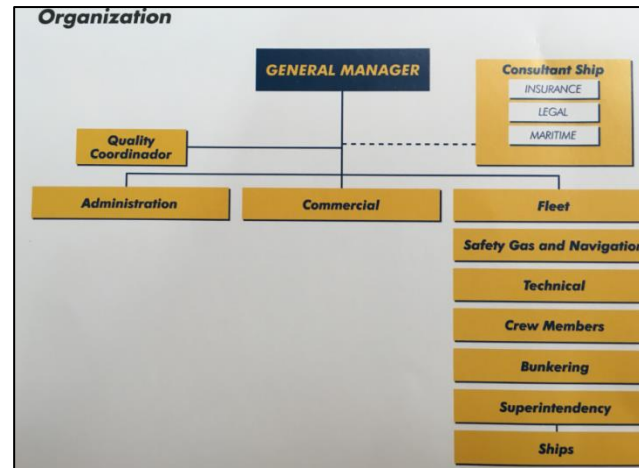
World Bank (2006). *Republic of Peru Environmental Sustainability: A Key to Poverty Reduction in Peru, Country Environmental Analysis*. Retrieved from

http://siteresources.worldbank.org/INTPERUINSPANISH/Resources/PERU_CEA_Full_Report_eng.pdf



Appendix A: Organizational Structure and Financial Statements

2015



2016



Organigrama Funcional Una estructura moderna



Figure A1. Organizational structure. Adapted from *Transgas Shipping Lines S.A.C.* (p. 2), by Transgas Shipping Lines S.A.C., 2016, Lima, Peru: Author.

Table 14

Income Statement

OPERATING INCOME	2014	2015
Gross Sales	S/.63,773,073.00	S/.35,320,462.00
Other operating income	S/.3,749,271.00	S/.3,696,086.00
Total Gross Income	S/.67,522,344.00	S/.39,016,548.00
Cost of Sales		
Cost of sales (operations)	S/.48,364,821.00	S/.32,505,972.00
other operating costs	S/.0.00	S/.0.00
Total operating costs	S/.48,364,821.00	S/.32,505,972.00
GROSS PROFIT	S/.19,157,523.00	S/.6,510,576.00
Selling expenses	S/.0.00	S/.0.00
Administration expenses	S/.7,693,814.00	S/.6,858,247.00
Other incomes	S/.1,827,222.00	S/.5,881,942.00
Operating Profit	S/.13,290,931.00	S/.5,534,271.00
Financial income	S/.29,511.00	S/.632.00
Exchange rate profit	S/.1,514,513.00	S/.1,496,408.00
Financial expenses	S/.538,604.00	S/.480,611.00
Exchange rate losses	S/.1,701,731.00	S/.1,284,874.00
Income before taxes	S/.12,594,620.00	S/.5,265,826.00
Legal expenditures	S/.589,834.00	S/.0.00
Taxes	S/.3,362,054.00	S/.0.00
NET INCOME	S/.8,642,732.00	S/.5,265,826.00

Note. Data from "Transgas Shipping Lines Annual Report – 2014 & 2015", Transgas Shipping Lines S.A.C., 2016, Lima, Peru: Author.

Table 15

Balance Sheet (Part 1)

	2014	2015
Assets		
Current assets		
Cash	S/.2,778,314.00	S/.2,673,418.00
Receivable accounts	S/.5,025,909.00	S/.7,259,759.00
Payments in advance	S/.136,423.00	S/.503,341.00
Estimated doubtful collection	-S/.1,884,083.00	S/.22,948.00
TOTAL CURRENT ASSETS	S/.6,056,563.00	S/.10,459,466.00
Non current assets		
Non current assets stock	S/.2,317,984.00	S/.0.00
Other non current assets	S/.1,797,082.00	S/.0.00
Financial investments	S/.9,553,976.00	S/.9,618,252.00
Financial leasing	S/.551,980.00	S/.33,818.00
Fixed assets	S/.7,621,800.00	S/.5,829,470.00
Depretation of fixed assets	-S/.1,735,443.00	S/.0.00
Intangible assets	S/.29,683.00	S/.5,910.00
Other assets	S/.50,544.00	S/.0.00
TOTAL NON CURRENT ASSETS	S/.20,187,606.00	S/.15,487,450.00
TOTAL ASSETS	S/.26,244,169.00	S/.25,946,916.00

Note. Data from "Transgas Shipping Lines Annual Report – 2014 & 2015", Transgas Shipping Lines S.A.C., 2016, Lima, Peru: Author.

Table 16

Balance Sheet (Part 2)

<u>Liabilities and equity</u>		
Current liabilities		
Bank overdrafts	S/.52,648.00	S/.8,651.00
Legal tributes	S/.647,890.00	S/.668,055.00
Salaries and shares	S/.323,246.00	S/.0.00
Payable accounts	S/.3,547,470.00	S/.5,630,698.00
Financial obligations	S/.2,286,144.00	S/.0.00
Total current liabilities	S/.6,857,398.00	S/.6,307,404.00
Non current liabilities		
Financial obligations	S/.574,811.00	S/.0.00
Other payable accounts	S/.50,679.00	S/.0.00
Total non current liabilities	S/.625,490.00	S/.0.00
Equity		
Stockholders equity	S/.2,500,000.00	S/.2,500,000.00
Legal reserves	S/.238,658.00	S/.500,000.00
Retained earnings	S/.3,428,004.00	S/.11,373,686.00
Net income	S/.12,594,619.00	S/.5,265,825.00
Total Equity	S/.18,761,281.00	S/.19,639,511.00
Total liabilities	S/.26,244,169.00	S/.25,946,916.00

Note. Data from "Transgas Shipping Lines Annual Report – 2014 & 2015", Transgas Shipping Lines S.A.C., 2016, Lima, Peru: Author.

Appendix B: Interviews Summary

Table 17

Interviews Summary

Staff Interviewed		Conclusions
Position	Name	
General Manager	Alonso Burgos	Miss communication between departments is frequent, this leads to re works and time consuming daily operations that could be done in less time.
Manager	Juan Carlos Jimenez	
Manager	Corina Figueroa	The company know there is an existing problem that is evidence for many years but they have not tried to solve it.
Head of Logistics and Logistics	Mario Muñoz	Lack of involvement of the human resources department on assigning roles to each employee.
Accounting Analyst	Ivan Rivera	The new CEO wants to act as a sponsor for this new project on the procurement department. He is involved on any projects now that want to improve the operations of the company.
		The company has two main activities: operation of the vessel and maintenance of the vessels.
		Delay problems on the procurement department can involve high costs due to penalties and payments on the ports.
		Company's accounting system is a special one due to the number of vessels they have.