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THESIS TO OBTAIN THE DEGREE OF MASTER IN BUSINESS ADMINISTRATION

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Dedications

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Abstract

Transgas Shipping Lines S.A. is a Peruvian shipping company specializing in the Maritime transport of Liquefied Petroleum Gas, Crude Oil and by-products, and Chemical products. In 1991, the company began to transport LPG between Peruvian ports. Seven years later, they began to conquer international markets, reaching important places on the West Coast of South America, the Caribbean region and some countries of the Asian continent. This is an example that as time goes on, the market becomes more competitive and new challenges arise, where companies have to respond with new strategies. In this sense, Transgas seeks to improve its performance not only in the core areas, but also within the support departments such as a logistics and operations department.

After the analysis of the company's current situation, the main problem has been defined as the ineffective control, management and measurement of the logistics and operations department. The qualitative and quantitative analysis of this problem concludes that the company is affected in different activities within the organization. At the same time, the company presents economic losses and decrease in the income statement due to low efficiency and the ignorance of the current performance.

The solution presented in this report has a set of steps to follow which has as a final product the elaboration of a dashboard, where the Key performance indicators of the department in the study will be shown. The implementation of this project consists of 4 phases which start with the change of culture, followed by the redefinition of the processes, the systematization of information and finally the creation of the dashboard. This implementation will allow the company to measure its performance, control its processes and thus improve its operations, with the aim of providing a high-quality service to their clients. The total investment for this project of 38 weeks was calculated to be S/. 28,000 soles.

Resumen Ejecutivo

Transgas Shipping Lines S.A. es una empresa naviera peruana, especializada en el transporte Marítimo de Gas Licuado de Petróleo, Petróleo Crudo y derivados, y Productos Químicos. En el año 1991 se inició transportando GLP entre puertos peruanos y siete años después se lanzaron a la conquista de los mercados internacionales, logrando importantes plazas en la Costa Oeste de América del Sur, la región del caribe y algunos países del continente asiático. Ello es claro ejemplo que a medida que el tiempo pasa, el mercado se vuelve más competitivo y con nuevos retos, donde las empresas tienen que responder con nuevas estrategias. En este sentido la empresa Transgas busca mejorar su rendimiento no solo en las áreas Core, sino también dentro de los departamentos de soporte como es caso de departamento logístico y de operaciones.

Luego de realizar el análisis de la situación actual de la empresa se definió como problema principal el inefectivo control, gestión y medición del departamento de logística y operaciones. El análisis cualitativo y cuantitativo de este problema concluye que la compañía se ve afectada en diferentes actividades de la organización y que presenta pérdidas económicas y disminución de ingresos por cuestiones de eficiencia y desconocimiento del rendimiento actual.

La solución que se plantea en este reporte tiene un conjunto de pasos a seguir que tiene como producto final la elaboración de un tablero de control, donde se plasmará los indicadores claves del área en cuestión. La implementación de este proyecto consta de 4 fases el cual inicia con un cambio de cultura, seguido por la redefinición de los procesos, la sistematización de la información y finalmente la creación del tablero de control. Dicha implementación permitirá a la compañía medir su rendimiento, controlar sus procesos y así poder mejorar sus operaciones, ello con el objetivo de brindar un servicio de alta calidad. La inversión total para este proyecto de 38 semanas se calculó en S /. 28.000 soles.

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Chapter I: General Situation of the Organization

1.1. Presentation of the Organization

Transgas Shipping Lines (Transgas) is a Maritime Transportation Company that develops the operation and management of Maritime vessels as well as the movement and trade of specialized goods. It started operations on July 11th, 1991. The company headquarter is located in Lima, Peru. The business operation is composed of (a) shipping services which involve cargo capacity for liquefied petroleum gas, oil derivatives, and chemicals; (b) administration and management of customer's ships or other owners for hydrocarbons transportation; and (c) the charter of ships to attend specific services of short-journey hydrocarbons transportation. By the year 2014, Transgas Shipping Lines was considered the largest and the most efficient shipping company this side of the world (Transgas, 2017). The main reason of that is due to the total cargo capacity composed of 14 gas tankers with a capacity of 154501 cbm and two multipurpose vessels with a capacity of 2852 TEU.

Transgas has the mission "To provide quality services, in a safe and sustainable way, complying with national and international regulatory requirements in order to meet the needs and exceed the expectations of the customers" (Transgas, 2017). In this statement there are three concepts which have a special meaning for the company: (a) quality, focused on the performance, work by processes and continuous improvement; (b) security, towards human life and cargo; and (c) sustainability, giving a focus on social, economic and environmental efficiency and effectiveness.

Regarding the vision of the company, the objective clearly states "Being recognized around the world as a high-quality shipping company based on the professionalism of their collaborators and being innovative to generate value in their services sustainably" (Transgas, 2017). In this case there are two concept which need to be described: (a) Innovation, which considers new management's models, improvement of processes and methods, better fleet

and reduction of costs; and (b) professionalism, which is considered as the attitude and actions according to the competencies and values of the company.

In the same way, the company's values are based on: (a) planning and organization, (b) teamwork, (c) customer orientation (internal / external), (d) commitment, (e) competitiveness, and (f) ethics. (Transgas, 2017)

1.2. Industry Analysis (Porter's Five Forces)

Every industry is different; understanding what shapes it is vital in order to do an effective analysis for Transgas. The competitive advantages that Transgas exhibits within the maritime shipping industry, as well as the industry itself, will be examined through the use of Porter's five forces model (Porter, 2008). The model explores the following five elements: Threat of new entrants, the threat of substitutes, bargaining power of suppliers, bargaining power of buyers and the rivalry among competitors. The results are summarized in Figure 1.

1.2.1. Threat of new entrants - Low.

New entrants require a sizable level of capital in order to set up the business. Liquid petroleum gas vessels that are around 225 meters long go for about 65 million USD on the second-hand market (Horizonship.com). The new vessels would also have to be refitted and upgraded to match the specific requirements needed to be certified by the many organizations governing liquid petroleum gas transportation. Foreign companies will also find it difficult to enter the Peruvian maritime market due to regulations that promote national carriers (Ministerio de Transporte y Comunicaciones, 2015). The new regulation has implemented a significant reserve percentage of traffic that can only be handled by Peruvian National Marine vessels. Thus limiting new foreign and national competitors from entering an already congested industry. The profit levels shown by the companies in the industry will end up attracting new entrants who wish to participate and take advantage of the successful market (unctad.org). Lastly, it is also very time consuming to get the necessary certificates to process

liquefied petroleum gas, especially to transport the gas internationally. All in all the barriers to entry are quite high, thus making the threat of new entrants low.

1.2.2. Threat of substitution – Low.

There are only a few substitutes that are serious options for consumers to turn too. These alternatives are train or truck and will only be considered if price, transit time and volume sent are at a better rate than offered by the maritime industry (elgas.com). At the moment, the maritime industry holds a competitive advantage due to the volume it can transport and the cost it can provide its services (elgas.com). In the coming years, pipelines in Peru will be starting to gain traction and will become a considerable threat due to its ability to continuosly flow gas (Plumb, 2017). For international transportation, to Asian or Australasian markets for example, aviation is not a possible alternative. This is because of the limited volume it can carry and the relatively high costs. Thus the maritime industry holds a significant competitive advantage due to being the sole transportation method. Once more, enhancements in pipelines could cause this advantage to diminish, although this will not be an issue for the foreseeable future (asme.org).

1.2.3. Bargaining power of Buyers – High.

The demand for liquid petroleum gas is dominated by a few key players, Repsol, Pluspetrol, Petroperú, Trafigura, Yara, Petredec, GasChem Services, Geogas and Copesul (Transgas., 2017). The negation power is therefore high in their favor of the buyers as it's hard for Transgas to play the different buyers against each other. The costs of switching for the buyers are also quite low; this is due to the relatively similar services provided by the various shipping companies. Making sure that customers are satisfied is of vital importance to Transgas (Transgas, 2017). This will be done by continuously improving the vessels used and the service provided (the process of documentation).

1.2.4. Bargaining power of suppliers – Medium.

In the case of Transgas, the ports that they do business in are key players in the supply of liquefied petroleum gas. This is because it requires specialized equipment to move the liquefied petroleum gas onto the vessels. In Peru there are 68 terminal ports, of which 51 are maritime and thus the only ones available for use for liquid petroleum gas transportation (Ministerio de Transporte y Comunicaciones, 2011). This is because the vessels for such transportation have a very deep draft and are unable to connect to fluvial and lacustrine ports.

Liquefied petroleum gas requires specialized equipment to move it onto the maritime vessels. The suppliers of such logistics are very heavily influenced by Peruvian government if not owned by the state. Autoridad Portuaria Nacional, a state owned company, promotes the development and competitiveness of the ports in Peru (Autoridad Portuaria Nacional, 2016). The company tries to improve the supply chain present in port terminals and therefore a key player in the maritime liquid petroleum gas transportation industry. Another state owned firm, Ositran (Organismo Superior de la Inversión de Transporte), regulates the market and supervises the general activities of the infrastructure involved in the transportation of goods over sea (Ositran, 2016). These governmental organizations help promote fair competition and high quality services between port operators.

The other key players in the industry are the maritime commerce operators and the port terminals themselves. The maritime commerce operators are mostly logistics operators contracted by companies to reduce costs and improve time management. There is a far higher supply of such operators than demand, therefore due to basic economic principles their negotiation power is very low. The port terminals number to 51 throughout the whole of Peru (Ministerio de Transporte y Comunicaciones, 2011). Thus due to the large quantity of options their power is also greatly reduced. Both these factors combined with strong governmental

pressure from state-owned companies means that the maritime industry gains a competitive advantage.

1.2.5. Rivalry among competition – Low.

Competition is high among the maritime transportation industry. However, this list gets considerably smaller when only considering the firms that can transport liquefied petroleum gas. Taking this into account the most important players that are direct competition to Transgas are: Naviera Transoceánica, Bertling Transgas Tankers, Servicio Naviero de la Marina and Blue Marine Inca (Transgas, 2017). Transgas tries to compete in a niche market for liquid petroleum gas with Bertling, Transgas tankers and Blue Marine Inca, meaning that the level of competition is fierce but relatively low. Striving for market leadership in such an industry is hard, due to concentration of competition. However because of this suppliers and buyers will have a lack of possibilities from which to choose from. The opportunity to gain market share is plentiful and the ability to differentiate from the competition can have considerable effects.

Taking all the forces into account, it is possible to conclude that the shipping industry for liquefied petroleum gas has a medium level of competitiveness. While the power of buyers might be high due to the limited amount of options, this is balanced out with other key factors. The lack of rivals means that Transgas can differentiate easily, while the high barriers of entry for new firms (Local and foreign) also keep competition low in the industry. Switching to a substitute like air or land (pipe and truck) might prove to be an issue later. However, at the moment due to the low cost and large volume, maritime will remain the best option for buyers.

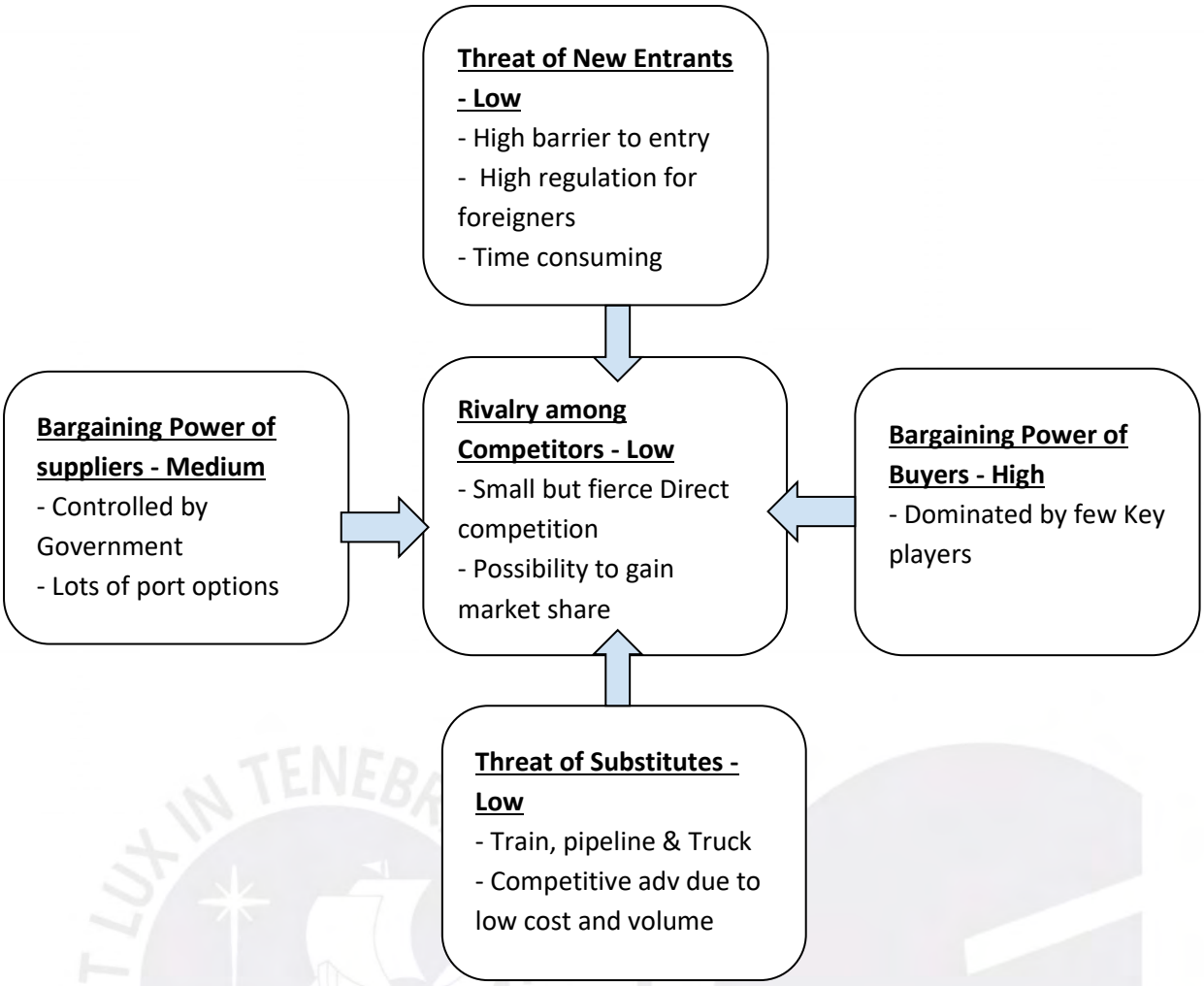


Figure 1. Porter's Five Forces Analysis

1.3. External Analysis (PESTE)

1.3.1. Political, government and legal factors.

In the past years, the Peruvian government and regulatory bodies have played a major role in the development and success of Peruvian organizations, and more particularly the shipping and maritime industries. As the years have gone by the industry has seen more interest from political entities, and this has caused the structure of shipping and maritime industries to continuously change to put into consideration other essential parts of the development of the nation.

Presently Transgas Shipping Lines operates under the legal framework of the law N 29475, which was passed in 2009 by the Peruvian national congress in order to regulate the practices and behaviors of the companies involved and to further aid the development of the industry. The law was passed in a bid to favor and create more opportunities for local Peruvians and their businesses now and in the future.

The law 29475 which was passed by the Ministerio de Transporte y Comunicaciones consists of the following core conditions for a Shipping and maritime industry:

1. It requires that reports must be taken when vessels enter, transit and leave the Peruvian waters, which includes but is not limited to their name, speed, course, and ports of destination.
2. It requires vessels to use Peruvian flag when approaching certain places on Peruvian waters for internationally owned vessels.
3. It requires that companies that do not own any vessels could not use the operation of foreign ships for more than six months
4. It requires only Peruvian owned companies to run and operate in a Maritime shipping industry
5. It requires that environmental laws and sanitary regulations are strictly adhered to which include pollution, discharge of ballast water and garbage
6. 25% of the total cargo is to be transported by a Peruvian War Marine, which cannot be admitted to any third party. (Ian Taylor & Company, 2010)

The International Maritime Organization (IMO) is also very essential to the Success of Transgas and is essential to the Peruvian economy as 92% of its trade and movements are carried out by sea (Maritime Authority of Peru, 2017). The IMO is the United Nations systems regulatory agency for the maritime sector. With its directive being secure, efficient and safe shipping on the oceans of the world, the Peruvian Government and the global

shipping industry accept IMO standards. The IMO ensures that: (a) There is safe and environmentally friendly carriage of global trade, (b) Universal frameworks governing maritime operations are adhered to, (c) To foster capacity building in the maritime sector, (d) Cooperation activities are developed through partnerships between countries involved: sender to receiver (Business.un.org., 2017).

The Ministerio de Producción is also important for the maritime and shipping industry, as they are responsible for regulating the flow and trade of products in and out of Peru. Moreover, this includes determining the products that are transported by a company, its point of origin and its destination and the amount being transported.

The government and in some accord the global entities have continued to promote the maritime industry in which the Transgas operates, because Peru is a maritime country by nature (Maritime Authority of Peru, 2017), and thus very attractive for economic development and investments. As a country, Peru has shown itself to provide opportunities in the maritime sector, ranging from its geostrategic location in the East Pacific Basin, which holds a numerous amount of potentials, to its growing economy that makes investment particularly inviting.

In the Government's bid to make Peru a central and major port hub in the future and to increase the commercialization of products between regions, they have signed a number of Trade agreements with several countries, which include Thailand, Singapore, United States of America and the European States; and are also members of the Pacific Alliance. These agreements were done to in order to create ease of doing business across regions which also directly affect the maritime and shipping industry (World Bank, 2017).

1.3.2. Economic factors.

Peru's economy has been a force to reckon with in the South America with the economy recording a steady average growth rate of 5.9% per year in a context of low

inflation.(World Bank, 2017). According to World Bank 2017, it is the fastest growing economy in the world and is classified as the *upper middle income.* Peru has recorded sound economic position, which has enabled them to make advancements in development, government spending and finances, poverty reduction and social sector progress. The following factors, according to World Bank, 2017, contributed to these advancements achieved:

1. External debt reduction.
2. Prudent Fiscal spending
3. Achievement of investment grade status
4. High international reserve accumulation
5. Structural reforms in various sectors in the last decade
6. Fiscal surpluses
7. Macroeconomic stability - caused by prudent macroeconomic policies
8. Reduction in poverty rates - which resulted from the growth in employment and income.

Foreign trade has characterized Peru and its performance has been tied to exports, which have provided the funds (hard currency) necessary to finance imports and external debt payments. The GDP has continued to grow particularly on the backs of its imports and exports and recorded a significant decline in its deficit from 4.9 to 2.8 percent of GDP in 2016. This decline was caused because of its growth in exports and less dependence on imports.

The government of Peru established a stabilization and liberation program, which helped in eliminating cash flow restrictions, decreasing trade barriers and further opening up the economy to foreign investments. This move resulted in the Peruvian government having one of the most open investment systems in the world; And this brought about an increase in

world maritime commerce and transport- which Transgas has taken advantage of, employment rates and a bump in the GDP which is expected to continue to rise by an average of 3.8% in 2017 and 2018 (World Bank, 2017).

However, the Peruvian economy has experienced a fair share of problems. "The average headline inflation amounted to 3.6 percent in 2016, above the upper limit of its target range for a third straight year, as supply-side shocks on food prices offset weak domestic demand." (World Bank, 2017)

According to the index of Economic freedom, 2017, although the Peruvian economy is welcoming to an increasing amount of foreign investments, problems such as lack of predictability, government corruption in the country and regulatory delays discourage investors. Corruption, which is a major concern in the country, with Peru ranking 101 in the Corruption Perceptions Index 2016, has continued to be a limiting factor for foreign investment and local businesses in the country. The economy is also exposed to some natural risk including recurrent climatic phenomena, floods and landslides. A clear example is El Nino.

1.3.3. Social factors.

Peru, which is a highly diverse country, has had success preserving its unique culture despite its mix of cultures from immigrants mainly in Europe and Asia. According to the World Population Prospects, there are roughly 32,000,000 people in Peru with the majority of the population between 15 and 65years of age. The official language of Peru is Spanish with more than 84% of the country prominent in it (United Nations, 2017).

The education system in Peru has been steadily improving over the years with an increase in the student population in schools showing this new trend.

The interest in the improvement of the quality of life of its citizens, by the Peruvian Government, has increased drastically over the years with Government increasing awareness

and making funds available and developing infrastructure for the education sector, transportation sector and health sector.

As mentioned, the economic growth is evident in the swift poverty reduction and the increase in the middle-class sector, especially in Lima. The transportation sector in the country has also seen improvement in the past decade with a high concentration on water transportation considering 92% of its trade and movements is carried out by sea (Social Issues and Concerns in Peru, 2004).

Peru has different ports along its coast with the most important and popular ones being Callao, Chimbote, Paita, Salaverry, Talara, General San Martin, Matarani and Ilo; and thus the Government developed a modernization process of its port infrastructure, which optimized port operations across the country (Maritime Authority of Peru, 2017). and the Ministerio de Transporte y Comunicaciones ensures that all port facilities have International Ship and Port Facility Security Code certification (ISPS) and the Peru's maritime administration manages a complex and effective integrated vessel traffic information management system (SIMTRAC) to ensure effective response to safety and security, as well as, environmental incidents", hence the "Country with secure ports" term commonly used to describe Peru (Maritime Authority of Peru, 2017).

In the future there are plans by the Peruvian Government to implement various conventions: the STCW-F Convention, the Torremolinos Protocol, the International Ballast Water Management Convention, and the International Anti-Fouling Systems Convention. In a bid to continuously improve operations and adapt to better changing trends (Maritime Authority of Peru, 2017).

Keeping in mind that in the rural zones of Peru there is still a high rate of poverty, the advancements in the transportation, shipping and maritime industries provide an opportunity

for trade advancements, successful connections and therefore poverty mitigations and employment opportunities for cities and communities and locals close to the coasts.

1.3.4. Technological factors.

The development, advancement and changing trends in technology is no news as it affects all industries around the world and the Shipping and maritime industry in Peru is no exception. According to the Tarun (2011), Peru was added in the "top 30 countries for offshore services" mainly because of its steady component of the IT value chain which caters to both internal and exports markets.

The technological sector in Peru has undergone drastic changes in the past 2 to 3 decades, driven by telecommunication liberalization and technological advances (Bernstein, 2000). With a growing number of science and technological societies, research institutes and universities teaching applied sciences, the government has continued to ensure research and development is encouraged. In this regard, various laws and regulations have been set in place to ensure organizations are continually improving processes and adopting new technological processes. An example of such is, "the government ensures that enterprises invest up to 10% of income tax-free in research and development projects approved by the National council of science and Technology and carried out by national universities" (Worldmark Encyclopedia of Nations. 2016).

The technological sector in Peru offers many opportunities in the market. The Peruvian Government continues to play an important role in supporting; investing and creating laws that will encourage and reshape the technological sector. This involvement in the sector has caused progress for all industries and businesses alike.

Advancement in IT enables maritime and shipping companies to have more sophisticated digital navigation systems, better control (real time) of vessels, automation of operations on vessels and digital communication systems. This in turn creates better decision-

making process, security, more effective and efficient operations (including procurement and supply chain) and better organization processes.

The impact of technology on shipping industry development and success has been very important in the past decade. Major achievements in the technological sector such as the constructions of locomotives and then the diesel engine changed the structure of sea transportation, by creating safer sea navigation. Today technological applications and solutions are greatly impacted by innovation (Tsiplikof, 2015).

Finally, looking deeply at the facts from the World Bank 2017 and doing business 2017, there is an astounding growth in many of the sectors in the country. However just as there are many advantages to this advancements, the technological sector is still lagging behind. There is still a lot of room left for improvement.

1.3.5. Environmental factors.

According to the Nations Encyclopedia (2017) the primary environmental problems that Peru faces are water pollution, air pollution, soil pollution, erosion and deforestation. The Peruvian government - environmental ministry and external international bodies are in place to develop laws to regulate the level of environmental effects and decrease pollution.

Peru which has the 4th largest rainforest in the world covering approximately 60% of its terrain experiences an increasing deforestation rate of 5% every year caused mainly by migrant farmers abusing the squatters law, illegal logging, development of roads, mining and petroleum explorations and drilling. Furthermore, air pollution and water pollution in Peru is a major problem which has continued to rise, especially in Lima, as a result of the more industrial buildings and activities, causing emissions and industrial/oil related waste, and an increase in a number of vehicles on the roads. According to Nations Encyclopedia, 2106, Peru has only 1,746cu km of renewable water and only 87% of city population and 62% of the rural population have access to safe, clean drinking water. Although various

environmental laws have been passed in an attempt to improve pollution in Peru, enforcement has been sloppy and impeded by inefficient management and insufficient financial resources.

As already illustrated the maritime and shipping industry accounts for 90% of the global transportation and is expected to carry a fair share of environmental burden considering the daily presence on the coastal waters and oceans. There are the indirect consequences caused by activities because of the existence of the expanding maritime industry such as the building of new offices and production and use of energy products; and there is, more importantly, the direct consequence, which is due to unlawful disposal of waste and ballast water.

The Peruvian government has a set of procedures in place to ensure strict adherence to the Peruvian Maritime Regulations where environmental impact is concerned.

"It is expressly forbidden to throw overboard any ballast, rubbish or waste, or to spill petroleum or any derivative or residue, contaminated waters from mineral processing plants, or any dangerous or noxious substance of any kind whatsoever, either in Peruvian waters or, without prior authorization from the Peruvian ports Harbormaster. Standing regulations stipulate that no tanker may dump hydrocarbons or derivatives within fifty miles from the coast. In accordance with International Regulations, ships navigating in Peruvian waters must have the required insurance policy against the risk of marine pollution. In the event of any contamination, and without prejudice to any sanction to be imposed locally, the rules for civil responsibility for marine pollution, as established by International Regulations, will be applied. It is expressly forbidden by Peruvian agricultural regulations to disembark garbage at any port." (Ian Taylor and Company, 2010)

1.3.6 Opportunities and threats

The PESTE analysis conducted above sheds light on the external factors affecting Transgas. However, it is imperative that it is also discussed the key opportunities and threats that this factors create for the Maritime and Shipping industry in Peru and more specifically Transgas. In Table 1, it could be appreciated the summary of opportunities and threats.

Table 1.

Opportunities and threats.

Opportunities	Threats
Government interest and support	Increase in local and international competition
Progressive Economic stability in Peru	Stringent local and international laws
Trade agreements	Slow Technological growth

In order to have a better understanding of the external factors that affect the company, a Matrix called External Factors Evaluation Matrix (EFEM) has been developed which could be seen in Table 2. This table was designed with the objective to identify the strategy that Transgas should adopt in the following time. The development of the table is based on the external factors, and it is weighted distributing one unit into the list of factors, then the value that each of them has is ranked from one to four depending on how the factor respond to the situation. This is made by the team who evaluated the company for the development of the report. After that, there will be a score for each factor calculated by the multiplication between the weight and the value, and the total value for the whole matrix will be the sum. In this particular case, the total result was 2.9. The importance of this result allows to know the situation of the company, which in this case this 2.9 points mean that they have been taking advantage of the opportunities and avoiding the external threats.

Table 2.

External Factors Evaluation Matrix.

	Key Success Factors	Weight	Value	Score
	Opportunities			
1	Government interest and support	0.15	3	0.45
2	Progressive Economic stability in Peru	0.20	4	0.8
3	Trade agreements	0.20	3	0.6
	Threats			
1	Increase in local and international competition	0.15	3	0.45
2	Stringent local and international laws	0.15	3	0.45
3	Slow Technological growth	0.15	1	0.15
		1		**2.9**

1.4. Internal Analysis (AMOFHIT)

1.4.1. Administration and Management.

As part of the cost control measures and betterment of organizational structure, Transgas went through a corporate restructuring last year by inducting a new CEO in order to lead the company into a more organized and dynamic path towards the future. The restructuring gave CEO more control over the management of the company with managers at his disposal to lead efficiently. Furthermore, the restructuring linked managers with their respective teams to work in synergy with the departments to achieve cross-departmental objectives. These changes in the management structure of the company gave a new path towards the future of Transgas by assigning clear roles and responsibilities to each employee in the organization. However, Transgas follows a top-down approach within their company including offices and vessels. Though in their ships they operate under a traditional structure

with Captain as the head who oversees all the activities related to the operation of the vessel. Under the command of Captain, the vessels consist of two pilots, chief engineer, and crew.

As it was mentioned before Transgas has two kinds of workspace, one in their offices .and another one on their vessels. The office employees belong to the departments like Gestion Contable, Gestion de HSQE, Gestion de Operaciones Comerciales, etc. on the other hand, the onboard employees aka the crew members belong to the Gestion de Gente de Mar.

The Strategic Information Management department and Designated Person Ashore (DPA) acts as a liaison between CEO and the day to day operations of the company. The DPA is responsible for the overall activities of the ship, which means they have to make sure that proper resources and support is given to the crew. The captains report directly to the DPA about the vessel status and update the AMOS ship management system. On the other hand, the Strategic Information Management department overlooks the important financial, commercial and operative information, which is necessary for the day-to-day operations and decision-making process of the top management.

Transgas currently owns 13 vessels, which are seaworthy enough to transport LNG throughout the world. The procurement and logistics departments deal with the daily operations of the company, they make sure whether there are adequate resources available for the sailing of vessels.

In the year 2016, Transgas adopted a new organization structure, which could allow the company achieve their goals. This new way of organization is shown in the following Figure 2. This structure compared with the previous one has the characterized to be more horizontal.

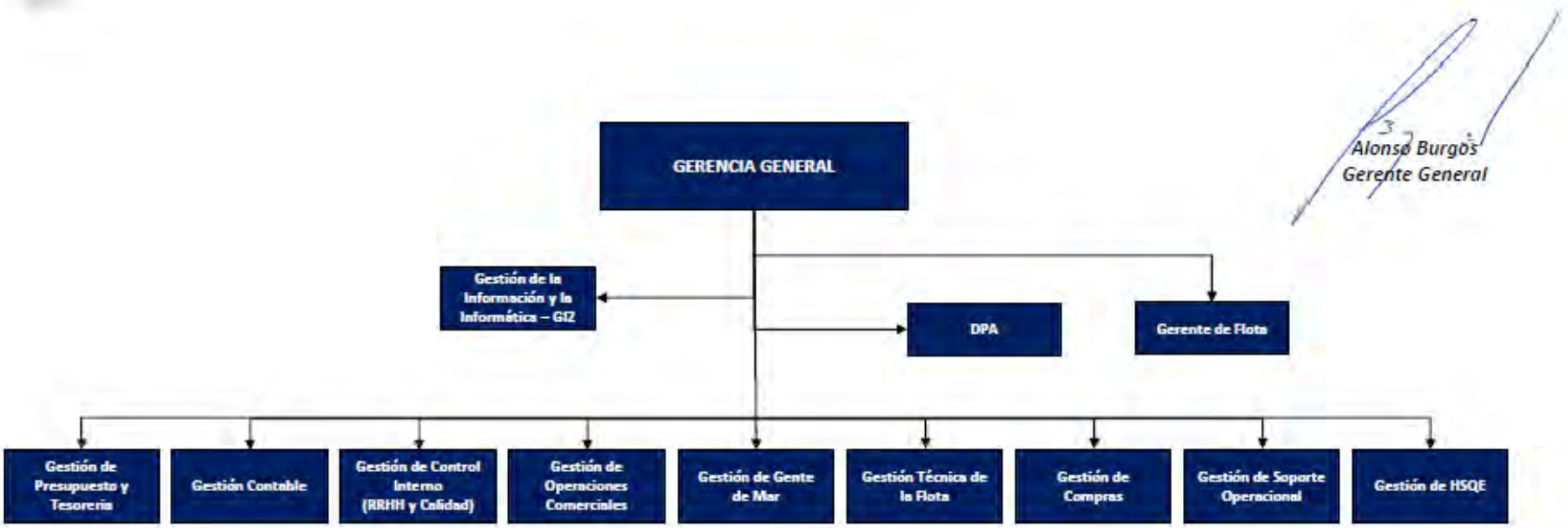


Figure 2. Trasgas' Organizational Chart..
Data from *Transgas Shipping Lines S.A.C.* (p. 2), 2016, Lima, Peru: Author.

1.4.2. Marketing.

The marketing activities of the company are handled by the Gestion de Operaciones Comerciales department; they are responsible for the client management. As a player in the service oriented industry, Transgas is increasingly trying to obtain quality certificates and industry recognition in order to bring themselves into the forefronts of the industry.

The marketing department is entitled with the duties to keep current international standard ratings such as ISO 9001:2000, SMC Code, International Management Code for the Safe Operation of Ships, Pollution Prevention Code, ISPS Code, and so forth. Transgas has more than 25 years of experience with the transportation of LNG throughout the world, with this vast experience and reputation the clientele would be expecting a superior quality of service from the company. So in order to meet the expectations of the client, the marketing team have to provide proof and validation of the high-quality standards through independent third party audits.

Transgas uses these audits and certificates to attract more customers and enter new markets around the world. The company is trying to become a major player on maritime transport of petrochemicals, LNG, and hydrocarbons in the Latin American region. By finding out the need for excellent quality control measures during the recent restructuring the company came up with a new department called the Gestion de Control Interno which overlook the activities related to the quality control. Though some problems are looming over the customer focus outside of the commercial areas is one of the main principles behind ISO certification for the quality control is the client's attention, so as an ISO rated company the customer focus has to be an important part of their activities. On the other hand, during the interview, it could be found out that most of the staff was unaware of their regular work affecting customer satisfaction because most of them didn’t had proper assigned roles and responsibilities this means they have little knowledge about the value chain.

1.4.3. Operations.

The operations management of Transgas is divided into two core areas, the operations of vessels and maintenance of vessels. The services mainly deal with the activities related to the transportation of hydrocarbons on board such as sailing, port calls, customs clearance, crew management, etc. The maintenance of vessels mainly revolves around the maintenance activities taking place on the ship that is conducted by the crewmembers. Every ship has a support team headed by Superintendent who oversees the maintenance management, though some of the major maintenance are outsourced due to the need of specialized expertise requirement.

These two areas of operations management dealing with quality control are maintained by the Gestion de Control Interno. The procurement and logistics department also plays a crucial role in the operations stream of the company, as they are responsible for the supplies, fuels, payload, etc. So it is their responsibility to make sure everything is over the place without any delays in order to transport the goods. The crew of each ship must safeguard the quality standards, as the commander of the ship, Captain will have exclusive responsibility for the vessel and reports to the office through DPA, as explained before these DPAs are the one who overlooks all the aspects related to the vessel's operation. It is also DPA's responsibility to ensure whether the company has sufficient certification and audits to conduct business.

The departmental operations are coordinated with the help of the IT department which makes sure adequate systems are in place to interlink information throughout the company. They keep a close look on the AMOS Ship Management Systems, materials requirement data, purchase data, vessel payload deliveries, etc. The Gestion de Control Interno handles the overall quality control of the company and they decide on assigning KPIs to each department respectively. Though right now this department does not function up to the mark

due to unclear procedures of departments. After analysis, it could be understood that the operations of the company are very informal and there were no written regulations in place to improve efficiency and performance. The creation of Gestion de Control Interno can be helpful to Transgas to develop a formal organizational structure which can enhance their synergies between departments and overall quality culture of the company. In the Figure 3 can be appreciated the Transgas Porter's Value Chain.

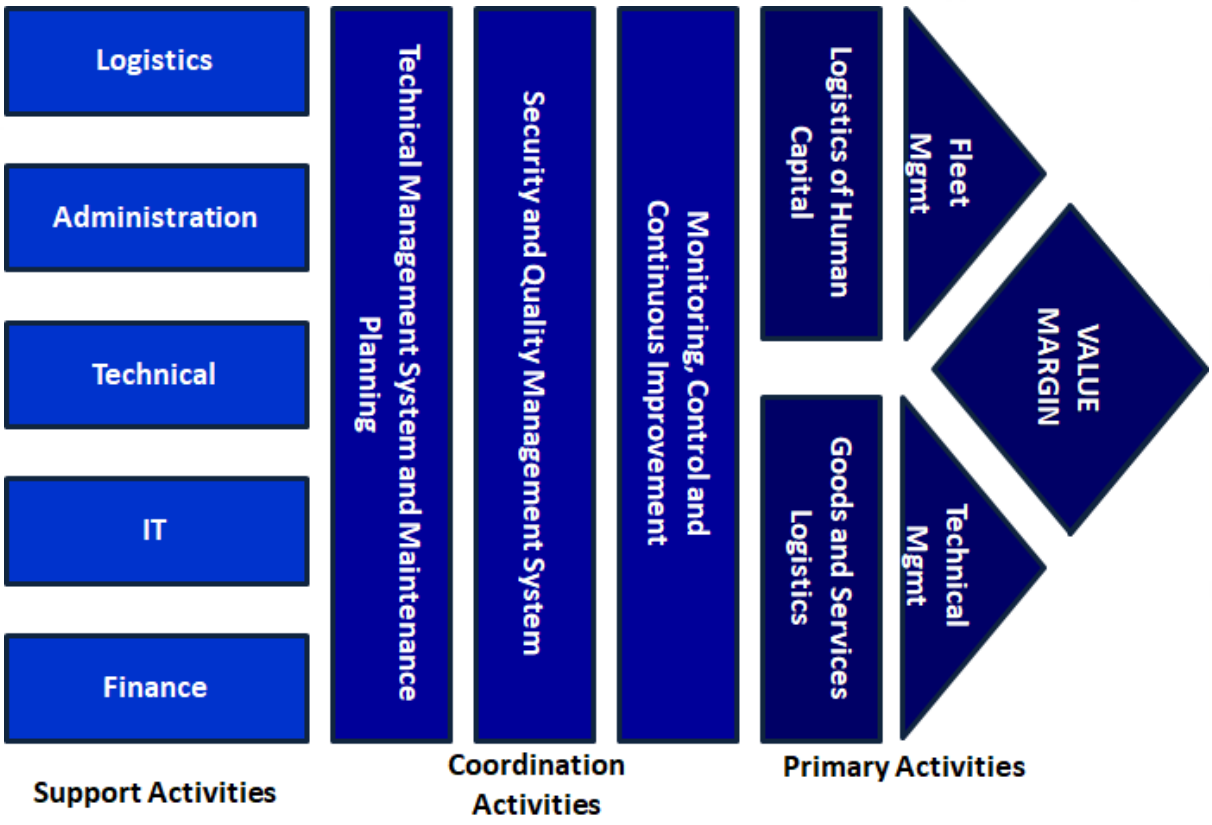


Figure 3. Transgas Porter's Value Chain.
Data from *Transgas Shipping Lines S.A.C.* (p. 4), 2016, Lima, Peru: Mario Muñoz.

1.4.4. Finance.

As part of the overall corporate reorganization, the Finance department also went through a rapid transformation through a change in management and reforms to increase transparency of the company. The primary goal of the Finance Department transformation was to introduce cost control measures to raise profits. Being part of a capital-intensive

industry like shipping, Transgas need to find an innovative and efficient method to monitor their cost to be a market leader to secure the bright future.

The Finance department is trying to work closely with the Procurement and Logistics department to understand more about the inventory list and additional materials stock to introduce a much better procurement of resources. The Treasury Department controls all the financial activities of the organization, due to the excellent financial performance over the years, Transgas is expendable when making agreements with the suppliers and financial institutions. Another primary department which deals with the economic activities is the Accounting department which makes sure the cash flow transactions of the company including accounts receivables, payroll, financial reporting, accounts payable and fiscal controls. Due to many international business transactions, the department needs to follow international accounting standards such as the International Financial Reporting Standards (IFRS). Since Transgas is a global maritime shipping company and operates many vessels they need to do a separate balance sheet of every ship, then these different ones are consolidated into a final report YoY.

The recent management changes initiated a new trend of decision making using data gathering so under this change the Finance and Administration departments needed a huge re-haul to work accordingly. This initiative will increase the transparency and cost control to achieve a better position in financial standing of the company. The calculation of the ratios in the years 2014 and 2015 was done with the data shared by the company, and after an outlook of the financial statements could be understood that the company in the year 2015 decrease their financial performance. For example, the current ratio which is used as an indicator to figure out a firm's ability to pay back its liabilities with its assets. Transgas's, current ratio in 2014 was 0.88, a ratio under 1 indicates that the company's liabilities are greater than its assets, Furthermore the below one doesn't mean that the firm will go bankrupt. That is why in

2015, they came back with a current ratio of 1.66 after some financial injections. Likewise, the ROE decrease from 5.04 points in the year 2014 to 2.11 points in the year 2015. According to the financial statements of Transgas, some of the key ratios of the company are summarized in the following Table 3, for the Balance Sheet.

Table 3.

Financial Ratios Balance Sheet.

Financial Ratios	**2014**	**2015**
ROE	5.04	2.11
Working Capital	-800,835.00	4,152,062.00
Current Ratio	0.88	1.66
Quick Ratio	1.14	1.57
Debt - Equity Ratio	10.50	10.38
Cash Ratio	1.14	1.57
Cash Flow - Debt Ratio	0.11	0.10

In the following Table 4, it is presented in the same way some ratios calculation regarding the income statement:

Table 4.

Financial Ratios Income Statement.

Financial Ratios	**2014**	**2015**
Gross Margin	28.4%	16.7%
Profit Margin	12.8%	13.5%
Times Interest Earned	3.33	1.61

1.4.5. Human Resource.

In Transgas, the employees are mainly office support employees, managers, executives and vessel crews. These employees are primarily under two different departments; the Gestion de Control Interno department manages the office support employees while

Gestion de Gente de Mar department manages administration and operations employees. The overall rules and regulations related to hiring and management of employees in different department differ as per employment laws and standards, administration of employee benefits, etc.

The HR department has had tough times in managing employees to work properly and collaborate for the betterment of the company's future. HR should be responsible for all the activities related to training, assigning goals and objectives, formulating contracts and job descriptions, etc., but these tasks are right now under separate departments. Due to the lack of integration of functions under HR, many employees were unable to identify their responsibilities for daily operation also this lack of integration lead the improper communication channels between offshore and onshore operations. The absence of proper reward and punishment policy is adversely affecting the productivity and efficiency of the employees.

The problem related to the lack of job description took a hard hit on the operations stream of the company, many employees were unaware about the KPIs involved in the day to day operations of the enterprise. Many of the new technological solutions were not familiar with the majority of employees so implementing the software solution was very difficult because of the lack of proper training.

1.4.6. Information Technology.

IT has been innovating every industry around the world, in the maritime sector as well it has been bringing revolutionary changes from data gathering to cost control solutions. As a transportation firm, Transgas is using many IT related feature like GPS, office solutions, AMOS, etc. for better decision making, real-time data and improving security. The IT operations of the company are managed by the Gestion de Soporte Operacional department; it provides the necessary documentations related to the orders, permits, and certifications. The

majority of the information related to the operation of the company is managed by an ERP platform which connects between different departments for decision making. However, the ERP followed by Transgas is not useful for their operations, so information processing is doing physically rather than digitally.

AMOS is an operational software used by the shipping companies to control the budgets, maintenance, etc. The vessels owned by Transgas are equipped with AMOS Ship Management systems which allow the superintendent to run diagnostics for understanding the vessel's operational capability. Even though the internet has been spreading all around the world, the access to onboard internet vessels is limited when they are sailing through the remote parts of the world. This lack of connectivity delays the communication and decision-making process of the company quite a lot of times. Another problem looming over the use of AMOS is the language availability, the system is fully integrated with English this means if they need more documents to understand the maintenance procedures and activities they have to use the Spanish version of manuals.

Due to the lack of connectivity during sailing the scope of IT in present day maritime industry is limited. In most cases, internet connection only allows partial connectivity which means the crew can only use the AMOS and ERP systems in certain locations. Furthermore, only Captain is authorized to have a personal computer then it is shared with the other crew members.

In the Figure 4 could be appreciated the level of knowledge that the department of the logistics and operation had in the year 2016 after a focus group developed by the company. This result shows the existence of a technological training and usage of the resources.

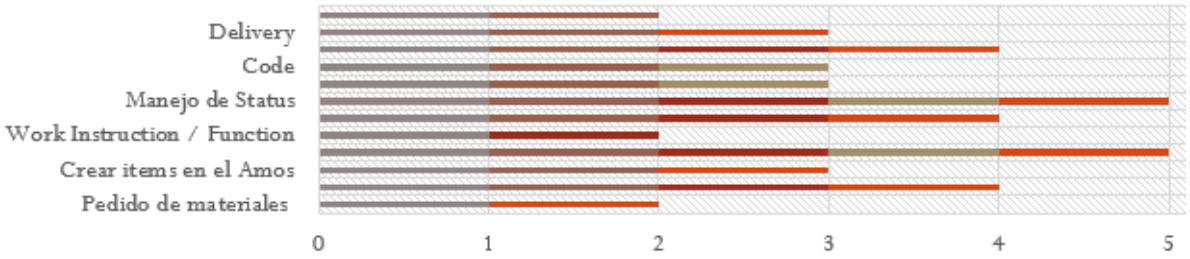


Figure 4. Knowledge of AMOS System by the Logistic Department. Adapted from "Informe Ejecutivo 2016", 2016, Lima, Peru: Author.

1.4.7. Strengths and Weaknesses

The AMOHFIT analysis was developed taking into consideration the internal factors that affect Transgas, however, is it imperative that it was also discussed the strengths and weaknesses that this factors create for the Maritime and Shipping industry in Peru and more specifically Transgas. In Table 5, it could be appreciated the summary of strengths and weaknesses.

Table 5.

Strength and Weaknesses.

Strength	Weaknesses
Over 25 years of operational experience.	High management to staff ratio making the overall operation of the company inefficient
Healthy business relationship with suppliers	Lack of stringent rules and regulations for cross departmental co-operations.
Highly skillful crew and management team	Ineffective internal management style.
Numerous industry recognitions and quality certifications	Faulty AMOS system

In order to have a better understanding of the internal factors that affect the company, it has been developed a Matrix called Internal Factors Evaluation Matrix (EFEM) showed in Table 6. This table was developed with the objective to identify the strategy that Transgas should adopt in the following time. The development of the table is based on the internal

factors, and it is weighted distributing one unit into the list of factors, then the value that each of them has is ranked from one to four depending on how the factor respond to the situation. This is made by the team who evaluated the company for the development of the report After that, there will be a score for each factor calculated by the multiplication between the weight and the value, and the total value for the whole matrix will be the sum. In this particular case, the total result was 2.25. The importance of this result allows to know the situation of the company, which in this case this 2.25 points mean that the company has been taking advantage of their strengths and avoiding their weaknesses.

Table 6.

Internal Forces Evaluation Matrix.

	Key Success Factors	Weight	Value	Score
	Strength			
1	Over 25 years of operational experience.	0.15	4	0.6
2	Healthy business relationship with suppliers	0.10	3	0.3
3	Highly skillful crew and management team	0.15	3	0.45
4	Numerous industry recognitions and quality certifications	0.15	3	0.45
	Weaknesses			
1	High management to staff ratio	0.10	1	0.1
2	Lack of stringent rules and regulations	0.10	1	0.1
3	Ineffective internal management style.	0.15	1	0.15
4	Faulty AMOS system	0.10	1	0.1
		1		**2.25**

1.5. Conclusions

The previous thorough analysis of Transgas has provided a detailed presentation of the internal and external forces affecting the company. Through Porter's five forces analysis,

it is clear that Transgas is competing in a medium level competitive industry. This is to say that Transgas has both an advantage and disadvantage, within the environment it conducts business in. Externally Transgas is affected by various factors that can be seen as opportunities to be taken advantage of and threats to defend against. It was found that the government could be a key partner in the future, through the signed trade agreements opening potential markets and their ability to maintain the economic stability of Peru. Transgas will, however, have to guard against the increased levels of competition that could result in such actions and the increased amount of red tape they would have to go through. According to the internal strategic analysis developed for the company, it can also be concluded that Transgas Shipping Lines is characterized by the strong technical performance and the high know-how, reflected in the achievement of industry recognized quality certifications. This has been observed across the last 25 years of successful operations. Unfortunately, a high management ration has led to ineffective management styles and a lack of stringent regulations to keep employees in check. The implemented AMOS system has also been found to be largely ineffective due to language barriers, connection delays and limited availability of use. Competitiveness is becoming more relevant for Transgas to maintain their market share and thus assure profitability for the company. In this sense, alternatives such as the existence of ground and pipe transportation of Liquid petroleum gas will have a major impact on Transgas. This will mean that the company will have to start looking for improvements not just in the core departments, but also in their support functions. Therefore, the development of best practices within the management of the operations and logistics department is crucial to achieving the purpose of the company: reaching more efficiency and better service. The following section will build upon the basic background knowledge gained to find what key problem is affecting Transgas.

Chapter II: Key Problem

2.1. Identified Problems

Transgas Shipping Line, as a maritime shipping company, has the goal to improve their service level to their clients. One area which plays an important role in the value chain of this specific industry is the operations and logistics department. In this sense, the concern of the top managers is to run the department with more efficiency. Mario Munoz, a key representative of the company who oversees the logistics and operations department, was able to provide insightful comments on Transgas. During one the interviews with Mr.Munoz, it was highlighted that when the company has one vessel inoperative, due to any factor, then it will cost the company at least $20,000 to remedy the problem. Then the importance of the logistics and operations department in order to reduce costly unnecessary expenses.

As it was established in the previous chapter, Transgas has had difficulties with their information management system. This was still the case even though they have been involved in technological advancements, such as the implementation of an ERP system which integrates the company together as a whole. In this sense, the mission of this project is based on the identification of the main problem within the department of operations and logistics. From this it is important to find out and how it would be possible to implement an action plan that solves and provides the company with the necessary tools to keep their competitive advantage in line with the business purpose: improve the service level to their clients.

During the various meetings with the company, several situations and events within the department of operations and logistics were described. The information gathered was grouped into three groups reflecting three different symptoms of the problem. These will be explained in the following paragraphs.

The first identified symptom, was that the company has been carried in the wrong direction by the manager's perception regarding the performance of the department. Most of

their judgements come just right after the annual report of the company and is thus based predominantly on financial items. Some of the perceptions of higher level management, regarding the operations and logistics department, are that they are the bottleneck of the process flow in the firm. Other perceptions of upper level management are that there is a lack of qualified staff within the department leading to the inefficient supply of spare parts for the vessels in need and the long lead times for pending request in need of attention.

The second symptom that was uncovered during the meetings with the representatives of the company, is that the logistic and operation management is not considered as a strategic department. This statement is based on the fact that this department has been considered by the top managers to be outsourced and thus handled by a third party organization. Although, it could be with the purpose to have a better administration and performance of the area, it is clear that upper management does not consider it a core factor to the success of the firm. Were this the case Transgas would look to improve the department internally. The company started doing evaluations of potential outsourcing partners through quotes, but this was recently stopped due to the lack of following up and assessments. The threat of being outsourced has led to a lack of motivation within the department, lowering a desire for employees to change that perception.

The third and final symptom that was found, was the lack of knowledge regarding the performance of employees and managers. The existence of an ERP system called AMOS has allowed the department to be integrated with other departments in Transgas. this includes the procurement, finance, quality, maintenance, and logistics departments. Having reviewed the AMOS system it has been found that there is the absence of key indicators to measure the performance of individuals. There are no evaluations that are measured toward the objectives of Transgas through any of the daily operations. The Transgas representative that were in contact with briefly mentioned that they have only been able to work with one indicator

throughout the whole department in the previous few years. This is a very serious problem as only focusing on one key measurement, that might or might not be associated with the objectives of Transgas, will lead to a loss of direction for employees. All three symptoms found within Transgas lead to a single focused problem. This key problem will be explained in the following section.

2.2. Key Problem

Now that the symptoms have been evaluated and thus the weaknesses of the company identified in the previous chapter such as the lack of structure to the support areas within Transgas. Taking this into account the main problem can be defined: The ineffective measurement, control and management of the department of operations and logistics. This problem has allowed the company to consider taking decisions without having a clear understanding of the impact in the long term that outsourcing such a key department will have on the company. At the same time this issue creates a non-objective perception to the directors. This will lead to a restriction on any real improvements that can be made on the value chain of the company, as developments will not be considered due to a lack interest from employees. The purpose of the company, providing a service of excellence, is also affected due to the fact that the performance of departments and their employees cannot be measured. Without measuring the performance of employees, it will become very difficult to guide them and help them improve. Bad performing departments such as the operations and logistics department are also unable to show improvements or focus on key indicators that will lead to the success of the department in the eyes of upper management. When considering that the logistics department plays an important role into the value chain of the company it is vital that this is resolved.

According to Stanković, Velimirović, and Velimirović (2011), “Key performance indicators are financial and non-financial indicators that organizations use in order to estimate

and fortify how successful they are, aiming previously established long lasting goals" (p.63). In this context, the solution of the main problem identified should is in line with the main objective and purpose of the company. In order to have a better understanding of this key problem, it is going to be analyzed the substance, location, ownership, and magnitude and time perspective.

Substance. The lack of measure regarding the performance of the operations and logistics department creates a lack of direction within the company about its objectives and goals. At the same time, it creates an avenue for the human resources of the company to just solve daily problems without considering the impact of such actions on the whole of the firm. Sometimes they fail to see or end up missing opportunities and therefore do not take advantage of them. At the moment, department in question is perceived as an area/department that does a decent job, but in the event of any bad results regarding their operations there is no way to track the root causes of the problems and thus the implication on the firm as a whole. The efficiency of the department is taken into judgment when additional costs affect the running of the daily operations. This is not only a waste of resources as it might not be the real cause of the increase in costs but might also exaggerate the issue in question. The training of the employees is another important factor, they do not have any way to evaluate their commitment with the company rather than the perception of the managers and authorities. By not knowing where employees need to focus on in order to become better at their tasks, managers will be left to arbitrarily rate work done and suggest improvements. Any follow up will inevitably lead to confusion if there is conflicting statements due to different moods or differing mangers opinions on what is important.

Location. This project limited the location of the problem to the department of operations and logistics. This is only due to the point of contact established within the company. However, the problem identified has been found to interact with different

departments in the company such as: finance, to involve the economic impact; human resources, to follow up on the members of the team and their performance; and commercial operations, to give them the optimal services considering they are the main internal client of the department. This problem is not confined to within the structure of Transgas but has been found to also affect external entities due to the direct work done with suppliers. If there is no real measure of their own activities and performance, there is no way to evaluate the impact and value of the suppliers working with the processes of the company.

Ownership. The department itself is mainly responsible for its own performance. However, the impact of their activities affects the company as a whole. Therefore, the main problem identified involves Transgas totally, from the top managers down to the sailors on the transport ships. This is because mangers are the ones who make and take decisions to implement strategies and make changes in operations. All the employees throughout the firm are also responsible because they are the key players in the development of the operations and are the ones who need to participate in any of the strategies set by management. Without their participation, any solution becomes redundant and nothing more than an idea.

Magnitude. The key problem shows that the perception of the manager regarding the increase in terms of cost, the low performance of the staff, the pending attendance, and the non-optimal supply of spare parts to the vessels, have an impact on the whole company. Any further investment of time, money and labor force towards the operations and logistics department, or company as a whole, will not be efficient and might not have the desired impact on the firm if the key problem found is not solved. This is because such resources might be allocated to the wrong areas of the business due to a lack of understanding of what is most important or least efficient at that moment.

Time perspective. According to the interviews with the representatives of the company, the problem identified by this paper has been present for a long time. This has

allowed the problem to entrench itself within the daily activities of the firm. This has meant that to the casual glance the problem blends into the norms and culture of Transgas, where perception in some support departments are the base of the decisions. Therefore, the issue is not visible while the operations are stable and there are no complaints from employees. However, when the organization experiences some form of difficulty then the lack of indicators or measurable factors starts to show the cracks within the organization. The found issue does not permit managers to take objective decisions and must therefore rely on self-perception, often faulty and lacking evidence.

2.3. Conclusions

The previous section looked to highlight the main problem of Trangas Shipping Lines. Through discussions and observations during meetings with representatives of the company three symptoms were found that all lead to a key problem. These symptoms were: top level mangers subjective perception of departmental performance, logistic and operations department not seen as strategically important and lastly, lack of self-knowledge of performance for employees. This report will look to attack and find a solution to the following problem, which is that Transgas has an ineffective measure, control and management setup within the department of operations and logistics. This is an issue not only affecting a specific department but also impacting the whole business. However, the scope of this paper limits us, this of course does not take away the need that the problem should be resolved as quickly as possible. The following literature review will be done in the aim to gather enough information to build a solid base, from which to come up with a solution to the problem faced by transgas.

Chapter III: Literature Review

3.1. Literature Mapping

Following the finding of the key problem afflicting Transgas, this consulting project will focus its attention primarily on the operations and logistics department. The key problem that already exist in this department is being affected by several factors; therefore, the purpose of this chapter is to show a framework that allows for a better understanding of the problem and the related theories that are affected by it. The explanation of the concepts, best practices, and other topics within the key problem will create the opportunity for one to build up a solid solution that can be implemented successfully.

In this case, the literature review is based on the data gathered from CENTRUM Catolica library, online databases easily available such as google scholar, online databases more specific to business research such as ProQuest and EBSCO host. These sources are the main foundations available for use. However, it does not mean that there have not been other sources that complement this consulting report through the different chapters.

The following literature review of this thesis is composed of three key components: (a) Key Performance indicator, where it is used to cover the main problem and the possible solutions that it can offer; (b) Logistics and Operations, this is where it has been found that the main problem is situated and thus the main practices regarding the management and the processes of the department is an important focus of this paper; and (c) Shipping industry, where the sector where Transgas Shipping Lines develops its operations is explained. A mapping of this literature review is summarized in the Figure 5.

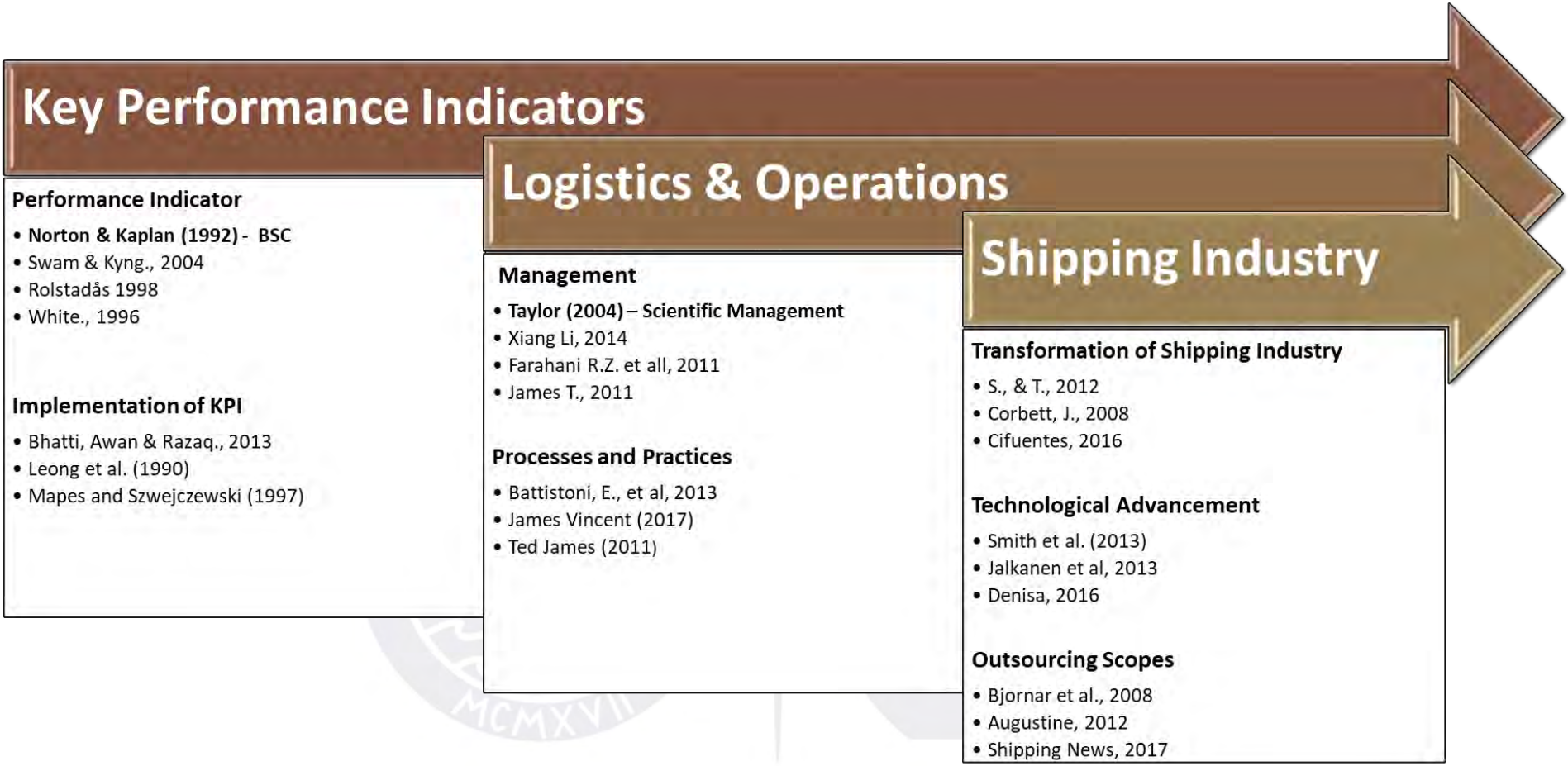


Figure 5. Literature Mapping.

3.2. Literature Review

3.2.1. Key Performance Indicators.

"It is not possible to manage what you cannot control and you cannot control what you cannot measure" (Peter Drucker, 2013).

The measurement of performance has become an important principle of management that recently has seen an increase in attention (Weber & Thomas, 2005; Ivanovs, 2016). Performance indicators have to be defined using physical values, which can be measured and compared (Gosselin, 2005). Benchmarking is such a method as it systematically and logically measures and compares performance (Swam & Kyng, 2004). It has become relevant as it identifies gaps between current and desired performance levels within the organization. Such indications allow managers to gain up to date information on how the organization is performing, especially in the dynamic and fast paced industries they find themselves in. Continuously improving performance indicators is also becoming critical as remaining stagnant is a sure recipe to failure (Cai, Liu, Xiao & Liu, 2008). One of the ways to prevent this is to implement Key Performance Indicators (KPI's) throughout the organization. By implementing KPIs it is possible to assess employees against each other as well as past results to see if there are improvements. The following section will highlight the benefits of KPI's and how to implement them in the organization. Firstly, it is necessary to understand what KPI's are.

First published in 1999, KPI's are essentially a way at looking at the way activities are done and seeing if the performance is at a certain level (Swam & Kyng, 2004). Rolstadås (1998) found that it is necessary to measure performance criterion that is critical to the success of an organization. Every organization will have different indicators that are more aligned with the competitive strategy of the firm. These factors used to be restricted to accounting-based measures, such as Return on Sales and Return on investments. Now

performance measure has started to encompass a broader range of 'metricise' such as quality (De Toni & Tonchia, 2001) customer service (Ittner, 1998), internal operations, innovation (Marginson, 2002) and reliability (Heckl & Moormann, 2010; White, 1996). Over the years two main groups of indicators have been determined, these are financial measures and non-cost based measures of performance (White, 1996; Sinclaire & Zairi, 1995). By focusing on such indicators an accurate measurement of the success of the organization can be formulated. Much like benchmarking against the competition, KPI's allow a company to set targets based on national performance data and then measure their company against them as well. Although, it is meant to be an internal measurement tool that allows for easy data collection and transfer. In order for this process to be effective a common set of indicators need to be set. Every department throughout the organization needs to highlight key criteria that are vital for the firm's success. Pool all the indicators together and set goals that every individual, department and the firm as a whole needs to achieve. The outcomes can even be set against industry standards or high performers, to gain an insight on how well the organization is doing relative to them (Ghalayini & Noble, 1996; Parmenter, 2009). An important factor that makes KPI's effective is the continuous updating of the indicators used. This can be done monthly, semi-annually or even annually; all to make sure that the indicators stay relevant. By staying relevant KPI's will accurately measure performance indicators that are critical to the organization. This paper will be focusing on how KPI's can be used internally to measure performance rather than the benchmarking option of comparing to the industry. This is because Transgas, at the moment, has issues measuring performance in all their departments, rather than a competitive issue. The benefits of KPI's will now be addressed to highlight the added competitive advantage it provides.

KPIs ensure that managers know if their activities are putting them on the right path or not (Bhatti, Awan & Razaq, 2013). This statement encapsulates the main advantage of

KPI's, which is that it is a tool to assist managers in the running and evaluating of the business. As already mentioned KPIs can be placed in two categories financial or non-financial. Leong et al. (1990) proved in his research that indicators in both categories were of equal importance for any organization. Managers that used both were then found to be far more effective in measuring performance rather than ones than only focused on one. Research on the effects of KPIs in the manufacturing industry found that managers put a higher focus on customer satisfaction and reliability which lead to a higher firm performance overall (Bhatti, Awan & Razaq, 2013). Using the performance indicators actually gave the companies a competitive advantage of their competitors (Bhatti, Awan & Razaq, 2013). Constant evaluation of their competitive situation led to firms to work and improve on focused parts of the organization that actually needed change. Fernandes et al. (2006) discussed the effects of focusing on the growth index of a firm as an indicator. It was found that this actually had no impact on the firm at all and should therefore not be a focus for future managers. This goes against conventional wisdom of looking at the growth as a key indicator for success. Some key indicators that can be used by Transgas will now be discussed.

Cost is a key indicator that is favored by external and internal stakeholders alike. A financial tool that can accurately measure the efficiency and effectiveness, it relates internal performance measures to external ones (White, 1996). Employee satisfaction has also gained importance in literature as it has been found to be key to success for all organizations. As found by Mapes and Szwejczewski (1997) if employees are satisfied with the organizations that trickles down to the customers and then to an overall increase in the organizational performance. Focusing on absenteeism and turnover rate are good indicators of employee satisfaction (Leong et al, 1990). Lastly, Reliability will also be a good indicator to measure performance as it is a way to measure the efficiency of the business accurately. With low

reliability customers will refuse to do business and will also spread negative messages to the market that will ruin the reputation of the firm. Concentrating on it is therefore very important to any business that wants to stay competitive (White, 1996). Researchers have found that measuring reliability is relatively easy and little discrepancy can be found between them (White, 1996). KPIs measurements are not always beneficial to companies, it is therefore a good strategy to take the negative situations of KPIs into account before implementation. Understanding when KPIs are not beneficial helps the organization prevent such a situation occurring for them.

Some of the problems with using KPIs are that focusing on multiple indicators could create conflicts and trade-offs. This means that one indicators value that increases could cause another to decrease. An example of this can be seen between quality and cost (Mapes & Szwejczewski, 1997). If managers focus on one of the two then the other will inevitably be hindered. This must therefore be taken into account when conducting an analysis before and after the results come through. If this is not done departments will find that their results do not accurately reflect their success, as the indicators will cancel each other out. Of course conflicting KPIs can still be used to compare different departments with each other to see their effectiveness. An example of this can be comparing the logistics department with the HR department on two new methods. Both departments can be analyzed to see the increase in performance compared to the over costs of the implementation. Understanding the different indicators and taking into account their conflicting views can provide new viewpoints that are beneficial to the overall company (Mapes & Szwejczewski, 1997). Choosing which Indicators to measure is very difficult as the wrong indicator could drive a company into the wrong direction. Kaplan and Norton (1992) introduced the Balanced Scorecard (BSC) as method of measuring fundamental intangible assets owned by the company. This paper will

take a look at how such a tool can be used to help Transgas select the appropriate indicators and to implement them correctly into the business.

The BSC has suggested that one needs to look at any organization from four different perspectives: Financial, Customer/stakeholder, Internal process and Organizational capacity (Kaplan & Norton, 1992). The financial perspective views the organizational financial performance and how it utilizes its financial resources. It should answer the question "how do we look to shareholders?" (Kaplan & Norton, 1992). In the customer/stakeholder perspective, the view of how the customers view the company is highlighted answering the question "how do customers see us?" (Kaplan & Norton, 1992). The third perspective internal process looks at efficiency and quality related to the products or services provided and any other key business process. Effectively this answers the question "can we continue to improve and create value?" (Kaplan & Norton, 1992). Lastly, organizational capacity looks at human capital, infrastructure, culture and technology and analyses their performance. "What must we excel at?" is the question answered by this perspective (Kaplan & Norton, 1992). The four perspectives allow an organization to keep traditional performance measure, such as the financial measures, and adding more foreword looking measures that evaluate the future value created by the company.

The next desired step is to find the metrics to measure the organization for each of the four perspectives. This however is an outdated view of the BSC and as expressed by Kaplan and Norton (2000, 2001, 2004) it is better for the company to start by asking what an organization wanted to accomplish.

By aligning the BSC with the company strategy and vision it not only becomes a simple task to select the metrics but also makes them far more effective. It becomes more effective because the BSC becomes far more specific to the individual companies, rather than turning the BSC into a benchmarking exercise. High-performing companies were found to

succeed because their strategies are quite different from one another (Kaplan & Norton, 2004). Thus, the metrics measured need to be distinct from competitors to reflect the different strategies that give a company such as Transgas a competitive advantage.

Once an organization knows what it wants to achieve selecting measurements becomes, as already mentioned, far simpler. Many companies have recently been found to write their strategies in the voice of their customers or employees. This helps in the visualization of the objectives. For example, a bank that wants to shift from a traditional product push strategy to one that emphasizes developing a complete financial solution for its customers expressed one of its customer objectives as "give me convenient access to the right products". Once this has been identified a metrics such as "number of targeted customer using on-line channel for transactions" can be easily identified (Norton, 2010).

Combining both the metrics and the objectives with the idea of causal linkages become the next improvement of the BSC (Kaplan & Norton, 2004). The idea of linking objectives and metrics lead to the creation of a strategy mapping (Kaplan & Norton, 2000). By doing this, causal relationships could be found and emphasized. For example, one of the causal linkages of a strategic objective could be: employees who are better trained in quality management will reduce the process cycle time while also reducing the number of defects.

This in turn will lead to an increase in customer satisfaction level, which will ultimately drive an increase in sales (Norton, 2010). All the objectives that the organization has set are linked in a cause-and-effect chain, starting with the employees' right through all the processes till financial performance.

The Figure 6 below shows the current structure of the strategy map advocated by Kaplan and Norton. It is important to note that for most BSC projects it is better to start and build a strategy map first. On this map all the objectives can be clearly written out and afterwards it is possible to easily select metrics for each objective.

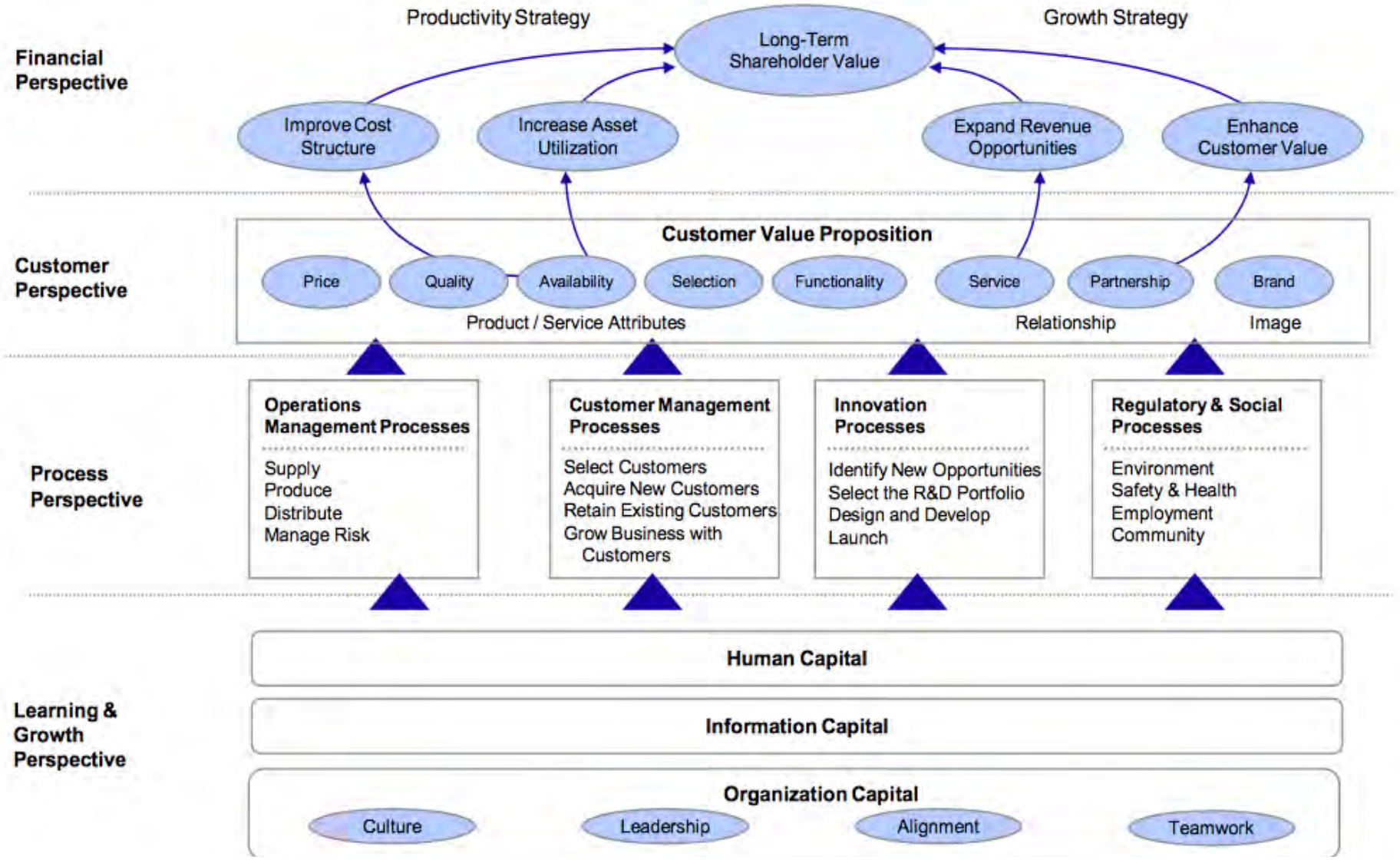


Figure 6. Mapping Strategy.
Adapted from Balance Score Card (Kaplan & Norton, 2004)

It is also possible to implement the Supply Chain Operations Reference (SCOR) model to define the indicators in a more industry or departmental specific manner. This is because it takes the operations and logistics field as the focal point when linking performance matrices, processes and best practices. This builds on the BSC as it allows for benchmarking of the key indicators to the industry standards. The ultimate aim of SCOR is to build a superior supply chain that is completely integrated with the overall firm strategy. It is almost impossible to make effective decisions when every department is measuring performance independently from each other. Naturally departments tend to lean towards promoting a set of metrics that make them look best, thus implementing a SCOR model enables a more integrated and fair selection.

The SCOR model as defined by Supply Chain Council has been able to identify five core performance attributes that are linked with supply chain. These are: Reliability, Responsiveness, Agility, Costs and Asset management. By using these main indicators as the benchmark from which Transgas should start their dashboard they will be able to compare easily to other departments, competitors and even industries. They will then be able to asses if the company's operations have them strategically focused on being a low-cost provider/compete on reliability or not compared to their direct competition.

3.2.2. Logistics and operations.

Regarding management, it is important to take into account one of the main authors who started the concept of scientific management: Taylor. He explained in his book the principles of this concept. There is described what he considered the best system of management what he called: the system of "initiative and incentive". In this system, management gives incentives for better work, and workers give their best effort. The form of payment is practically the whole system, in contrast to scientific management (Taylor, 1911). In Figure 7 the four principles of Taylor's scientific management can be appreciated.

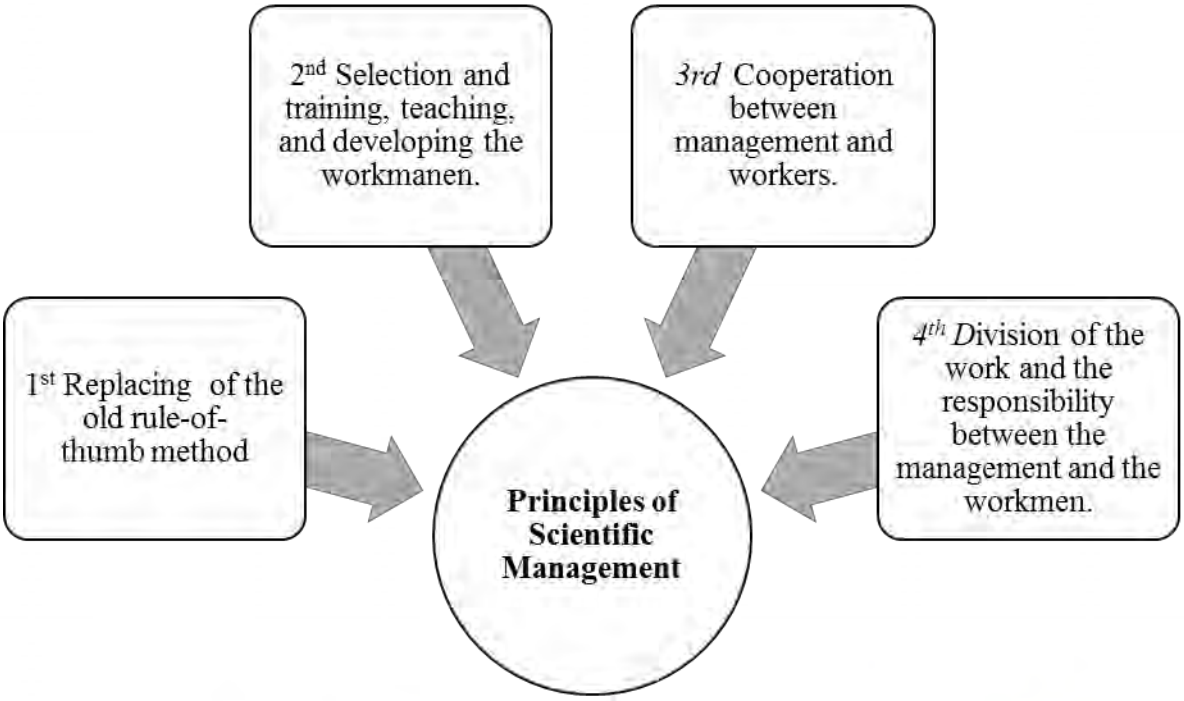


Figure 7. Taylor's Principles of Scientific Management.
Adapted from The Scientific Management (Taylor, 1911)

On the other hand, and because of the evolution of management over the time, Cheng, 2013, mentioned that Taylor's theory present "deficiencies" resulting from scientism. In this sense, he suggested two strategies to cure scientism, and to return to Taylor's true interest in management. The first one is based on an "edification" philosophy that encourages managers and researchers to enhance their awareness and expand their understanding. And the second one calls for managers and researchers to consider management not only as a science but also as an art.

Management. Logistics and operations which has received attention since the early 1980s has been considered to be essential factors for the companies in order to obtain a competitive edge.

According to Xiang Li, 2014, Logistics is the management of the flow of goods between the point of origin and the point of consumption in order to meet some requirements

of cooperation. It incorporates the flow of information, material handling, inventory management, security and transportation which can be analyzed, modeled, remodeled and optimized continuously for improvement.

It is further explained as all the activities that aid in the movement and organization of supply and demand in the creation of place and time utility.

Another definition by Farahani R.Z. et all, 2011, is that Logistics is the entire process of planning, implementing, and controlling the efficient flow and storage of materials and products, services, information, energy, people, and other resources that move into, though, and out of a firm from the point of origin to the point of consumption and with the purpose of meeting customer requirements. “Logistics is the positioning of resources at the right time, in the right place, at the right cost, at the right quality” (Chartered Institute of Logistics and Transport, 2005).

According to the Farahani R.Z. et al, 2011, the concept of logistics and its process have been described as having three sections:

1. Inbound Logistics, which is explained as being the movement and storage of materials received from external suppliers.
2. Materials Management, which represents the flow of goods or raw materials “within” an organization.
3. Outbound Logistics or physical operations, which deals with and represents the movement of products to its client from the point of production.

Therefore, the whole process can be said to be the receiving, storing and dissemination of goods for use with inbound logistics being - what comes into the organization, materials management – how it is processed and stored and Outbound logistics – when it leaves the organization to the client.

Organizations must adopt numerous business improvement methodologies to improve business performance and therefore must ensure that its and flow of information materials are appropriate therefore a sound, error proof logistic network must be adopted first which incorporates the communication and information network as well as the physical facility network.

Operation on the other hand is, according to Andrew Greasley, the process that goes into the production and delivery of any goods and services, which is undertaken by every organization irrespective of whether they have a functional department specially called "operations". It involves a majority of assets and employees in an organization and therefore is very crucial in the success of a business.

Operations management therefore is simply the management of the operational processes within an organization with the main role being the transformation of the inputs of an organization to finished goods or services using its processes which can be facilities such as buildings and or staff- everyone involved in the operation process (James T., 2011).

In discussing operations it is imperative that the strategies adopted in operations are considered and highlighted. According to Andrew Greasley, there are two approaches to operations strategy, the resource-based approach, which works from the inside of a firm – out and the market based approach, which deals with decision making based on the market and the customers in that market that it targets, an outside-in perspective which is most observed by organizations.

However, As much as the external approach is beneficial it has been observed that in order to achieve competitive advantage and competitiveness an organization should not just improve its performance along some specific dimensions in which it want to be competitive but they have to incorporate the development of its capabilities within the organization that provide specific operating advantages.

According to Ted James, operations strategies can be grouped into the following levels:

- Corporate Level Strategy: this level strategy provides a long-range organization guidance and approach and answers the question of "what business should we be in?"
- Business Level Strategy: this level operations strategy is concerned with the product line and services that should be offered to the market. It deals with putting into action the long-range decisions that has been made by the upper level organization and answers the question "how do we compete in Business?"
- Functional Level Strategy: this level operations strategy is where the functions of the business such as operations, finance and marketing make plans in order to support the competitiveness pursued by the business strategy and answers the question: "how does the functions in various departments contribute to the business strategy."

Ensuring the right operation strategy determines to what extent an organization reconciles its market requirements with the resources it has for operations, how it deploys those resources and satisfies market requirements. This has proven to be particularly challenging because not only does an organization need to incorporate the resource based and market based strategies, they also have to consider the changing market and its degree of influence.

Furthermore, according to the Hill framework for operations strategy formulation; which links together cooperate objectives of an organization, marketing strategy and operations; five steps should be followed by organizations in order to have successful operation management:

In the first step, it puts emphasis on the establishment of corporate objectives in order to provide a clear direction for an organization, which should be dependent on the needs of stakeholders within the organization and should include financial measures, environmental policies and employee practices. It goes further to say that when doing so performance indicators should be firmly established in order to monitor and measure progress of an organization's processes and devise improvement plans.

The second step involves the identification of an organization's target market and the best approaches to compete in those markets

The third step, according to this methodology, is very crucial as it reveals areas of mismatch between the organizations strategy and capabilities and takes into consideration exclusively performance indicators when arriving to business decisions. It also creates a link between the marketing process and operation processes and translates the marketing strategy into factors that show competitiveness such as price, performance and quality of service or goods.

Finally, the fourth and fifth steps, involve putting the processes and required resources in place as defined in the performance objectives and then ensuring continuous improvements and waste eliminations and complete involvement of affected stakeholders.

In support to Hills framework, Battistoni E, et al, 2013, indicates that the optimization of the internal resources in an organization is crucial to them achieving a competitive advantage. It goes further to add that the continuous improvement and monitoring of internal processes can be the push an organization requires to achieve excellence always and organizations can effectively benefit from the analytical tools such as best practices and benchmarking.

According to William Ruch, 1994, though organizations mainly focus on its overall performance, findings should be disintegrated to specific business units, work group and

individuals in the organization, However, It is also useful to note that an individual-productivity focus provides and biased view of the whole organization. Productivity, which is a major concern for organizations, must intermingle with other organizational aspects such as innovation, financial control, employee performance, quality and profitability.

Keeping in mind that the operations and logistics management is the transformation of inputs, which can be in form of raw material or information, to outputs, which can be in form of good and services. Productivity can be explained to be how efficiently this transformation is done. According to CSCMP, 2014, Productivity is computed as a ratio of outputs (goods and service) to inputs (materials and labor) and can be used for individual workers, machines, a department and the organization as a whole.

$$Productivity = \frac{Output}{Input}$$

"The interpretation of productivity is not as easy as you might think. Productivity is a relative measure that should be tracked over time. This allows us to benchmark against our competitors, our industry, and ourselves. By comparing our productivity over time and against similar operations, we have a much better sense of how high our productivity really is." (CSCMP & Sanders, 2014).

Furthermore, analyzing and considering an organization's competitive strategy can also measure productivity in an organization.

The OECD (organization for Economic Co-Operation and Development) Manual on Measuring Productivity (2011), highlight the different productivity concepts and measures:

Labor productivity, based on gross output; which shows how productively labor is used to generate a gross output by tracing labor requirements per unit of output. This approach creates ease in measurement, readability and traceability.

$$\frac{Quantity\ index\ of\ gross\ output}{Quantity\ index\ of\ labor\ input}$$

Labor productivity, based on value added; which shows how productivity labor is used to generate value added by analyzing micro and macro links such as the contribution of the organization and its industry to economic growth.

$$\frac{Quantity\ index\ of\ value\ added}{Quantity\ index\ of\ labor\ input}$$

Capital-labor MFP based on value added; which shows how productively combined labor and capital inputs are used to generate value added.

$$\frac{Quantity\ index\ of\ value\ added}{Quantity\ index\ of\ combined\ labor\ and\ capital\ input}$$

Capital productivity, based on value added; which shows how productively capital is used to generate value added. It is adopted to indicate the extent to which output growth can be achieved with lower welfare costs in the form of foregone consumption.

$$\frac{Quantity\ index\ of\ value\ added}{Quantity\ index\ of\ capital\ input}$$

KLEMS Multifactor Productivity; which shows how productively combined inputs are used to generate gross output. It is used to analyze the industry the organization is in and determine areas for change.

$$\frac{Quantity\ index\ of\ gross\ output}{Quantity\ index\ of\ combined\ input}$$

It is therefore important to note that theses measure are all interrelated and not independent of each other and have to be collectively considered to achieve efficiency. (OECD & Schreyer, 2001)

Processes and Practices. In analyzing Logistics and Operations management, existing practices and process have to be assessed. In this section I will be analyzing the tools and techniques, which can be adopted by organizations in order to achieve effective logistics and operation management.

Total Quality Management (TQM), which has been adopted in the past, has been directly associated with general performance improvement of an organization and therefore operation efficiency and effectiveness (Battistoni, et al, 2013). James Vincent (2017) in his article about TQM in the maritime and shipping industry defines Total Quality Management as the continuous effort by management and employees to ensure customer satisfaction and healthy growth in an organization. He went on to explain that in order to achieve TQM, an organization has to integrate processes from all aspects of the organization and continuously use analyzed data as an indicator for decision making and pace setting. Furthermore, he went on to highlight that TQM systems are process centered. They require input in order to generate an output.

The adoption of a strong Human Resource Management is important as it helps to assess the level of employee knowledge and training and ensure that lacking areas of knowledge is documented and improved. "Human resources are functional activities and strategic plans that enable improved services to employees and increased profitability for the employer" (Mayhew, 2017).

Furthermore, in trying to manage the entities within a company's operations system it is important to establish a well-constructed performance system in order to for employees to understand employer's expectations, for employers to provide the necessary tools to achieve excellence and give feedback to employees.

"Within the perspective of Human Resource best practices, performance management comprises job descriptions, performance standards, continuous feedback from supervisors and regularly scheduled performance appraisals" (Mayhew, 2017).

Business Process Reengineering concept, which is rethinking a business process or design in order to achieve improvements in performance is also a vital tool that organization have been using in the last decade to improve organization processes.

According to Ted James (2011) BPR can mean one of the following:

- The fundamental rethinking and changing of a core business process.
- The radical redesign, which involves the complete rethink of the way a business operates.
- Dramatic improvements, usually involving changes or improvements in multiple sectors in an organization.
- The critical contemporary of process measures of performance based on various competitive factors.

The BPR can be implemented in an organization by first identifying and documenting current process activities by collecting data using data collection tools such as observation, interviews and existing document review; analyzing them and then identifying processes for improvement using a scoring system that prioritizes the importance and performance to stakeholders. Evaluating process design alternatives and creating an implementation plan either by modifying existing plans, creating new plans or adopting a benchmark design then follows.

Finally and very important is the Enterprise Resource Planning tool (ERP) which is an information system that helps manage large amounts of data in an organization. (James, 2011). It creates a universal platform for sales and performance of employees, stakeholder information and inventory.

The ERP tool goes a step further and provides a full view of the organization across multiple functional processes and matches them together based on how they relate and affect each other, has a centralized database where information is stored. It also provides a blueprint of all the processes an organization should adapt and implementation plans. The ERP ensures visibility and aids effective communication in an organization thereby creating a sound

decision-making process and guarantees all processes within an organization work together to increase efficiency and effectiveness within an organization.

Some of the advantages in the establishment of an ERP for an organization are that:

1. It creates better control especially where there is a lot of information which if mishandled would affect the monitoring of performance and growth.
2. It removes waste from the organization in terms of duplication of information
3. It improves internal and external communication.
4. It helps analyze an organization's profitability in order to determine where sales and costs are higher or lower.
5. It improves the quality of decision-making process within an organization.
6. Aids efficiency and effectiveness of time, money and energy (Arciciega, 2013).

3.2.3. Shipping Industry.

Transformation of Shipping Industry. The LNG shipping market is transforming and evolving to a more competitive setting. The operational efficiency in the LNG market can be increased significantly when sellers take a more thorough stance towards contracting tonnage on the back of product supply. More flexible contracts will be used in a market with more dispersed sellers and buyers (S & T, 2012). The transformations in gas shipping aimed at understanding the features of the gas shipping market, distinct with other main merchant markets such as dry, tanker and container markets (Engelen, 2010). Globalization trends are heralded or disclaimed, respectively, as beneficial or detrimental to global stability, the environment, peace, and sustainable development. In fact, the maritime industry has transformed its technologies, national registries, and labor resources over the past decades to serve the demands of globalization. Aside from the shift of human labor (oars) to wind-driven sail, the first modern energy conversion in marine transportation was the shift from sail to combustion. Two primary motivators for energy technology innovation – greater

performance at lower cost – caused this conversion. These technologies enabled trade routes to emerge regardless of the latitudes without consistent winds, supporting both international industrialization and modern political superpower expansion (Corbett, 2008). The pressure for LNG shippers to build more vessels becomes stronger when examining the outlook for the market in the commodity. According to Goldman Sachs and the International Energy Agency (IEA), LNG became the world's second most traded commodity behind oil last year and demand will continue to grow (Cifuentes, 2016). BASC -Business Alliance for Secure Commerce-, is an international business alliance, created to promote secure international trade in cooperation with governments and international organizations. BASC is a private sector led and controlled coalition that has been supported by U.S. Customs and Border Protection (CBP) since its creation in 1996. As a non-profit organization incorporated in the State of Delaware as the World BASC Organization, the BASC is an international business alliance created to promote supply chain security in cooperation with government agencies and international organizations. The BASC was created to address the problem of concealing contraband in commercial trade. As a voluntary program for businesses, with no government-imposed mandates, corporate participants are expected to follow BASC's security standards, which are designed to significantly improve their security practices and in the process deter contraband smugglers and terrorists from using their companies to introduce contraband and implements of terror in legitimate shipments. The BASC program examines the entire process of manufacturing and shipping of merchandise from foreign countries to the United States, emphasizing the creation of a more security-conscious environment throughout the supply chain. The BASC currently has over 2,500 companies that have been certified by the organization. And it operates in 13 countries of Latin America and the Caribbean: Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Haití, México, Panamá, Perú, the Dominican Republic, Paraguay and Venezuela (World BASC Organization, 2011)

Technological Advancement. The Smith et al. (2013) analysis makes novel use of the Satellite Automatic Identification System (S-AIS). The AIS is an automatic system for locating, identifying, and tracking ships. In the system, ship location information is transmitted and exchanged via AIS receiving stations and satellites for the primary purpose of avoiding collisions. More recently, due to its detailed information on ship operation, shore-based AIS data has increasingly been used to observe ship identities and activities in unlimited geographical locations as well as to estimate energy consumption and emissions (Jalkanen et al, 2013). Leading edge research to support the LNG industry with emerging technologies makes the next generation of very large LNG carriers a safe reality. With the global market for LNG growing at more than three times the growth rates for oil or traditional gas markets, operators are continuously looking for efficient and safe ways for containing, transferring and transporting LNG. ABS has over 50 years of experience classing LNG carriers and has the distinctive approach to class large LNG carriers built with all types of currently accepted containment systems. And it continues to facilitate industry innovation by providing technical guidelines for new LNG containment concepts (Card, J., & Lee, H., 2005). The increasing trend towards implementing quality programme in the logistics industry has led the shipping industry to follow suit. As a result, shipping companies have been making progressive efforts to design and implement comprehensive quality assessment and improvement strategies or programs with a view to improving performance, competitiveness, and customer satisfaction (Minahan, 1998). An LNG carrier is a technologically sophisticated ship, with double-hull special design and insulated storage tanks with metallurgical properties that allow them to withstand very low temperatures. The average size of an LNG vessel has increased in the last years and it currently is about 150,000 cu.m.1 (i.e. about 60,000 tonnes of LNG or 0.09 bcm2 of NG). As of July 2008, the building cost of such a ship was USD 225 million (Gkonis, 2009).

Outsourcing Scopes. The major problem for many companies is how to measure the strategic or economic value that logistic outsourcing can offer. Several authors, researchers, managers and other interested parties have tried to answer this question and create a list of key indicators. However, their points of view are quite different. While some claim that logistic outsourcing must always bring some cost reduction, others highlight its strategic value in terms of fulfilling goals that are not always directly concerned with financial targets (Denisa, 2016). Most studies of logistics outsourcing are focused on cost reduction and only a few of them report on service and strategic benefits. The major problem for many companies is how to measure the strategic or economic value that logistic outsourcing can offer. In general, outsourcing non-core processes (as logistics is for the majority of manufacturing companies) decreases capital investment requirements, which in turn drives more of the company's profit into return on assets (Hsaio et al, 2010). There are many potential benefits from logistic outsourcing. However, there are also huge potential risks associated with it. The evolution of gradually more complex supply chains makes decisions about logistics outsourcing more difficult. Their empirical analysis showed that it is not always beneficial to outsource some activities what is proved by an example from the Norwegian oil and gas industry (Bjornar et al, 2008). A trusted outsourcing partner with the right mix of expertise in terms of processes, people and platform can deliver outsourcing solutions that go beyond cost arbitrage and are targeted to mitigate industry-specific pain points. An experienced BPO player with in-depth domain knowledge and expertise in complex processes, such as shipping documentation, customer service, terminal operations and analytics-driven vessel plans can help shipping companies reduce the risks related to market volatility and gain an edge in the market. An outsourcing partner with global delivery capabilities also meets the regulatory needs of global companies (Augustine, 2012). As a result of ongoing commercial challenges and regulatory changes in the maritime industry, maritime organizations are undergoing

many radical strategic and business model changes, including the drive to modernize outdated business processes. One of the prominent approaches for driving efficiencies, reducing costs and gaining competitive advantages has been through technological innovation. An existing example is the adoption of Electronic Chart Display and Information System (ECDIS), whilst the industry is also on the brink of numerous other developments, ranging from the paperless ship, to 24/7 ship internet connectivity and possibly even the contentious 'driverless ship' (Shipping News, 2017).

3.3. Conclusions

Chapter two highlighted that Transgas Shipping Line at present, has a lack of key indicators in the department of operations and logistics that would allow the company to measure their performance. In this chapter, the literature review has highlighted current and past research with the aim to gather enough information from which to make an informed solution. The following literature review was analyzed in three groups.

The first group linked the problem/solution to the theory of key Performance Indicators. Key performance indicators are not only unique to every business but they are critical to the success of the business in the short and long run. Defined as an internal measurement tool by mangers, to stay up to date on what their employees and their departments are doing and if it is going in the right direction. Constantly updating and reviewing such indicators is important to keeping the indicators relevant to the company. Some issues with using the performance indicators is that conflicts could arise between important indicators due to preferences of different departments. Thus, choosing which indicators to value more than others is also an important factor that needs to be taken into account. The balanced scorecard model was introduced as a way to coordinate this selection procedure and to keep everything under an organized structure. This is done through four different perspectives: Financial, Customer/stakeholder, Internal process and Organizational

capacity. The balanced scorecard should be aligned with the vision of the company to increase the chance of successful implementation. The SCOR model was also looked at as a possible addition to the BSC due to the more specific direction towards the operations and logistic department. A few key indicators that are generally accepted as the standard were provided to allow for easy comparison to competition and the industry.

The second group analyzed described the management, processes and practices of the operation and logistics department. This literature brings the theoretical procedures and practices of developing a good performance into different industries, which will permit solution of the main problem identified in the company. It was found through the principles of scientific management that given incentives employees will work better by giving their best efforts. Operations and Logistics has been found since the 1980's to be essential for companies to obtain a competitive edge, due to the flow of information and materials vital to the company. Lastly, the ERP system was introduced to help manage store the large amounts of data that is inevitable in such a large company as Transgas.

The third group showed the literature focused on the topic of the shipping industry where the company is developing their operations. Putting the focus on the transformation and evolution of this industry into a more competitive setting, it was possible to understand the globalizing trends. The technological advancements such as the S-AIS systems allows for quick identification and location of ships in order estimate energy consumption. Another technological advancement is the ability to build larger LNG carriers, thus increasing the amount transported. Finally, a look at the outsourcing scopes available showed that there were mixed reviews from suggesting the advantages of outsourcing to highlighting the strategic importance of keeping the transportation in-house.

Chapter IV: Qualitative/Quantitative Analysis

4.1. Qualitative Analysis

The qualitative analysis is a securities analysis that uses subjective judgment based on unquantifiable information, such as management expertise, industry cycles, strength of research and development, and labor relations (Investopedia, 2017). After carefully brainstorming through the key problem looming over the internal management it was decided to analyze the problem qualitatively through the McKinsey 7S model.

Ever since the introduction of the 7S framework, it has been the benchmark analysis for the organizational effectiveness. The basic idea of the framework was featured in the book "In Search of Excellence" by former McKinsey consultants Thomas J. Peters and Robert H. Waterman, the framework maps a constellation of interrelated factors that influence an organization's ability to change (Peters & Waterman, 2009). It could be appreciated in the Figure 8.

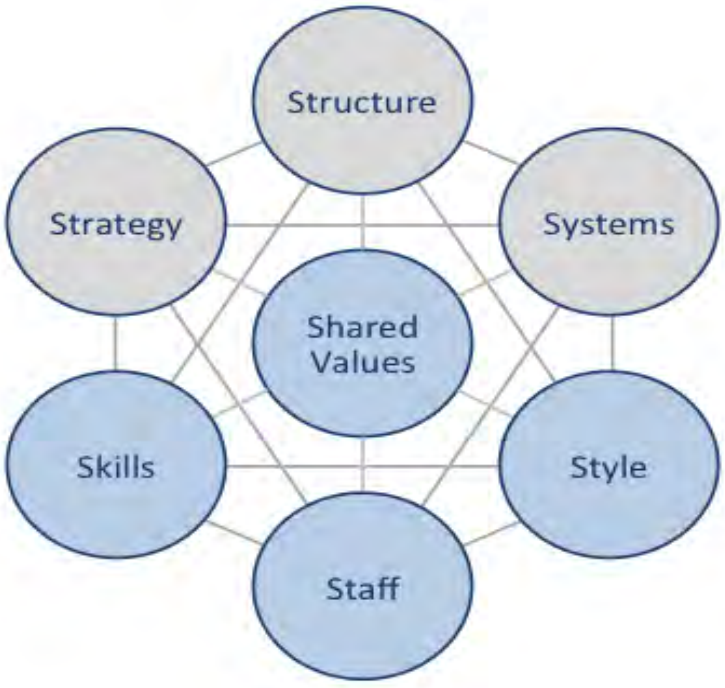


Figure 8. McKinsey 7S Framework.
Adapted from *In Search of Excellence,* Peters & Waterman (2009)

4.1.1. Structure

Transgas follows a traditional style of management with no clearly defined rules and responsibilities for the employees. Though over the years they have developed themselves into a multinational firm with operations spanning all around the world the corporate structure didn't go through any rapid transformations. The structure of the 7S framework clearly mentions the notion of the structural need of an organization, and underlays the fact that structure is simple and it should divide the tasks and provide coordination. In McKinsey's words the structure trades off specialization and integration, which decentralizes, and then re centralizes (Robert, Thomas & Juilen, 1980).

As seen in the organizational chart, Transgas is headed by a President who oversees all the business activities of the firm. Though the organization's day-to-day activities are overlooked by the CEO who reports directly to the President about the activities which matters the most in the operations. The structure of the organization looks very much like an appropriate organization though the principle problem related to the lack of proper defined set of rules and responsibilities makes it hard to manage efficiently. A company who is planning to grow substantially on international capacitates would need an efficient management principles to lead forward in a very competitive environment like LNG shipping. For any organization information management is one of the key towards efficiency of corporate management. Knowledge management, like knowledge itself is difficult to define. Concepts and practices evolved through the 90s as management in the post-industrial era not only realized that knowledge was perhaps the resource, rather than land, machines or capital but also that their organizations generally poorly managed it. If more attention were paid to creating, providing, sharing, using, and perhaps protecting knowledge, the promise was that the organizational performance would improve. In this sense, knowledge management could be seen as consistent with resource based theories of the firms, namely

building and competing on a capability that could be quite difficult for others to imitate (Earl, 2001).

The informal management styles can be seen almost every part of the organizational structure with lack of key quality control measures to analyze the performance of the employees. Furthermore, about the absence of defined roles and responsibilities, it came to our notice that even the budgeting phase of the company is also very casual and informal, making it hard to clearly identify the key aspects of the financial resource allocation.

4.1.2. Strategy

Strategy is in essence a firm's action or plan to blend into the market where they are operating. It is also the way a company aims to improve its position vis-a-vis competition- perhaps through low-cost production or delivery, perhaps by providing better value to the customer, perhaps by achieving sales and service dominance (Robert, Thomas & Juilen, 1980). Transgas is a company with huge potential of growth, with clearly defined mission, vision and objectives they want to be the market leader in the Latin American LNG transport industry. As a company dealing with the LNG transportation it is important to own some of the state of the art vessels to work efficiently and timely manner. Currently the prime strategy of the company is to modernize their fleet of vessels with innovative technologies to perform better than the industry standards. To conduct business in such competitive environment like maritime industry is both tough and costly. The industry leads on the basis of timely and incident free benchmarks, which means the competitors are working tirelessly to make their operations more and more efficient in the industry.

However, the problem related to the structural factors are giving a hard time to the management to strategically position themselves in the market to compete with the industry elites. It is not only affecting the positioning in the market it is also having an impact on the value of service given to the customers. Over the years, it was seen many companies in

different industries vanishing due to the poor adaptation to both internal and external environments. The ones those who are in business are always striving harder to improve themselves to compete especially in highly competitive industries where the game is won or lost on share points. But "structure follows strategy" is by no means the be-all and end-all of organization wisdom (Robert, Thomas & Juilen, 1980).

4.1.3. Systems

The systems act as a neuron in an organization, it helps the firm to integrate various operations undertaken by different departments. In McKinsey's explanation, Systems mean all the procedures, formal and informal, that make the organization go, day by day and year by year: capital budgeting systems, training systems, cost accounting procedures, budgeting systems. If there is a variable in our model that threatens to dominate the others, it could well be systems (Robert, Thomas & Juilen, 1980). The need of an effective ERP in today's business world is an important factor in developing efficiency throughout the organization.

Transgas uses AMOS as their ERP to integrate the overall organizational activities. Talking about AMOS, it is a multi-layered system with so many complexities from maintenance to operations. ERP systems are described as "computer-based systems designed to process the transactions of an organization and facilitate integrated and real-time planning, production, and customer response" (O'Leary, 2000). The basic working of the system is like the employees put up their need to the system then the suppliers try to formulate their offers as per the needs. As per the standard operating procedure of the system there have to be three comparative offers to a particular need in order to figure out the apt one according to the need. The shortlisting of the offer is also in coordination with the logistics department, they evaluate the offers in the system on the basis of quality, price and time. The trading data in the AMOS system are backed up in case top management need to review the offers for audit purposes.

Furthermore, when dealing with multiple needs, the system let the user to chart out priorities based on the requirement of the particular product or service. Another feature of the AMOS is that it helps the firm to track the inventory right from automatically including the new inventory to counting the inventory left for use. This helps Transgas to manage their resources efficiently though still problems looms around the use of AMOS system. Due to the lack of maintenance the system takes too much time to boot up on the other hand the data stored in the system are based on a timeline with no automatic feature to search. The absence of such an automatic system makes it hard to sort out data needed for an internal analysis, it also increases the labor and opportunity cost related to the ERP. Another factor that is affecting the proper use of AMOS is the lack of employee commitment. Most of the times the inventories count are inaccurate because crew doesn't report when they use the materials so if they don't update the use of materials accordingly the AMOS system won't be able to find out the shortage of materials. This lack of proper information coordination is adversely affecting the sailing operations of the vessel, which in turn affect the customer satisfaction. Another major problem affecting the AMOS is the poor Internet connectivity on remote places around the world.

4.1.4. Style

Style Style is a corporate management principle. The trouble companies have with style is not in recognizing its importance, but in doing much about it. Personalities don't change, or so the conventional wisdom goes (Robert, Thomas & Juilen, 1980). As a company, which manages operations around the world, Trangas would need top-notch management principles to expand globally as well as to be the market leader in Latin America. The management of Trangas follows traditional management principles with no clear set of rules and responsibilities. The lack of appraisal system is demotivating the employees to work efficiently in fact this demotivation can be seen in the inventory

management of the firm. The demotivation is one of the factors which is hindering the AMOS certified employees from frequently updating the system to understand the inventory level.

Recently workplace culture around the world has changed considerably towards an open workspace system but still organizations do have predetermined responsibilities structure for the management. These companies are able to attain this change in workplace style is because of the integration of workplace through technologies but it is not same for Transgas they still lack the basic structural facts which are needed to manage a workplace efficiently. This is also one of the reason why the information flow of the company is not very well managed because employees don't know their responsibilities. As Henry Mintzberg has pointed out, managers don't spend their time in the neatly compartmentalized planning, organizing, motivating, and controlling modes of classical management theory (Sayles, L. R, 1993). If Transgas want to attain their vision, goals and objective they need to bring some good management principles to the organization to make the employees work efficiently.

4.1.5. Staff

Staff (in the sense of people, not line/staff) is often treated in one of two ways. At the hard end of the spectrum, it is talked of appraisal systems, pay scales, formal training programs, and the like. At the soft end, it was talked about morale, attitude, motivation, and behavior (Robert, Thomas & Juilen, 1980). When we talk about company's success employees are the backbone of any such success stories. It is the same in the case of Transgas they have well-experienced staff in their organizational structure. The staff in Transgas can be divided into two kinds, the one those who are based in Lima office and the other is the ship crew. As explained in the internal analysis the employees based in Lima includes the top management and operations staff and the ship crew consists of Captain, Pilots, Cook and Fireman. The President who presides over overall activities of the company, and the CEO

who looks after the majority of day-to-day operations head Transgas. On the other hand, the vessels are headed by a Captain who is in touch with the DPA to coordinate the sailing. Under the Captain, there are two Pilots; one is in charge of the shipment and the other in charge of the vessel's maintenance. The next Executive position onboard is the Chief Engineer who deals with every onboard systems related activities and under there are different specialized engineers to support the operation of the vessel.

Even though there is a handful of executive positions on board only Captain and Chief Engineer are authorized to use the AMOS though as the second in command a pilot and an engineer is also authorized to use the system with the proper consent from Captain and Chief Engineer. As it was discussed before the key problem on board is also the lack of proper control and measure of the internal management. The employees are less motivated to do their work because of the absence of structural responsibilities, which in turn is decreasing the operational efficiency of the crew. For any organization need of proper communication is always prime to coordinate their activities but onboard Transgas vessels only the Captain have access to the email, this means none of the other executive staff won't have an idea about the information flow. So, these practices are not only keeping the key staff in the dark it is also affecting the day-to-day operations of the vessel. Transgas does have training for their employees though many of these trainings are connected with the promotions. During our chat with the staff it was gotten to know that there isn't any continuous improvement training, which are important for an organization like Transgas.

Inventory management is one of the many poorly managed functions in Transgas. Even though staffs were properly trained to manage the AMOS system, those designated people aren't performing up to the mark to integrate the system. To make matters to the worst the lack of clear structure is also affecting the top management's control over the vessel crew. The staff onboard is very well qualified for their respective positions so they are often

considered as an asset for the company. So these expertise are in some way making them blind to follow the orders from the top management of the company. Furthermore the absence of clear rules and responsibilities are the villain here as well because it should have induced structure in the vessel management.

4.1.6. Skills

The skills of a company enable one to capture their crucial attributes as no other concepts can do. A strategic description of a company, for example, might typically cover markets to be penetrated or types of products to be sold. But how do most of us characterize companies? Not by their strategies or their structures. It was tend to characterize them by what they do best (Robert, Thomas & Juilen, 1980). Transgas has been in the market for the last two decades, over the years even though their management structure didn't go through any substantial changes, they have been performing quite well in the sense of market expansion. But when you closely monitor the company you can see that the growth is gradually diminishing.

Talking about the skills monitoring system, presently Transgas doesn't have a system, which can analyze the employee skills, and this is hinders employees professional growth. Companies around the world invest in their employees to increase their productivity but if there isn't a system that can analyze them, how is a company going to increase its productivity? Knowing that many of their top management and vessel crews are experienced in their respective capacities, Transgas has an upper edge in their operations. But as it was explained in the previous chapters the lack of coordination among departments and control are adversely affecting the internal management of the company. Transgas definitely lacks a bunch of KPIs to analyze the performance of their company as a whole and inter-departmental wise.

4.1.7. Shared Values

Shared value means a guiding concept--a set of values and aspirations, often unwritten that goes beyond the conventional formal statement of corporate objectives (Robert, Thomas & Juilen, 1980). As a company whose vision is to grow globally especially strengthening the existing presence in North America and South Asia, Transgas is trying hard to efficiently manage their workforce to expand the shared value principles. Due to the unavailability of capital Transgas wants to grow gradually without a major capital infusion. From understanding the outline of the Transgas corporate idea, it was understood that shared values aren't equally dispersed across the organization.

Top management is only interested in cost cutting measures and they tend to see only cost as a factor that need to be addressed. The company considers teamwork, loyalty, honesty, commitment, punctuality, quality, safety, discipline and order as the basic value to conduct business. Even though some of these values won't see the limelight most of them have been leading Trangas into a company what it is today. As stated in the mission statement of the company, they are very much dedicated to provide prime quality maritime LNG transport services through state of the art vessels and marine conservation efforts. The shared value gradually pick its place once a company establishes its defined roles and responsibilities since Transgas lack such a structure it is hard to establish the shared values principles. If the company can introduce the shared value it is not only good in employee perspective it is also an advantage for the company to achieve its mission, vision and objective.

In the next Figure 9, the main results of the 7S framework applied to the problem is shown.

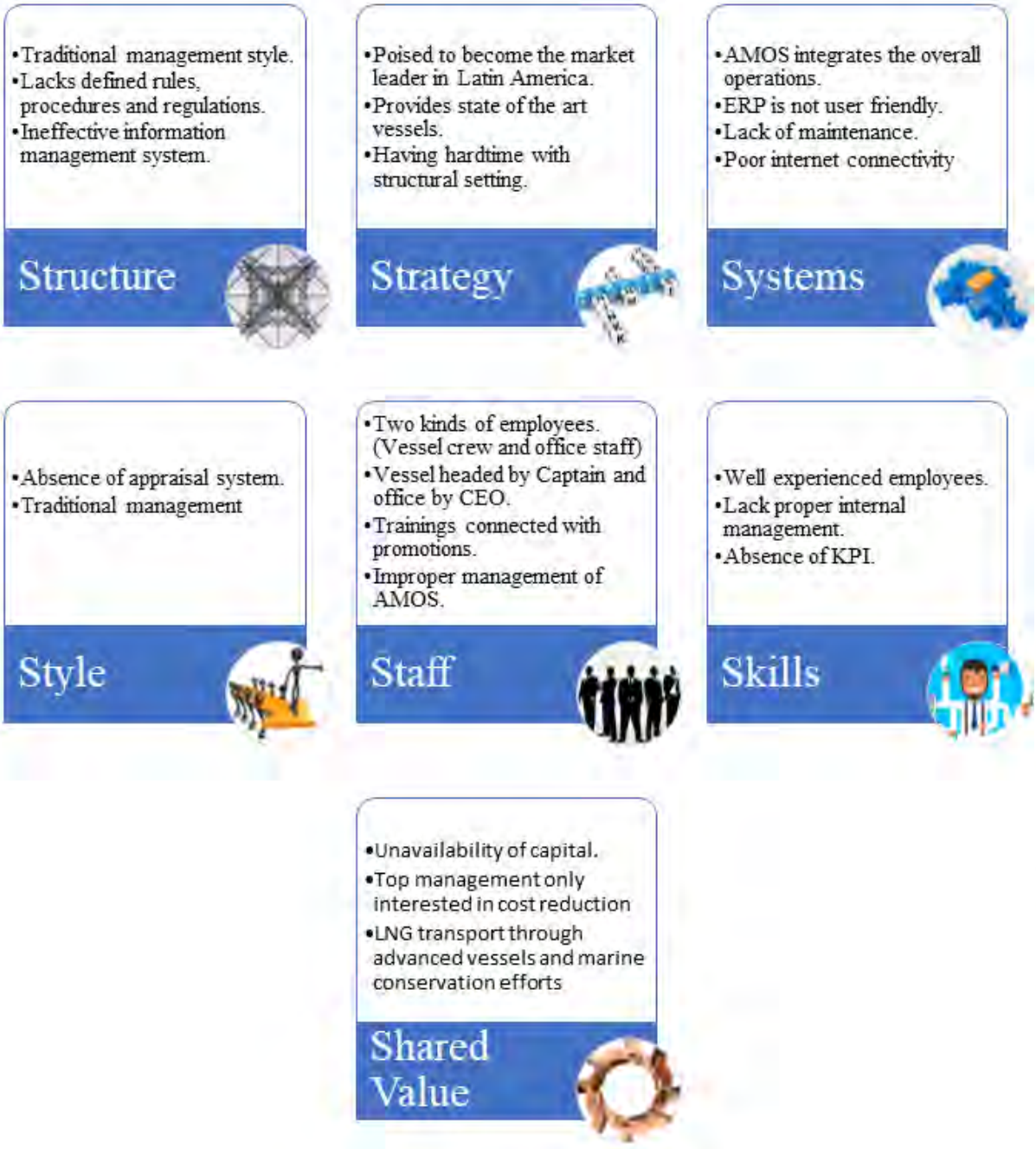


Figure 9. Main results of the Qualitative Analysis using 7S Framework.

4.2. Quantitative Analysis

The logistic and operation department have an impact on the financial statements produced by Transgas. Their process of reception, distribution, storage, inventory, and

invoicing has a cost which affects the total income. Therefore, the main problem identified and the root causes are reflected as a final step in these numbers. In Figure 10 there is a summary of the main financial ratios, which are directly related with the main problem.

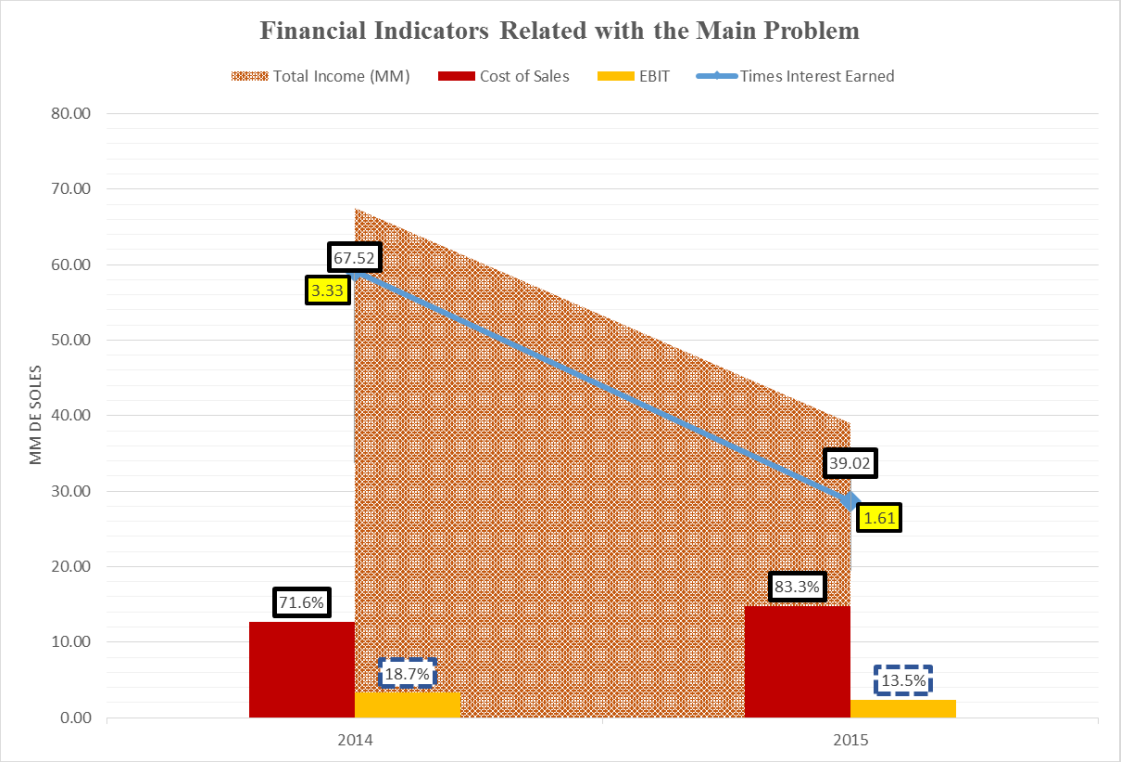


Figure 10. Main Financial Indicators Figures.

As it could be highlighted by the above diagram Transgas' income has decreased by 42.2% from the year 2014 to the year 2015, which represents a S/. 28.51 Million drop. Even though there are several factors into this specific business environment, there is no real visibility on how the support areas within the company are affecting this negative situation. The productivity, effectiveness and good performance of the different departments works together and reflects just the financial results as a whole company.

At the same time, if the Gross profit margin ratio for the years 2014 and 2015 is evaluated it could be seen that there has been a decrease from 28.8% to 16.7%. In other words, the Cost of sales has increased from one year to another. This ratio is directly related

with the performance of the logistic and operation department due to the fact that the cost of sales includes the logistics costs. Such an indication bodes negatively to the overall performance of the department in relation to the company.

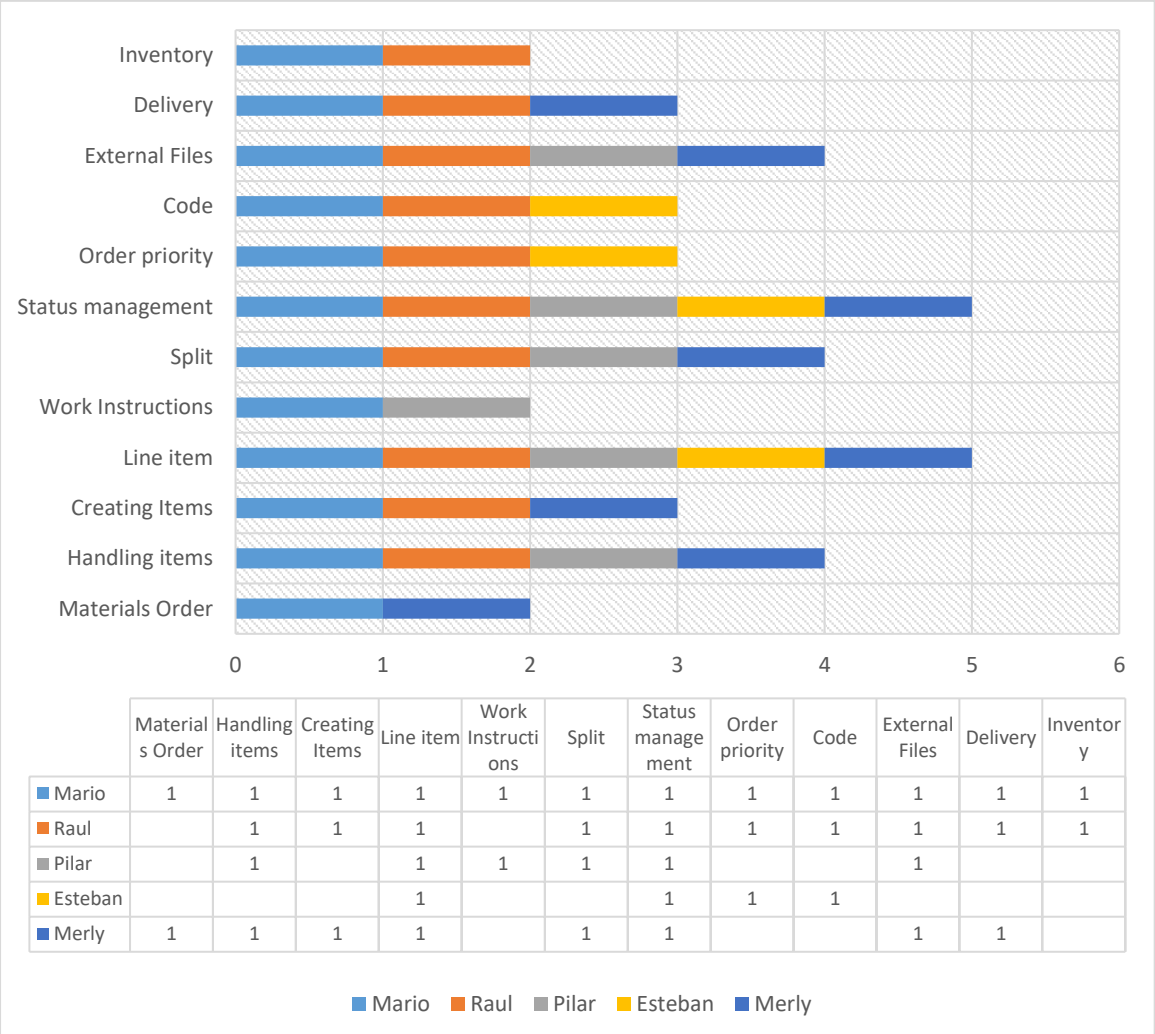
The other financial ratio which also takes into account the department in question, although indirectly, is the EBIT margin. As it could be seen in the Figure above, Transgas has showcased a decrease for this ratio from 18.7% to 13.5%. This financial value refers to the earnings that the company has received before taxes and interest. This ratio indicates the general performance of the company and thus its negative performance change reflects the poor performance of the different departments in particular the operations and logistics.

Likewise, looking at the balance sheets from 2014 and 2015, in the Appendix B, the intangible assets decreased S/. 23,773 from 2014 to 2015, which represents an 80% drop regarding the previous year. This intangible cost involves reputation cost and loyalty cost. In the maritime shipping industry, it is essential to provide ships for the transportation of gas on time and prepared for use. According to the information provided by the company, one vessel inoperative due to any factor could cost to the company at least $20,000 to fix it.

According to a previous studies to Transgas developed by Arestegui (2016), the operations and logistics department, by the year 2015, was wasting S/.162,530 in repeated orders. Using the same form of calculation for the previous year, 2014, the amount of money wasted for this bad practice will be S/. 242,825. To come over to this number, the main input was the percentage of the costs of sales provided by the company. However, in order to gain more accurate numbers to calculate the impact of the different changes in performance of the company it is necessary for the company to keep up to date and to create a culture of constant updating and measurement of the financial statements. This can be done by assigning and producing an up to date financial document for the current fiscal period. Each period reflects a quarter of a year and by having a narrow focus/time line it will allow the firm to make

faster responses to any negative results. Compared to only looking at financial statements once a year, such as the data given has indicated, this is more efficient and effective.

A Focus group developed in the year 2016 within the department of operations and logistics has shown that the knowledge about the AMOS System by the staff is not significant at all. In the Figure 11 below it is possible to see a visual representation of the results obtained.



	Materials Order	Handling items	Creating Items	Line item	Work Instructions	Split	Status management	Order priority	Code	External Files	Delivery	Inventory
Mario	1	1	1	1	1	1	1	1	1	1	1	1
Raul		1	1	1		1	1	1	1	1	1	1
Pilar		1		1	1	1	1			1		
Esteban				1			1	1	1			
Merly	1	1	1	1		1	1			1	1	

Figure 11. Focus Group Result - AMOS System Knowledge.
Adapted from *"Informe Ejecutivo 2016",* Transgas Shipping Lines S.A.C., 2016, Lima, Peru: Author.

According to this result, only 20% of the staff within the department of logistic and operation knows all the functions that the AMOS System offers regarding their activities.

There are gaps in the general staff understanding that provide Transgas the opportunity to work on and improve.

The total amount of outsourced time used by Transgas for each boat has been consolidated monthly with the data available. The boats were outsourced by Transgas and thus had to be paid for hourly. The vessels were used to supply the vessels owned by Transgas with spare parts and other required materials. The months evaluated were June and July during the year 2017 due to the availability or lack of data. Transgas outsourced the use of the boats and paid by every full hour even when they the vessels in question were only used for 30 min. In the Figure 12 below, it could be appreciated that the total time that were not used in the months evaluated and the total amount of money paid.

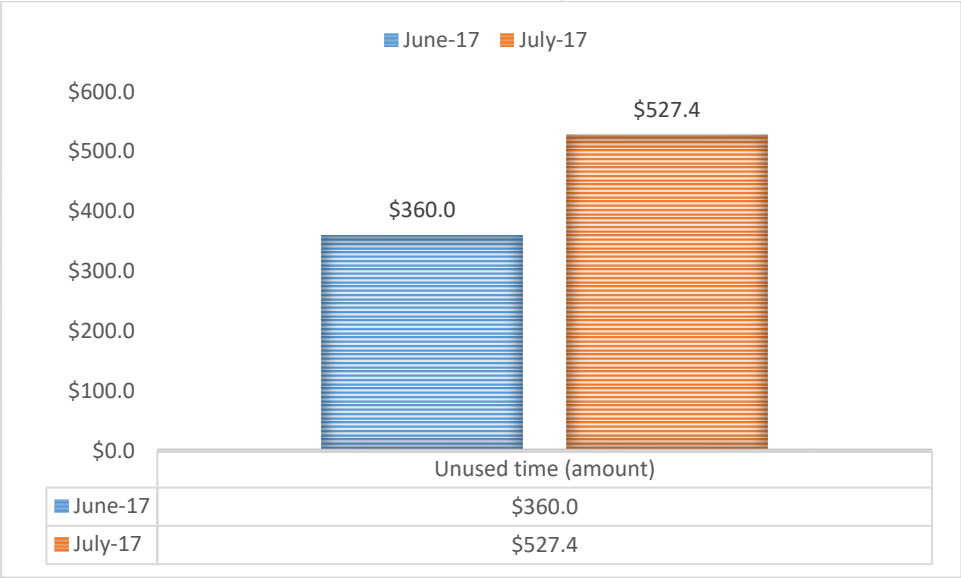


Figure 12. Unused time (amount) in the outsourcing boats.

This results shows that the company is losing money monthly about USD 444 on average. If it is projected to a year based on this information, the company is losing USD 5,328. In order to take action toward these results, it is vital to measure these situations over a year. The availability of the information and the systematization of it plays an important role in this kind of situations.

As a final comment, it could be said that the main problem identified as the ineffective control, measure and management of the logistics and operations department, is reflected not just in the financial statements. But also in the complexity to the directors regarding taking actions towards any real improvement. As Druker (2013) mentioned “It is not possible to manage what you cannot control and you cannot control what you cannot measure”.

4.3. Conclusions

This chapter has clearly explained the overall structure of the company Transgas with the help of the McKinsey 7S framework and financial ratios. The need of rules and responsibilities for the better management of a firm is not just a myth it echoes loudly in the present business world. As it was mentioned throughout this chapter from both the qualitative and quantitative analysis of Transgas, if they want to attain new heights they need to move out from their traditional ineffective management style. They will then be required to move to a more integrated and controlled management practice. From the qualitative analysis it was found that the structure of Transgas was if a traditional management style with no clear defined rules and responsibilities. Even the financial responsibilities were absent leading to a lack of financial data available for analysis. The current strategy of Transgas is to modernize their fleet of ships, however this will be very costly and could set Transgas behind their competitors. Indeed, nowadays, most of their ships have well-advanced technologies, and regarding finding the financial sources for an expansion of the fleet, it will come from some of the private investments to increase the working capital which is being considered by the Transgas management.

Looking at the systems in place it was clear that the importance of an ERP is not just for namesake, as it helps the firm to coordinate the activities undertaken by different departments. In Transgas’s case they have an ERP called the AMOS system, there are many

problems looming over the use of this system due to its ineffective use. While the rationale to adopt an ERP is mostly associated to the relative advantage it provides, the failure rate of these projects remains high. Reports indicated that ERP failure rates remain in the range of 60% and 90% and 70% of ERP implementations fail to deliver anticipated benefits. Other studies indicate that 35% of ERP implementations are canceled, with the remaining 65% of them resulting in cost and time overruns averaging 178% and 230%, respectively (Al-Mashari, Al-Mudimigh & Zairi, 2003).

The management style exhibited at Transgas shows that they are far too traditional, this needs to change to allow them to become competitive internationally. Lack of appraisal systems id demotivating and the lack of clear responsibilities hinders information flow between employees. The employees in Transgas face limited training as it is linked with promotions rather than just continuously improving staff knowledge. This lack of skills training is reflected in the absence of employee skill analysis hindering the opportunity for employees to grow and learn. The shared values of the company are being poorly distributed across the company, which is demotivating the employees to increase their productivity. Furthermore, the lack of a proper appraisal system to recognize the employees who are performing well on their tasks makes it hard for the employee and company performance.

From the quantitative analysis, It could be seen how the Logistics and Operations department has been wasting money due to its ineffective operations. This money can be redirected to other needs of the company, if they were able to clearly understand the proper functioning of the department. from these analyses, it was possible to discover that the lack of control, measure and management is actually affecting the company's overall activities.

Chapter V: Root-Cause Analysis of the Problem

5.1. Identified Causes

As explained in Chapter 2 in the Key problem, Transgas has an inefficiently managed, monitored and controlled Logistics and Operations department. This chapter will focus on the main causes leading to this problem. Upon the following in depth analysis of Transgas operations, procedures and processes a series of causes have been highlighted which are listed below:

- Ineffective hiring procedures.
- Poor management styles and practices.
- Unclear company direction.
- Lack of adequate experience.
- Lack of constant and continuous training of management and staff.
- Poor employee leadership and supervision.
- Lack of commitment by management.
- Lack of feedback, reviews or follow up.
- Ineffective inter and intra department communication.
- Lack of central ERP in place for information collection and retrieval and tracking.
- Inefficient use of AMOS system.
- Poor inventory management.
- Limited technological exposure.
- Unclear company culture.
- Fear of change and lack of innovation.
- Unclear organization objectives.
- Lack of understanding of company goals and vision and mission statements.
- Focus on short-term goals and successes.

- Unclear company standards, policies and requirements.
- Lack of identified performance metrics and indicators.
- Lack of appraisal and reward systems.
- Lack of performance tracking.
- Poor quality management process.
- Improper management, planning and use of resources.
- Unclear reporting procedures/ management confusion.

The possible causes above have been classified into 4 key categories. This has been done in order to have clear understanding; People (management and employees), Communication (flow of information), Environment (business and internal) and Methods (process, procedures and control). Each category will be indicated in the Fishbone/Ishikawa diagram.

5.2. Main Causes of the Problem

The fishbone analysis, which is also, called the Ishikawa diagram and Cause and Effect diagram is a graphic presentation that identifies the many possible causes for a problem (effects). Through such a visual display it will be able to easily illustrate the links between this identified problems. Figure 13 below, shows how the overall effect or problem has the already mentioned four causes. These causes will be analyzed in depth such that it is possible to get a clear understanding of the linkages of the presented issues that Transgas is experiencing.

5.2.1. Communications

Ineffective inter and intra department communication. As stated in the initial problem analysis it could be seen that there is an unclear form of communication within the logistics and operations departments and thus this prevents effective communication between this department and other departments, which include the Human Resource department (on

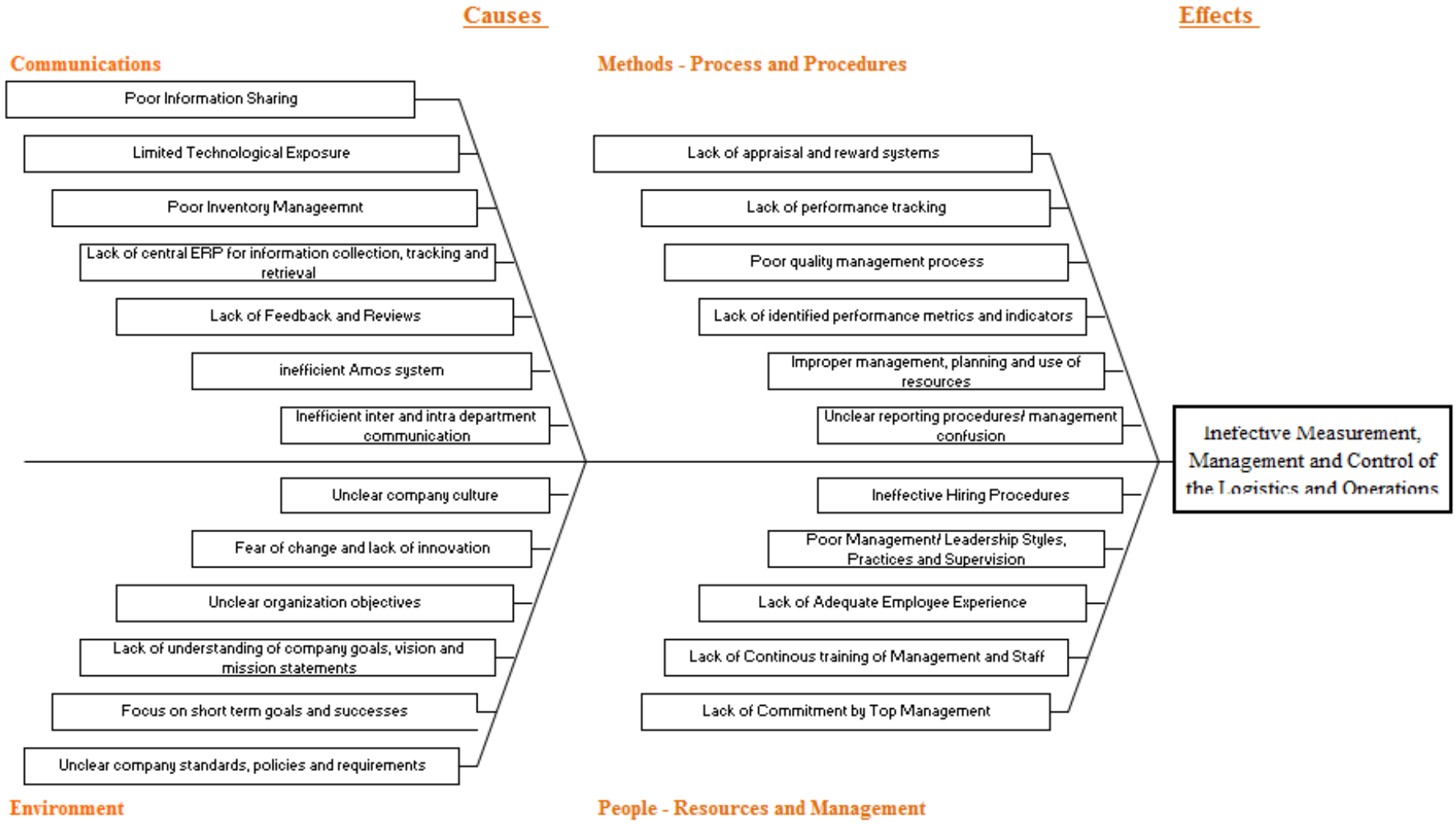


Figure 13. Fish-bone - Root Causes.

and off shore), Finance department, health, safety and quality team and planning committee. There is currently no precise methods of communications established in the organization and communication is majorly by word of mouth and thus may be disregarded, or forgotten. Communication is also flawed because interdepartmental processes are not effectively documented hence making it difficult to share with other departments.

The free flow of information within a department is vital in order to track assigned jobs and work status and effectively understand arising issues and provide quick innovative solution. The ability of employees to transfer information between each other in a team and to other intra-connected teams determines their strength, performance and efficiency.

Lack of ERP Software in place for information collection and retrieval and tracking. Transgas presently does not possess an integrated software system in order to manage all internal and external resources, which include physical assets, human resources, materials and financial resources. This has ultimately caused limitations in how organizational resources are managed, tracked and reported. Implementing an ERP will allow Transgas effectively integrate its business process and present a single view of company's active and inactive resources. Transgas also does not have any system that centralizes its information and this causes information to be lost and duplicated. Furthermore the company's operations and information regarding information are only taken one process after another and this disallows for a whole-body analysis for decision-making within the organization.

Inefficient use of AMOS System. Transgas currently has an AMOS system, which is supposed to manage the maintenance, engineering and requirements of the vessels in according to safety codes and standards. However, there is still a series of kinks in the Amos systems in place. The present systems in use have very limited access to Internet causing continuous connectivity and tracking delays of the vessels. Furthermore, the AMOS system in place does not take into consideration language barriers and is primarily in English

therefore procedures and processes required are impossible to understand by Spanish speaking employees. This greatly affects when and how they share information regarding the operations and management of vessels.

Poor Inventory Management. In the management and storing of goods intended for transports, Transgas does not effectively manage the in and out of goods and this in turns makes them vulnerable to increased inventory cost, time, theft and many more inefficiencies. Transgas doesn't have real-time information on how products are moved and where and this creates space clutter, increased lead times and stock outs. Furthermore, delivered products are monitored based on initial invoices and receipts, trust and word of mouth but they are not managed, checked to ensure consistency at all times.

Limited Technological Exposure. Transgas has experienced shortcomings in terms of internal technology for communication. The technological state in Peru as a whole is still growing and thus is not as sophisticated and error free as other world players and thus the internal communication in Transgas is limited to emails, phone calls and face-to-face meetings. Transgas has not adopted high efficient communication technologies such as Mail Pilot which allows the access of all email accounts under one account, eliminating the need to import documents dorm one platform to another; and Botiful, which is a tele-presence robot that allows long distant communication with workmates around the world.

Lack of Feedback and Reviews. Transgas operations is done based on initial instructions and assigned tasks and there is a high level of trust that the employees will do what is told of them, however good/bad performance and possible improvement areas are not communicated to the general staff and even management. The traditional instruction method is used where general organization standing is sometimes communicated but there is no specific /personalized feedback for employees. Additionally managers do not match

operations with people and so don't feel the need to communicate progress with lower level employees.

5.2.2. Methods

Lack of identified performance metrics and indicators. Transgas currently lacks performance metrics, indicators and scorecards to evaluate individual and team based performance and Transgas only has metrics to monitor vessel requirements. All other aspects of the organization are run blind without a measure for control of activities within the company. This therefore makes it hard to measure where the organization has been, where it is headed and whether or not something is wrong.

Lack of appraisal and reward systems. Transgas, which outsources its employment practices and talent sourcing (administrative and operational) to Escuela Nacional de Marina Mercante pays its employee based on market standards. Transgas however, does not have any system in place that evaluates and assesses payment system, salary increases, incentives and promotions based on employee job performance. Furthermore, there is no way of determining if and when employees efforts and job functions are outdated or inefficient in the organization as appraisal systems encompasses goals in order to help improve employee and employer interests.

Lack of performance tracking. Performance tracking is the process of knowing the performance at every point/stage of people involved in your organization and identifying the areas of improvement based on the visible data collected in order to develop strategic initiatives needed to boost motivation, engagements and efficiency. Knowing that this involves sourcing and collating data from various sources within the organization, Transgas does not perform inter/intra department data sourcing for employees in order to track their activities. Also they do not have any performance boards to compare the tracked work of

individual employees with each other in order to determine trends on a periodic basis. Finally there is an absence of the use of work sheets to record and access work done on a daily basis.

Poor quality management process. There is a little or no focus on quality management in the organization. Preventive measures are not a big concern for Transgas and problems are tackled as they arise. Management has a fairly vague idea of the quality of the services its employee produce and bases decisions making on the issues that arise.

Improper management, planning and use of resources. There is an inefficient use and management of resources in Transgas. Resources are simply assigned tasks based on immediate need however, there is no advance plan for the assignment and release of resources, time frame recommended and needed for individual and alternative use of assigned resources. This makes it difficult to ascertain a critical path and ensure efficient use of resources based on clear time constraint.

Unclear reporting procedures/ management confusion. There is no clear and structured reporting system in the organization and low-level employees are unsure about which stakeholders/ managers are to be informed and consulted for various tasks and arising issues. This confusion creates duplicated and lost information as employees either relay information to the wrong stakeholder/manager or multiple unnecessary stakeholders. Also, tools Like RACI charts are not used in order to determine who is responsible, accountable, consulted and informed about the progress and completion of tasks and projects.

5.2.3. Environment

Unclear company culture. The company culture includes norms, core values, style and behavior of the organization and can gives employees a sense of what to expect in the organization. That being said, Transgas employees do not show a sense of team or belonging and there is no cultural screening in place to ensure employees culture orientation matches approved company culture. More so, employees do not understand how the direct outcome of

their work matches and benefits the identity of the organization and therefore not inspired by assignments. Also, the practices and performances of employees are not matched against business objectives and therefore increases the likelihood of initiating projects that do not meet objectives.

Fear of change and lack of innovation. Management and employees are resistant to change because of the perception that it will require a lot time and resources and therefore prefer to keep processes the way they are**.** More so, because Transgas has been successful in the past 25 years they believe there is no need to change anything even though the change may bring about efficiency and improved practices. Furthermore, there is no drive towards innovation and creativity in the organization and employees are not encouraged or trained to go out of the norm.

Unclear organization objectives. Organizational objectives are the measureable steps to take to achieve a strategy and a glimpse/insight to the direction of the organization. Although Transgas' objectives are clearly stated, employees do not have a clear sense of the required steps stated. Transgas' objectives do not put into perspective a clear road map or specific, measurable, attainable and time-bound steps. Also set organizations are not reviewed and updated to reflect changes in business trends and practices and markets.

Lack of understanding of company goals, vision and mission statement. Upon hiring of employees, there is no training regarding the Company goals and vision and thus they only see the written form but do know clearly understand the implication and essence of the set goals and vision. Trainings are only done for tasks assigned. In addition, for goals in the maritime industry to be effective, they need to be reviewed and modified, due to its competitive and dynamic nature. That being said, Transgas does not evaluate company goals with the aim to redefine.

Focus on short-term goals and successes. Even though the company mission takes into consideration projected long-term successes the operations within Transgas focuses mainly on the short-term results and employees are instructed based on this. Knowing that without long-term focus, short-term goals and successes will not add up to much, Transgas fails to incorporate its long-term focus and short-term focus.

Unclear company standards, policies and requirements. Similar to the ‘’lack of understanding of company goals and objectives” above, employees are not fully aware and informed of the policies by which the organization is run. There is also no information regarding the requirements and standards that must be adhered to when performing assignments. The results of the employees are not benchmarked against best practices and recommended guidelines and policies in the organization are not explicitly enforced on employees/tasks performed

5.2.4. People

Ineffective hiring procedures. As mentioned above, Transgas’ hiring procedures is outsourced to an external agency, which provides Transgas with staff based on request. However Transgas does not do a personalized screening of employee work ethic, cultural orientation, past experiences and education in order to ensure they match company’s culture and objectives. Also company culture, goals, mission, objectives and reward system is not discussed and explained with prospective hires.

Poor management/leadership styles, practices and supervision. The management practices and styles in the organization are determined by each individual’s personal management practice. The organization does not have a clear defined method that managers and team leads are expected to adopt therefore lower level employees are unsure of what is expected of them especially when working with multiple leaders and managers. Furthermore,

operational managers do not consider personality traits and temperaments of subordinates when supervising thereby using one criteria/ idea to manage their assigned employees.

Lack of adequate experience. Employees don't particularly have adequate experience in the job positions or roles that they hold. This is encouraged by the fact that Transgas just informs the hiring agency about the role it requires people for and the job function of the prospective hire. The agency in turns give them whomever they dim fit bases on a series of factors whether or not they have enough experience in that role from a previous job. This limits creativity in employees, as they don't have a reference point when tackling assignments and it increases the amount of training and support necessary.

Lack of constant, continuous training of management and staff. Transgas organizes general administrative trainings yearly for their staff and when an employee is promoted. However this training are not specifically tailored to the needs of the employees, their weaknesses, strengths and educational background. Their trainings do not vary by employees and position. They also have very limited onsite trainings and development seminars for staff. Finally the organization does not offer also personal development trainings, which may help develop employees moral, attitude and relationships and ultimately boost performance.

Lack of commitment by top management. According to the businessdictionary.com, 2017, top management is defined as the direct participation by the highest level executives in a specific and critically important aspect or program of an organization which includes setting up organization, establishing policies and objectives, providing resource and trainings, overseeing implementation on all organizational levels and evaluating and revising the policies and objectives in line with the results achieved. Keeping this definition in mind, Transgas management does not commit to the total improvement and advancements of its employees via continuous trainings, they also do not revise policies and objectives based on individual, team and departmental results.

5.3. Root-Cause Analysis Results

Upon extensive information gathering and analysis of the possible causes it is shown that an unclear company culture and performance measurement are major causes affecting the Logistics and Operations department of Transgas. The availability and effective transfer of information within an organization is a core determinant of its success and this goes on to affect the effectiveness and efficiency of tasks. The clear knowledge on information gathering, its usage and decision-making within Transgas will create solid foundation for effective monitoring and tracking of performances from the lower level employee to the top management. Furthermore, the lack of a clear sense of leadership and direction deter organization activities and efficiency among other things.

5.4. Determination and Ranking of Main Causes

The inefficient measurement, management and control of the Logistics and Operations of Transgas can be related back to four specific problem categories: Communication, Methods (Process and Procedures), Environment, People (Resources and Management), which was assessed in order to determine the level of contribution to the problem and its impact on quality, resources and results. The causes have been ranked on a scale of one to five with one being Very Low Impact and five being Very High Impact. Table 7 below shows the assessment criteria used for ranking.

Table 7.

Assessment criteria.

Assessment Value	Assessment criteria
5	Very high impact
4	High impact
3	Moderate impact
2	Low impact
1	Very low impact

Then, after the assessment criteria, the Table 8 which is below, shows full ranking process and results.

Table 8.

Impact assessment results.

	Causes	Impact on Results	Impact on Resources	Total impact	Average impact
1	**Communication**				**8.3**
1.1	Poor information sharing	5	5	10	
1.2	Limited technological exposure	4	5	9	
1.3	Poor inventory management	3	2	5	
1.4	Lack of central ERP for information collection, tracking and retrieval	5	5	10	
1.5	Lack of feedback and reviews	3	3	6	
1.6	Inefficient AMOS system	5	3	8	
1.7	Inefficient inter and intra department communication	5	5	10	
2	**Methods**				**9**
2.1	Lack of appraisal and reward systems	3	5	8	
2.2	Lack of performance tracking	5	5	10	
2.3	Poor quality management process	5	4	9	
2.4	Lack of identified performance metrics and indicators	5	5	10	
2.5	Improper management, planning and resources	5	4	9	
2.6	Unclear reporting procedures/management confusion	4	4	8	
3	**Environment**				**7.5**
3.1	Unclear company culture	4	5	9	
3.2	Fear of change and lack of innovation	4	3	7	
3.3	Unclear organization objectives	4	4	8	
3.4	Lack of understanding of company goals, vision and mission statements	4	4	8	
3.5	Focus on short term goals and successes	4	2	6	
3.6	Unclear company standards, policies and requirements	4	3	7	
4	**People**				**8.2**
4.1	Ineffective hiring procedures	4	3	7	
4.2	Poor management styles, practice and supervision	4	5	9	
4.3	Lack of adequate employee experience	4	4	8	
4.4	Lack of continuous training of management and staff	4	3	7	
4.5	Lack of commitment by top management	5	5	10	

Communications. Communication got an impact score of 8.2. The lacks of effective inter and intra department communication, poor information sharing and ERP system in Transgas are key causes that pose the highest impact on resources and results on the organization. Furthermore, the lack of information sharing and effective management causes a stagnating effect in departmental and organizational progress

Methods. Processes and procedures had the highest average impact score of 9. This is explained based on the fact that performance metrics, indicators and tracking methods make it impossible for departments to assess areas of improvement, efficiency and business viability and future. Poor quality management also has a high impact on organizational procedures and it results in an increase in the cost of operations and time spent as there will be a high number of possible rework and an increased vulnerability to substandard service.

Environment. The environment section had an average impact score of 7.5 with the highest impact being unclear company culture and poorly understood company's goals, vision and objectives. This has a big impact on departments and the organization as a whole because values, priorities and practices determine the effectiveness of / efficiency in teams and the approach to which problems are solved. It sets the standards to which behaviors, process and tasks in the organization processes are established.

People. Upon assessment, People: resources and management got an average impact score of 8.2. Each cause in this category has a high impact on the results and medium level impact on the resources within the organization. This is solely because the quality of people within an organization determines how successful implementation of tasks will be. It is shown that the hiring procedures and people management does not take into consideration commitment, management styles and varying employee motivators and drivers. Which are necessary to effectively managing employees and achieving efficiency

5.5. Conclusion

As seen in this chapter, various causes have been identified and analyzed in addition to their various impacts on the organization resources and results. The assessment revealed the main causes to be poor information sharing and inter and intra department communication, lack of performance tracking, identified performance metrics and indicators and commitment by top management. These have the highest impact on the logistics and operations department and the organization as a whole. The total effectiveness and efficiency of Transgas is dependent on the full involvement and interest of all levels of employees, from top management to lower level and the ability and knowledge of how to acquire information and process it in order to aid effective decision making. Moreover information processing should also aid, enable and include tracking and backtracking in order to discern the future from past and present performance. Lastly, determining metrics and indicators of performance allow an organization to know specifically the aspects in an organization in need of efficiency and the people responsible and should be held accountable. Knowing the causes of the problem allows for the possibility of solutions.

Chapter VI: Assessed Solution Alternatives

In this chapter, the alternatives of the possible solutions will be considered such that the company Transgas will be able to review the different possibilities available to them. The different solutions address the root causes of the problem identified in the previous chapter: the ineffective measure, control and management of the operation and logistics department. The following analysis will also provide an analysis of the risks of implementing the solution could be for the company, what would be required to implement. Finally, where the resources could be found that are necessary for the implementation of the alternatives will be pinpointed. At the end of the following section, the alternatives will be evaluated against each other to suggest a final solution.

6.1. Alternatives to Solve the Problem

6.1.1. Culture Change.

From the Fishbone diagram in chapter 5 it is possible to address the key root causes of the main issue afflicting Transgas. The first alternative 'measurement culture' aims at addressing most of the root causes with the following some of the main ones addressed: There is a focus on the short term, unclear organizational objectives, unclear company culture, lack of understanding of company goals, vision and mission statements and lastly, unclear company standards, policies and requirements.

It has been found that one of the key drivers to the success or failure of performance measurement implementations is organizational culture (Bititci et al, 2004). Organizational culture is a very broad subject that, till date, researchers have still not come to a consensus over (Henri, 2006). Most cover the idea that there must be shared beliefs, values, significant meanings and assumptions (Green, 1988). However, it has been found that it is not the definition of what culture is that varies widely among researchers, but how it is operationalized. According to Rousseau (1990) culture will encompass five elements that are

spread along a continuum of subjectivity and accessibility. The first two on this continuum is '*material artefacts* and *patterns of behaviour*' which encompasses the observable physical expression and patterns of activities. Examples of this include symbols, rituals, language, communication and the mechanisms of decision-making. Next along are behavioral norms, which is the common beliefs that are seen to be acceptable. *Values,* is the priority assigned to the outcomes or certain states of company activities. And at the end of the spectrum one finds *fundamental assumption,* which are the unconscious elements that, even to members, are not directly knowable but are still practiced. Transgas was found to lack a specific company culture that was targeted to the measurement, control and management of its operations. Taking this into account it is important to understand what drives culture and how it can be created.

Organizational culture does not originate from the differing sets of values present in a company, rather it originates from the emphases on a limited set of values (Zammuto & Krakower, 1991). Stressing the right company values through their promotion by upper level management is therefore required to start the creation of company culture. In order for Transgas to have a culture that focuses on measurement, control and management, they must highlight how important these variables are. By creating shared value (what is important) throughout the company, all employees will start to implement and interact such values in the organizational structures and control systems (Uttal & Fierman, 1983). This will lead to a change in the behavioural norms (the way things were doing here) exhibited by management and their subordinates (Uttal & Fierman). A culture with an emphasis on control has been associated to stress predictability, stability, rigidity, conformity and formality. There must be a change in perceptions by orientating goals towards improving efficiency and profit (Henri, 2006). Matching the culture of the organization to the desired strategy is imperative to improving performance and the general climate within the firm (Schwartz & Davis, 1981).

Changing the culture of a firm is first and foremost very difficult (Schwartz & Davis). Corporate culture imposes powerful influences and the organization and shifting it takes commitment and dedication (Schwartz & Davis). There are many examples of managers who have tried and failed to change the culture of their respective companies due to encumbering nature of such a task. However, there are also enough examples where it has worked out and the reformed culture has led to becoming a source of strength and competitive advantage. A risk to Transgas when trying to change the company culture is the need to violate the norms present in the firm today. This is dilemma for many managers as it is the embodiment of such norms that has lead them to such positions in the first place (Schwartz & Davis). Deep resentment and resistance will generally be the results of such actions. Taking this into account some strategies to ease change and help speed along the process will now be discussed.

When going through a process of change top-level management must legitimize the change and be committed to the endeavour (Bititci et al, 2004). Employees will look at their managers for leadership and will copy their actions, thus by setting a good example change will be more readily accepted (Bititci et al,). Kotter (1995) highlighted a few common errors that managers were guilty of making and how best to not fall in those traps. The first error was the fact that managers did not establish enough of a sense of urgency. Without motivation people will be less inclined to put effort into a project and it will end up going nowhere. Although seemingly an easy fix, nearly 50% of companies studied committed this first error and ended up failing as a result. Driving people out of their comfort zone and be in favor of change requires lots of energy that many do not account for. The other end of the spectrum is also a danger; being to urgent and forceful shows a lack of patients and puts employees on the defensive. By getting 75% of managers to back the change and promote the urgency has been found to be the most successful and prevents problems later in the process.

This problem is the cause of error 2, not creating a powerful enough guiding coalition. As already mentioned managers need to legitimize the change, this is done by getting the heads of the organization to be active supporters. Getting such a group together can be done through company off-site retreats and/or events where urgency can be expressed. Without a strong leadership, the change will stop due to the formation of opposition groups looking to prevent the change. Vision for where the project will lead the company was highlighted to be extremely important by Kotter (1995) as it gives direction to the project. Communicating this vision to the organization is the basic requirement to capture the heart and minds of troops so to speak. Leaders of the organization must learn to "walk the talk" as nothing is more detrimental to the success of project than saying one things and doing another. Managers at Transgas can do this by inserting the vision into routine discussions with employees by talking about how that employee's actions are helping or undermining the vision.

Transgas should take the changing of their culture as a viable solution to their problem of measurement, control and management. This cultural change will need to affect not only the Top-level management but the company as a whole. All members of the organization will need to be molded as it is only through such a complete company make over that the change be effective and lasting. By creating a culture where control is of high priority they will create a stable platform from which they can build more efficient and effective performance measuring tools. New employees coming into the organization will also be indoctrinated into a setting where the norm is the desired situation where Transgas wants to be. Old and new employees will therefore start to incorporate standard practices that will bring them up to level of their international competitors such as Maersk who embody the cultural identity of high levels of performance with constant control and measurement (www. maersk.com).

The resources required to change the company culture to that of one more directed to control can be found mainly in-house. It requires the dedication, time and support of managers and employees throughout the company to step in line and change their perceptions of how to conduct their activities. This change will need to be led by the executive managers who influence the general managers who in turn will oversee the lower level employees. This trickle down influence will insure that the change is legitimized and ensured. The vision that will be presented will have to incorporate the ideal situation of Transgas, which is where performance is measured and evaluated continuously in order to improve performance and to discover issues.

6.1.2. Systematization of the data.

The company works at the moment with an ERP system called AMOS, which integrates the diverse departments of the company. As it can be appreciated, there has been an intention by the managers to sort out the matter of the information flow throughout the company. However, as could be seen in the previous chapters, some of the root causes of the main problem start in the systematization of the data. The AMOS System therefore has data, which is not relevant and presents the lack of registration of essential information that is required by managers and employees alike.

Other causes identified in chapter five that is relevant to the current situation is the lack of performance measures, the poor quality management and limited technological exposure. With the solution of systematizing the information gotten from the critical processes, those problems could be solved. In this sense, the alternative solution proposed is to systematize the information taking into account the process that the company developed. The processes must be aligned with the main goals and objectives of the company in order to create a streamlined implementation. The systematization of the information allows the company to make better decisions. With the identification of the right data at the right time,

such information can be transformed into key information useful for decision-making processes. Thus, the creation of management and control tools has their origin within this alternative.

The development of this alternative makes it necessary that the processes are well defined. The critical activities identified and the objectives between the departments should be aligned with the whole company. After that, the technological system should be selected. Even though, Transgas works with AMOS system, the impact of such a system should be evaluated as well as the impact of changing such a platform or just the making of slight alterations in order to create a better fit with the processes.

6.1.3. Redefining of the business processes.

The second alternative will be aiming to solve the identified problem by solving the following root causes (as defined by the fishbone diagram): Poor inventory management, poor information sharing and inefficient inter and intra department communication.

A business process has become a necessity for every organization. Today in many organizations positions such as process owners, process managers and most recently even chief process officers have come to existence. All in order to acknowledge the specialized requirements of a process-orientated organization (Becker, Kugeler & Rosemann, 2003). First, one must answer the question ‘what is a business process?’ Although a relatively easy one to ask and for some easy to answer it has still taken researches a long time to come to a consensus (Lindsay, Downs & Lunn, 2003). A business process is an activity that has the aim to accomplish a specific organizational goal (Lindsay, Downs & Lunn). Activities such as purchasing, inventory management and procurement are a few examples of where one can find business processes. Depending on what type of organization, industry and even the nature of the work provided, a business process can take up different forms. These are split into the following categories:

- Operational process: Deal with the core business and its resulting value chain. Such a process delivers value directly to the customer through the production of products or the offering of a direct service. For example managing bank accounts and taking customer orders.
- Supporting process: These processes help and fortify core business process and functions within an organization. For example Human Resources management and workplace safety. Such processes do not provide value to the client directly.
- Management process: These processes measure, monitor and control activities that are related to the systems and procedures of the organization. Like supporting processes these do not add direct value to the customer. Examples of management process include internal communications, governance and strategic planning.

From the information provided it is clear that management processes are the processes that Transgas will need to focus on, as they are most inline with their problem. At the moment it has been found that the management processes implemented in Transgas are not inline with the company's goals. This is detrimental to the future growth, profitability and overall success of Transgas. By having process that do not represent the desired goals employees and managers alike will not take the vision or the mission of the company to heart. This means that any control or measuring tools that Transgas would like to implement will not be used properly, as the company itself cannot come into sync with its already implemented processes. For Transgas' managers there are a few strategies available to choose from. This paper will look at the following two: process mapping and process reengineering.

- Process mapping: This is a visual display of the different steps involved in a business process from start to finish. Such mapping will draw concise pictures of the sequences of all the tasks needed to produce a product or service (Rouse, 2014).

- Business process reengineering (BPR) is the task of redesigning the workflows within the enterprise in order to optimize the whole process. There are a few principles that should be followed, the following are the most applicable to Transgas: Organize around outcomes, not tasks; identify all the processes in an organization and prioritize them in order of redesign urgency; integrate information processing work into the real work that produces the information; Build control into the processes (Hammer & Champy, 1993)

6.1.4. Development of a Dashboard.

Lavinsky (2013) mentioned that "an Executive Dashboard is a visual representation that gives executives a quick and easy way to view their company's performance in real-time". Building on the previous three alternatives, a dashboard would provide Transgas the perfect method to keep easy control of the business activities of all the individuals and departments of the company.

The benefits of the development of this tool are:

- Control over the processes. It empowers the managers to take decisions and as well the employees due to the fact they can measure the impact of their effort into the company.
- Easy visibility and understanding of the measure. The key information of the company is summarized in a panel, which facilitates the control and actions of the managers regarding the company's strategies.
- Time saving. Due to the objective measurement of the performance the managers can avoid the different verbal and written report of the employees, so in this way it eliminated the perception and changed by results.

The main problem of Transgas is related with the control, measure and management of the logistics and operations department. The development of this alternative fits perfectly.

However, In order to develop that it is necessary to have the information systematized, the processes defined and the culture of measure well established. All of them are requirements of this alternative because this dashboard will show the results of the management over the process in order to take decisions such as improvements, investments, or even outsourcings.

6.1.5. BASC certified Replenishment-at-sea (RAS) operations.

In today's business world, the need of exploring new revenue stream is important to sustain in the marketplace. As an LNG transportation company, Transgas have to venture into ideas where they can gain the most since the world is moving towards to hydrocarbon free society. So as an alternative stream of income it would be futuristic if Transgas can venture into the Replenishment-at-sea (RAS) business since there isn't much competition going on in that market in Latin America.

Furthermore, Transgas does own some RAS vessels to resupply their own operations around the world so this will give them an upper edge to expand into the resupply business. But the major concern these days looming over any business entity is how secure are their businesses? In order to address these kind of security concerns, most of the companies dealing with shipping industry tries to obtain the Business Alliance for Secure Commerce (BASC) certification. This certification will allow Transgas to demonstrate the possible clients their transparency in their processes and the international support regarding their operations in this new business opportunity.

Since RAS operations can take place around the world in different types of scenarios it would be highly recommendable to get a BACS certification before venturing into the business. The BASC was created to address the problem of concealing contraband in commercial trade. As a voluntary program for businesses, with no government-imposed mandates, corporate participants are expected to follow BASC's security standards which are designed to significantly improve their security practices and in the process, deter contraband

smugglers and terrorists from using their companies to introduce contraband and implements of terror in legitimate shipments (World BASC Organization, 2011).

6.2. Assessment of Alternatives

6.2.1. Criteria.

In order to obtain the optimal solution for the company, it is necessary to evaluate the alternatives. This analysis will be based on the following criteria: Priority, cost implementation, time implementation, feasibility and the impact in the company. By doing such an analysis Transgas will not only understand in detail how the evaluation was made but be able to justify such an implementation to key stake holders.

Priority. Cambridge Dictionary (2017) defines Priority as "something that is very important and must be dealt with before other activities". It means that this criterion will define the urgency regarding the implementation of the alternatives taking into account the main problem of the company. In the section before (6.1), it was explained that the alternatives of Transgas could be implemented into the logistic and operation department. However, there are some metrics that should be evaluated to consider if the option is suitable for the company and how important they are compared to different alternatives. Because the problem could be addressed in different situations with several alternatives within differing areas, the weight for this criterion has been given a value of 20%, reflecting the importance and complexity of such a criterion.

Cost Implementation. In order to assess all the alternatives it is important to take into consideration the cost of the implementation. Such an evaluation will allow Transgas to assess whether they have enough resources at their disposal to implement the alternative in the first place. It is important to consider the economical resource of the company as implementing an alternative that cannot be afforded will leave Transgas in a unhealthier position than before implementation. Even though Transgas is a company, which has good

performance in revenues, the implementation of alternatives should be optimal. In other words, at least the economic benefits of the implementation should be greater than the costs involved. Taking this into account looking at the cost implementation, will further allow for the evaluation of the benefits that the company will receive in the future considering the initial costs that the firm had to pay.

So, there are two key points into this criteria: (a) the value of the investment and (b) the willingness of the company to afford them. Together this criterion will account for 20% of the overall assessment, echoing the importance of the cost impact that implementing an alternative will have on the firm.

Time implementation. Because companies are in a constant development phase improving their operations, remaining competitive and thus ahead of the competition is becoming more and more critical as a decision factor for managers. In this sense, time as a factor of alternatives measure gets strong relevance when evaluating alternatives and as the old adage explains, "Time is money". The more time Transgas spends on implementing the alternative the less competitive they will be due to lower response rates to changing environmental factors.

At the same time, Transgas as a leader in the market has to develop and implement the improvements ahead of their rivals in order to stay ahead. For this reason although time spent on implementation is important it will be given a factor of 15% in the assessment of alternatives. Timing is important within every project. In Transgas this factor create value but there are some other factors which are important as well such as the impact on the company or the feasibility which also should be considered in the final assessment.

Feasibility. It is important to consider the availability of the resources needed to carry out the alternatives as proposed to Transgas. The resources involved are not only the assets of the company such as the availability of human resources, but also the legal, technological,

economic and environmental aspects. Project managers use feasibility studies to determine potential positive and negative outcomes of a project before investing a considerable amount of time and money into it (Investopedia, 2017). As the cost of implementation and length of implementation are key assessment criterion already these shall not be included in the feasibility assessment criterion. The remaining aspects that have already been mentioned will weigh a total of 20% of the selection assessment.

Impact in the company. Finally, the impact of the alternatives on the company is essential to the final assessment. This is because it will allow the measure of outcomes that the proposed solution will provide for all the stakeholders. At the same time, the main question that this criteria answer is the value added to Transgas. Value added could be represented by savings, productivity, and improvements, among others. Due to its high importance for key stakeholders, such as shareholders, this criterion has been given the largest weight worth 25% of the overall decision.

6.2.2. Results.

After the definition of the criteria, which are going to be measured, and the definition of the final optimal solutions for the logistics and operations department, it is possible to do a quantifiable assessment. The criteria will allow to understand the situation of the alternatives and to take decision regarding the final proposal that this document will do. The following Table 9 shows the results of this assessment highlighting the different weights of each criterion and the overall importance of each alternative. This alternatives have been ranked on a scale from one to ten with one being the lowest and worst score possible, and ten being the highest and best score possible.

Table 9.

Alternatives Assessment.

Alternatives	Priority 20%	Cost Implementation 20%	Time implementation 15%	Feasibility 20%	Impact in the company 25%	Total Value 100%
Culture Change	10	7	7	9	8	**8.25**
Systematization of the data	9	8	6	9	7	**7.85**
Redefining of the processes	8	7	6	9	8	**7.70**
Development of a Dashboard	7	8	4	9	9	**7.65**
BASC certified Replenishment-at-sea (RAS) operations	5	3	5	6	8	**5.55**

0 = lowest and worst score possible, 10 = highest and best score possible

6.3. Conclusion

As it can be appreciated in the Table 9, regarding the alternative assessments of the alternatives, Transgas will be best helped by changing their company culture to one that is more directed to measuring, storing and analyzing data. Closely followed are the next three alternatives. As the data produced shows such a close result it could indicate that Transgas will be best helped implementing the first four alternatives in sequential order based on the total value of the assessment. However, not all of them should be implemented at the same time due to a lack of available resources. The final option of getting BASC certified was found to not be very significant in solving the current issue. The alternatives, which are finally going to be developed in order of implementation, are culture change, redefining of the processes, systematization of the data, and development of a dashboard. As it noticed, they

are related each other, they together address the problem of ineffective control, measure and management of the department. In this sense, Transgas will be able to build upon each implemented solution using the following alternative. Not only will the results be magnified by such a strategy but it would bring Transgas closer to a full implementation of a balanced scorecard, which at the moment would be very difficult due to a lack of established core values necessary for successful implementation. The following section will go into detail how the final solution, based on this analysis, will be formulated.

Chapter VII: Proposed Solution

This chapter will show the proposed solution that come over after the assessment of the alternatives. To introduce this approach, it is necessary to take into account what Kaplan and Norton (1992) mentioned, “What you can measure, you can get”. Indeed, in this 21st century business environment, characterized by competition, high demand and of strong movements within the industry, it is required for the companies to show competitiveness and key strategies, supported by solid management tools, which allow to satisfy the customer quality requirements through the expected performance.

Several researches about performance measurement systems, have focused on making financial measures more relevant, however some others stated that it is more important to improve operational measures like cycle time and defect rates, because then the financial results just will follow (Kaplan & Norton, 1992).

In Chapter 5, it was analyzed the cause roots of Transgas’ problem, and then the alternatives solutions where presented in next chapter. This chapter will propose the optimal solution in order to create a positive impact in Transgas addressing the different issues through a combined approach that will solve the main problem identified. After the assessment of the alternatives and this final solution, it is essential to explain the phases that it involves. In this sense, the sequence of the solution plays an important role due to it will be suggested four alternatives which are linked up each other in a strong way. In the following Figure 14, it could be appreciated the processes and key point of the proposed solution as a summary.

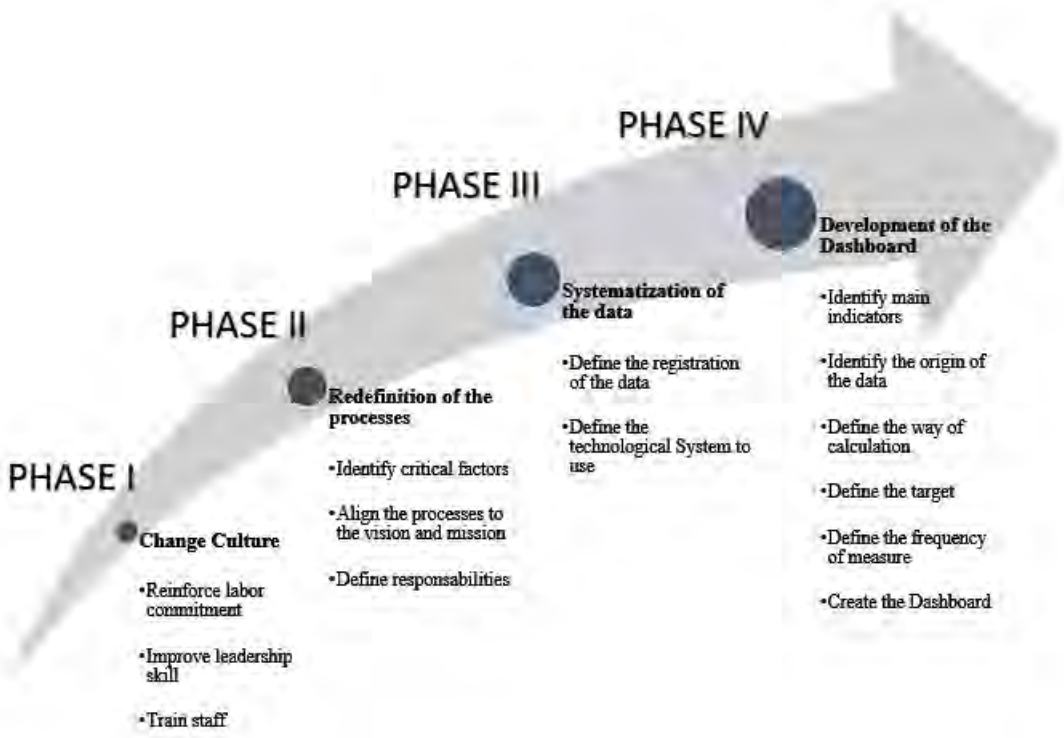


Figure 14. Proposed Solution.

The first phase of the solution to be implemented is the culture change which is strongly related with the values, strategies, vision and mission of the company. The main objective in this stage is to create a measurement culture. This phase will have a long term implementation and will be reinforced over the time. It has a beginning but does not have an end, it is a concept which has to be adopted by the company and has to drive the way of working towards achieving the short, medium and long term goals. This phase involves the following steps: (a) to reinforce labor commitment, where the employees will understand their value for the company, and how the company reciprocates their efforts based on their performance, and also, through reward program; (b) To improve leadership skill, where the team leaders could be able to lead successfully the teams, control their processes and have the tool to take actions when they are facing several situations; and finally (c) To train staff, which means to take advantage of the employees capacity to obtain better results in the company. Giving the staff the tools to improve their performance.

The second phase of this solution is the redefinition of the processes. This stage plays an important role because will structure the company, the information flow, the interaction of the different stakeholders, and the responsibilities over each optimal activity. This stage should take into consideration the objectives of the company and the strategic plans. In this sense this phase involves the following steps: (a) to identify critical factors, where will be evaluated the impact of the activities in the company and the department approached in order to identify which of them have a crucial impact for the company; (b) To align the processes to the vision and mission, which means working toward the same objective that the top managers planned. In other words this stage establishes the routes to operate the activities and processes; and (c) Define responsibilities, where each activity identified has in charge a person or a team. This responsible will have the charge to look for improvements and will respond to the results obtained.

The third phase of the solution to be implemented is the systematization of the data. This stage will just come over after the end of the redefinition of the processes. The main reason is because the data that the company could handle should be systematized and play the role to be an input to take decisions. In this stage it is important to identify the technological support and the interactions within the company. In this sense, this phase includes the following steps: (a) to define the registration of the data, which involves the identification of the processes where the information should be registered, at the same time, it should be defined the metrics to take the data; and (b) to define the technological System to use, which means to support the information obtained in the processes and to structure them in order to convert them to a value input.

The fourth phase of the solution, and the final one to be implemented, is the development of the Dashboard. This stage will give a tool to the managers to control the processes, performance and opportunities with their department, in this case the thesis will

limit the solution to the to the logistics and operation department. In order to do that, this phase includes the following steps: (a) to identify main indicators, according to a comparison made with the main players within the same industry and identify the impact if they are controlled; (b) to identify the origin of the data, which means to relate the information into the company with the calculations; (c) to define the way of calculation, which is the way how to measure the indicator according to the operations in the company; (d) to define the target, which is the objective of the department and it is aligned with goals, mission and vision of the company; (e) to define the frequency of measurement, which is the period of time where the indicators should be controlled to take actions and evaluate their performance; and (f) to create the dashboard, which is the final product that summarize the information of the department in a good looking way and easy understanding to take strategic decisions.

7.2 Conclusion

In conclusion the proposed solution addresses the main problem of the ineffective control, measurement and management of the logistics and operations department with a multi solution possibility. The end solution will come together and provide a dashboard ready for use for managers throughout the company. This deliverable will help the leaders and managers in charge to take decisions to direct their activities toward the achievement of the company's goals and objectives, at the same time that will allow the whole department to be aware of their own performance and their impact within the organization.

Chapter VIII: Implementation Plan & Key Success Factors

8.1. Activities

The implementation of the proposed solution is divided into four stages. This report has presented in the previous chapter a group of solutions that will attack the main problem of the company, which was identified and defined in chapter 2. The problem is defined as the ineffective measurement, control and management of the logistics and operation department. Each phase of this solution was structured in order to assure effectiveness and efficiency into the development of the implementation. In the next section, a Gantt chart will be presented, which will explain and describe the time of each activity and the order it will be executed. The following section will explain the steps that Transgas should follow in each phase.

8.1.1. Phase I: Change Culture.

The objective of this stage is to create a change in the mindset within the staff and the leaders of the department, to create a measurement culture. The culture measurement is vital in the company, to be prepared for the opportunities to improve the financial outcomes and to provide a better service to the internal and external clients. Those responsible for this phase is the human resource department. This is because they will play an important role when changing the culture of the employees. It is necessary for them to motivate and bring the necessary tools to respond to the requirements. When the staff is prepared, then the long terms objectives of the company will become sustainable and feasible. Although, the HR department is the main responsible of this stage, then those involved in the solution are the whole team, from the top managers to every single employee. This phase will have a long-term implementation and will be reinforced over the time. This stage has three clear activities: training of the staff, reinforcement of the labor commitment, and the development and improvement of the leader's skill; however, this stage has only a beginning, not an end. It means that the work of the human resource can do with the staff and the leaders will define

the direction of the company and will have to be present over the time as continuous improvement plan and with new approaches. However, in order to focus into the solution of the main problem this phase will take 38 weeks which is the total time of implementation of the project.

Reinforce labor commitment. Employee motivation and satisfaction determine what drives them to be productive on a daily basis. By having employees commit to the changes implemented by the solution, there will be a large driving force for the successful adaptation of the project. The frequency of such activities should be one session each four weeks. This activity will be developed team buildings in order to make the teams stronger and aligned with the same objectives. Indeed, it will be significant for the company because of the enhanced impact that the employees are bringing to the company. It is necessary to obtain feedback from them in order to improve operations and to get new ideas. Establishing reward and punishment policies is essential to maintain the motivation within the staff who are working towards the goals of the company.

Improve leadership skill. This activity will take four sessions, six weeks each, for the entirety of the whole project (38 weeks). The focus will be the captains, supervisors and leaders of the company, especially those related with the logistics and operation department. This step is to insure that leaders are able to successfully lead the teams, control their processes and have the tool to take actions when they are facing several situations.

Train staff. This step will last six weeks. The main points will have the following key areas: (a) Make the employees understand the company. This involves the culture, goals, and strategies of the company. This will be led by the human resource department working in some workshops with the staff and the directors during the six weeks of implementation. (b) Ensure that every single employee knows their functions and the added value within the organization. This will also be part of the workshops led by the human resource department

during this period of time. However, the main focus in this step will be the staff and their perceptions, in order to get an idea about their motivations and commitment with the organizations. (c) Provide training on the importance of measuring performance. Giving the staff the tools to improve their performance. Management specialists will lead this and courses should be taken in CENTRUM Católica taught by specialized professors in leadership.

8.1.2 Phase II. Redefinition of the processes.

The objective of this stage is to structure the company, the information flow and the interaction of the different stakeholders, and the responsibilities over each optimal activity. The deliverable of this stage is the base for future decisions, and will be related with the strategies that the company could have. The ones responsible for this phase is the logistics and operation department, due to the findings of this report. They have the responsibility to align their processes with the company's goal and as well to define the critical factors they are going to respond to. In this sense, those involved in the solution of this stage are the whole department of logistic and operations, but also the top managers of the company which define the goals of the company. At the same time, it is important to mention that this department present a matrix function within the company, so the others departments are implicated in this stage. This phase has three activities: the identification of the critical factors, the alignment of the processes to the vision and mission, and the definition of those responsible. The time of this phase projected for the implementation of this phase is nine weeks.

Identify critical factors. This activity will take place over three weeks. The development of these activities will be led by the logistic and operation department where the main objective is to identify the critical processes. Table 10 is a template of the list of processes in order to categorize the critical factors.

Table 10.

Template to Identify Critical Factors.

No.	Processes	Critical Factors
1	Purchase of materials	Yes
2	Return of materials	No

Align the processes to the vision and mission. This activity is projected to last three weeks. The main objective is to relate the actual processes with the strategy of the company. It means that the top manager and the leaders of the logistics and operation department should work together to align the processes and the strategies and modify in case it is necessary. In the following Table 11, a template is shown that could help make the relationship between the company strategy and the processes easier to visualize.

Table 11.

Template to relate the Processes and the company strategy.

No.	Processes	Strategy Align
1	Delivery of Spare Parts	Service Level
2	Invoice prepayment	Cost & Productivity

Define responsibilities. This activity will last three weeks as well. Its development depends on the previous step. When the processes are defined correctly, then the responsibility for each of them should be assigned by the leader of the logistics and operations department, and supported by the human resource department in order to make a

legitimate procedure within the organization. The Table 12 below shows the template to assign responsibility to the different processes.

Table 12.

Template to Assign the Processes Responsible.

No.	Processes	Responsible
1	Purchase of Spare Parts	Purchase Analyst
2	Invoicing	Purchase Assistant

8.1.3. Phase III. Systematization of the data.

The objective of this stage is to create availability of data for relevant information. The data that the company handles should be systematized and processed in order for effective decision-making. The responsibility for this implementation stage is shared by IT and the logistics and operation department. It is important to take into account that in this stage both departments will work together in order to organize the data and to establish improvements in the registration. Those involved in the solution are also both departments, but some others should be implicated in an undirected way due to the logistics and operation department processes are integrated within the company. The activities involved are the definitions of the registration of the data and the definition of the technological system to use. The time projected of this implementation phase is 7 weeks.

Define the registration of the data. This activity will last four weeks. This activity should be led by the IT department and the logistic and operation department. They both work on the registration of the relevant data. So the first task is to evaluate what has already

been done with the AMOS System. The ERP system has a specific way of working and should be analyzed in order to continue with the same system. Improvements will be necessary in order to align the processes and company's goal regarding the registration of the data throughout the processes.

Define the technological System to use. The duration of this activity will take three weeks. This activity consists in defining the technological system to work on after determining which information should be stored. The AMOS System shows the capacity to carry on this aspect. The IT department and the Logistic and operation department should evaluate this alternative in detail with technical information.

8.1.4 Phase IV. Development of the Dashboard

The objective of this stage is to give a tool to the managers to control the processes, performance and opportunities within their department. The scope in this report will be the logistics and operation department. In order to start the development of this stage it is necessary that the previous stages - the second and third - are finalized. The responsible for this phase is the Logistic and operation department. They should identify, define, and present the indicators that best fit with the operations and industry in which Transgas is developing their activities. The final deliverable of this stage will be the tool that allows the managers to take decisions based on trustful information regarding the situation and performance of the department. Those involved in the solution are the logisitics and operations department and the IT department due to the complex automation of the dashboard. The activities within this phase are the identification of the main indicators, the identification of the origin of the data, the definition of the way of calculation, the definition of the target, the definition of the frequency of measurement, and the creation of the Dashboard. The time of this implementation phase is 16 weeks.

Identify main indicators. This activity will last four weeks. The leader of the logistic and operation management has the main responsibility of this implementation section. However, this will be subject to the validation and approval of top management in order to ensure indicators align with objectives and strategies of the company. This report presents some suggested indicators which Transgas can use while they begin the whole implementation project. Those indicators were taken from the Supply Chain Council (2010) as a benchmark and validated by Transgas representatives during meetings to ensure strategic fit with the industry in which Transgas develops their operations. This is attached in the Appendix C.

Identify the origin of the data. The duration of this activity is three weeks. The responsibility will be shared between the logistic and operation department and the IT department due to the fact that they both should identify and define the origin of the data and its use. This stage will rely heavily on effective coordination.

Define the way of calculation. This activity will last three weeks. In this activity the main task is to calculate the indicators, the equation will be defined by the source from which the indicators was taken. Having a very trustworthy and legitiment source is important. In this case, the SCOR model was used as a reference, but industry fit of the company is also very important and has thus been taken into consideration.

Define the target. The duration of this activity will take two weeks. The logistic and operation leader are responsible for implementing this section, which will establish their objectives and goals. They shall be taking into account the company's strategy in the long, medium and short term. They will have to meet and define the target for each KPI.

Define the frequency of measure. This activity will last two weeks. As seen in the Gantt chart below, this activity will be executed in parallel to the previous activity. The logistics and operations manager will be responsible for implementing of this section as well.

Create the Dashboard. The duration of this activity is four weeks. This activity will be developed and led by the logistic and operation manager and supported by top management and the IT department. The suggested dashboard, which could be taken as the prototype of the final dashboard, has been attached in the Appendix E.

8.2. Implementation Gantt Chart

The Figure 15 below shows a detailed Gantt chart developed for the implementation of the project and it shows the time and the activities in detail per phases. The whole project will take 38 weeks to implement to get better results. However, it is important to mention that a Dashboard prototype with the actual processes allows the company to have a base to develop, is presented in this report. It is necessary for Transgas to develop the activities and the stages themselves to get the results they want to achieve. This ongoing process will not be terminated after the initial 38 weeks, but will need continuous development and review.

8.3. Key Success Factors for Implementation

Before starting with implementation, it is necessary to identify the key success factors. In every project risks and enablers will be presented. Indeed, in order to ensure the execution of the project implementation, it is important to identify the risk and enablers, and also to take advantage of each of them. In this report, those were identified and defined alongside the key actions to ensure or avoid them.

On one hand, the enablers are the factors, which increase the probability and possibility of a project. However, what is more important is to define the actions that ensure the execution of the project. It is not enough to identify the enablers, but also to create measurements. The enablers and the actions for the implementation of this specific project were identified and will be shown in the Table 13.

	Responsible	Time required	M1				M2				M3				M4				M5				M6				M7				M8				M9				M10	
			W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2
Phase 1: Culture Change	HR Department	**38 weeks**																																						
Reinforce labor commitment		8 weeks																																						
Improve leadership skill		4 weeks																																						
Train staff		6 weeks																																						
Phase 2: Redefinition of the processes	Logistics department	**9 weeks**																																						
Identify critical factors		3 weeks																																						
Align the processes to the vision and mission		3 weeks																																						
Define responsibilities		3 weeks																																						
Phase 3: Systematization of the data	IT and Logistics department	**7 weeks**																																						
Define the registration of the data		4 weeks																																						
Define the technological System to use		3 weeks																																						
Phase 4: Development of the Dashboard	Logistics department	**16 weeks**																																						
Identify main indicators		4 weeks																																						
Identify the origin of the data		3 weeks																																						
Define the way of calculation		3 weeks																																						
Define the target		2 weeks																																						
Define the frequency of measure		2 weeks																																						
Create the Dashboard		4 weeks																																						

Figure 15. Gantt Implementation Chart.

Table 13.

Enablers for Implementation.

Enablers	Key actions to ensure it
Top management support and involvement.	Seek approvals, communicate effectively, management understand and support the team
Small measurable victories.	Set lots of short-term and easy to achieve goals to keep moral up
Define roles and responsibilities.	Job descriptions.
Availability of resources.	Present and receive the approval for the resources needed. Define the effects of the project within the organization, and set the consequences of inability of the resources.
Company's support activities match with the business goal.	Policies, procedures and processes aligned with the goals, create reports frequently.

On the other hand, it is important to know the risks that are involved in the implementation of a project. This uncertainty is reduced when the most relevant risks are identified and there is an action plan to avoid or reduce the impact. In this sense, those risks for this specific implementation project were identified and the actions to avoid them as well. They are shown in the following Table 14.

Table 14.

Risks for implementation.

Risks	Key actions to avoid it
Lack of commitment and support	Executive and management level needs to back up the project through reward offerings - Clear directions from top to bottom to legitimize the project.
Lack of effective communication	Propose bi-weekly meetings in order to discuss progress and provide feedback.
Lack of trust in the consultants	Make it clear that proposed solution is backed with institutional knowledge.
High degree of complexity	Follow step by step implementation plan and do not skip any steps.
Fear/resistance of Change	Make sure that evidence of positive impact is presented continuously

8.4. Conclusion

Chapter eight has provided an insight into how the proposed solution should be implemented, including a Gantt chart for easy visualization of the implementation. Starting with phase one, changing company culture, the HR department will be mainly responsible for its successful implementation. As the main long-term implementation, there are three key activities that must be completed: train staff, reinforce labor commitments and develop and improve leader's management skills. Such a large change will take a very long time and has

been predicted to cover at least 38 weeks. The second phase is redefining the process implemented by Transgas. The operations and logistics department oversees the successful implementation of this phase. Taking at least nine weeks to complete the department will have to identify the critical operations factors, align the processes to the vision and mission of the company and lastly, re-define those responsible. Phase three, systemization of the data, aims to make relevant data available for use. Both the IT and logistics departments will need to work together in order to achieve successful implementation, which should take up to seven weeks. It will be necessary to define the registration of data and define the technological systems that will be used. The final phase is the development of the Dashboard. Taking up to 16 weeks to implement it will also require the IT and logistic department working together to achieve successful implementation. It is necessary for Transgas to find the main indicators that will be implemented in the resulting dashboard first and then determine the location of the necessary data used to measure the success of the indicators and the manner in which such success should be calculated. The definition of the target that should be achieved, and how often it should be measured and the actual creation of a visual dashboard will then follow. The following section will look at what should be expected after the successful implementation of you proposed solution.

Chapter IX: Expected Outcomes

9.1 Outcomes

Upon completion of the implementation plan, the following outcomes are expected in order to solve the main problem of inefficiency in the measurement, management and control of the logistics and operations. The expected outcomes have been divided into six major aspects, which are critical in measuring success of the projects. At the same time it is important to have the clear idea of the total investment of the 38 weeks project which is S/. 28,000 soles, the details will be attached in the Appendix D.

Effective communication. The implementation will allow for the whole organization to gather, process, use and share information effectively. It will produce an updated and improved ERP system that will aid information tracking and retrieval. Individuals and teams will have access to required and necessary information at all times and therefore all communication will be done based on available data. Furthermore, employees will get timely feedback and reviews of work done and be able to clearly see how individual, team and departmental efforts contribute to Transgas position and success. Therefore a clear and important outcome is effective organization-wide communication.

More inclusive and well understood company culture. Transgas will have a quality corporate culture, which will include three aspects

1. Vision – knowing that a great company culture begins with the vision and mission statements. Employees will have a clear understanding of the future projections and views of Transgas, they will understand the authenticity of the vision statements and this will in turn give an orientation of every decision that will be made in the organization.
2. Values and Practices – the value of a company is the center of its culture. Employees will have a clear picture of Transgas purpose and the guidelines on the behaviors that are required to achieve its vision. This includes how to perform tasks, how to treat customers and colleagues and professionalism. Employees will be equipped with tools to continuously achieve. Moreover, employees will understand organization structure and where in the hierarchy they are. They will know how business practices will take place in and out of the

office. Finally the values and practices of Transgas will be reinforced into its policies and operating principles on a daily basis. This will create a positive, comfortable and well understood working atmosphere.

3. People – Recruiting practices, which will include stringent policies, will ensure that just the best candidates are employed. Incoming employees will have a strong corporate-cultural alignment with Transgas and share strongly in the existing vision, values and practices.

Quality Human Resource Management. Transgas will have an effective hiring procedure that not only considers the corporate cultural fit but also considers adequate experience and educational qualities. Employees will have continuous specialized training suitable for individual and team progress. Managers will have in-depth reports on employee personality styles and motivators. Reward and benefit systems will be customized specifically to employee level of education, experience, job role, job value and most importantly personal motivators. Furthermore, the clear company structure and management practices will allow for better employee management and leadership and supervision. In summary, a clear outcome will be the availability of suitable present and future employees with better hiring processes, vetting and human resource management

Efficiency. The implementation of new and improved processes will increase Transgas efficiency and effectiveness of resources, which include financial resources, inventory, human resources and information technology. It will further enhance team productivity and efficiency. Achieving a clear company culture, process, procedures and performance structure will encourage employee cohesion and motivation and drive and enable company operations run smoothly with clear knowledge of assigned tasks and responsibility.

Transparency and commitment. The implementation of balanced scorecards, performance indicators and performance boards enable the organization to know clearly how it is performing at every point in time. It will create clarity and transparency of individual and team efforts within the organization. Management and lower level staff will know present status and where improvement is need for future success and also for comparison and benchmarking purposes.

Financial savings. Enforcing quality management into Transgas policies processes and procedures ensures financial savings brought about by task rework. Effective quality ensures

workflows smoothly and thus increasing profitability. With all the process defined, Transgas will not have an issue with repeated orders. Which accounts for a loss of S/.202,680 on average per year at the moment. At a modest estimation it is assumed that a year after implementation of the dashboard, Transgas will experience a total cost saving of at least S/.500,000. This is based on the reduction of repeated orders and increase efficiency. It must be taken into account that a more accurate figure would only be possible with more information provided by Transgas, and the proper measurement of their daily activities.

The Table 15 shows as a summary the expected outcomes after the implementation of the project taking into account the timeframe and the indicators.

Table 15.

Expected Outcome after Implementation

Expected Outcomes	Indicator	Goal	Timeframe
Effective communication	1. Workplace Survey	Over 80% average staff score	38 weeks
	2. Internal Audit	100% compliance	
Well understood company culture	1. Workplace Survey	Over 80% average staff score	6 weeks
	2. Observation		
Quality Human resources management	1. Workplace survey	Over 80% average staff score	9 weeks
	2. % of employee training	80% of the staff taking scheduled training	
Efficiency	1. Productivity projections and tracking.	15% yearly productivity increase	38 weeks
	2. Financial statement	Cost reduction	
	3. Customer Satisfaction surveys	Over 80% customer survey score	
Transparency	1. Internal Audit	100% compliance	38 weeks
Financial savings	1. Financial statements	Cost reduction	38 weeks

9.2 Conclusion

In conclusion the successful implementation of proposed solution will increase companywide efficiency and productivity, create an environment where the right employees work well together, are comfortable and at peace therefore encouraging innovation, creativity and advancements. Additionally, there will be an appropriate use and transfer of information therefore aiding effective communication, process transparency and commitment. Lastly infusing quality management into companywide procedures will ensure standardized processes, strong resource management and therefore saving Transgas time and cost.

Chapter X: Conclusion and Recommendation

10.1. Conclusions

The world is inching towards a new business setting day by day, it could been clearly seen these kinds of changes happening in the LNG shipping industry. The global LNG market is expected to nearly double in size during the current decade, as it did in the past several decades – from 50 million tonnes in 1990, 100 million tonnes in 2000 and 220 million tonnes in 2010, to 400 million tonnes per year by 2020 (Thomas, K, 2015). In overall the industry is very much competitive due to the client's need of superior quality service at lower price. This means companies like Transgas have to explore themselves to improve their industry reach by improving their efficiency and competitiveness. As it was explained before some of the main problems it could be charted out in Transgas were related to the improper management control and procedures. Even though the employees are very much experienced in their respective tasks the lack of clear roles and responsibilities are decreasing the efficiency of these skilled workers.

Peru is rapidly expanding its business context and the government is trying to promote a business-friendly environment to improve home grown companies like Transgas. This is an opportunity for Transgas to improve their operation to expand their business in Peruvian market as well as in the international market. For any company, skillful employees are their backbone since Transgas have a lot of such employees they should take advantage of this factor in order to use this business-friendly environment. In today's world managing information is the toughest and most strategic aspect of any kind of business, those who can control and manage the information efficiently is going to be the main player in the market. In Transgas, an ERP system called the AMOS controls the flow of information, though some structural inefficiencies such as lack of maintenance and training, non-user friendly operations and poor internet connectivity are hindering the system to work properly. Proper

communication between departments are always strategic for the success of any business entity, so it could be figured out that Transgas lacks inter and intra departmental communication which is in turn affecting the overall function of the company. As a company, which deals with large quantity of inventory a proper inventory management is not only important it is a necessity, the lack of such a system is affecting the operation. Doing business in 21st century is all about the use of technologies to increase productivity so for a company like Transgas they need to get an exposure into the advanced technological world of LNG shipping industry to get an edge over the competitors. More recently, because of the detailed information they can provide on ship operation, shore-based AIS and satellite-based (S-AIS) data have increasingly been used to observe ship activities for the purpose of estimating energy consumption and emissions, 20 observations of activities in the open ocean, based on positional reports from ships, offered an innovative way of quantifying shipping emissions and energy consumption. Operational practices, especially speed, can be estimated from S-AIS data to help estimate ship energy consumption and emissions (Wang, H., Rutherford, D., & Desai, C, 2014). Appraisal systems act as a motivational force behind the development of employee but the absence of such a system will adversely affect Transgas' business setting.

After some careful thoughts, this report finalize the four-phased solution for Transgas to improve their overall efficiency and performance. These solutions loop around the structural factors of the organization to create a dashboard, which will manage and measure the overall activities of the company, redefining processes and systemization. The creation of the dashboard means that there will be a system in place to analyze the quality of service being offered and to look into how the company can actually improve their service through continuous improvement. With the systematic communication of information through AMOS in decision-making, it will redefine the operations of the company. The importance of KPIs to measure the company data is the future of any firm without such a measurement system how

is a firm going to know how to utilize its resources efficiently. In the end it all depends on what kind of value proposition Transgas can offer to their client. If they can provide such a value with increased productivity then it would be a win-win scenario for both their clients and Transgas. The future of any organization lies ahead on how much they can transform themselves into the marketplace with apt amount of resources.

10.2. Recommendations

The recommendations to propose clearly supersede with the series of solution that were proposed. That is why the implementation of the proposed solution should be leaded by the top managers, giving directions from top to bottom in order to legitimize the project.

As every organization in the LNG shipping industry Transgas also wants to be competitive as much as possible in order to gain more market share. An organization poised for such feat have to evolve into the marketplace to strike down any value propositions existing in the industry. Doing business in this century is all about controlling the information and transforming the business in whichever way possible with the state of the art technologies. But it doesn't matter if you have the enough resources and lacks the training and expertise to utilize such resources. This is one of the major drawbacks for Transgas because they have well experienced employees who are very much knowledgeable about their respective tasks but the poor internal management measure and control is reducing their productivity. As it has been proposed in the solution it would be really good if Transgas can implement such a dashboard system to curb the loss of efficiency. Introducing the dashboard is not an easy task it takes a lot of time and effort to put everything together so it is highly recommend Transgas to put forward an action plan for implementing the four phased dashboard introduction system to avoid any delays. Being proactive in implementing the dashboard system will completely revamp the corporate culture this mean employees have to approach this change in doing business with an open mind because their support it is

impossible to fully integrate a new system. At the same time, it is highly recommended as well to make an integration with the current ISO certification that the company has.

Organizations are always looking for new opportunities in the existing market scenario which means coming forward with new ideas to generate revenue. One of such new idea would be to venture into the business of Replenishment at sea (RAS) which is a highly lucrative industry considering the present situations. Most of the commercial shipping companies these days outsource RAS operations though Transgas have their own fleet of vessels to resupply their tanker vessels. Due to the increased demand of resupply activities around the world, Transgas can take this opportunity to expand their business into the RAS operations. Such an expansion of business would mean that they need to rapidly introduce new management principles and structure into the organizational activities otherwise the risk of a potential failure will increase. This means introduction of the dashboard system is not only going to increase efficiency of the company it will also brighten the scope of new business opportunities.

In today's corporate world business transformation means a lot in terms of doing business because as it was explained before the market environment is rapidly changing everyday so in order to sustain in such a market firms have to evolve themselves for this change. Transformation means three fundamentally different categories of effort, the first is operational, or doing what you are currently doing, better, faster, or cheaper. Many companies that are "going digital" fit in this category — they are using new technologies to solve old problems. The next category of usage focuses on the operational model. Also, called core transformation, this involves doing what you are currently doing in a fundamentally different way. The final usage, and the one that has the most promise and peril, is strategic. This is transformation with a capital "T" because it involves changing the very essence of a company. Liquid to gas, lead to gold, Apple from computers to consumer

gadgets, Google from advertising to driverless cars, Amazon.com from retail to cloud computing, Walgreens from pharmacy retailing to treating chronic illnesses, and so on (Anthony, S, 2016). If Transgas wants to expand their presence around the around and to sustain in an evolving marketplace they need a better transformation strategy to position themselves in the market.

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Appendix A: Income Statement 2014 & 2015

OPERATING INCOME	**2014**	**2015**
Gross Sales	63,773,073.00	35,320,462.00
Other operating income	3,749,271.00	3,696,086.00
Total Gross Income	**67,522,344.00**	**39,016,548.00**
Cost of Sales		
Cost of sales (operations)	48,364,821.00	32,505,972.00
other operating costs	0	0
Total operating costs	48,364,821.00	32,505,972.00
GROSS PROFIT	**19,157,523.00**	**6,510,576.00**
Selling expenses	0.00	0.00
Administration expenses	7,693,814.00	6,858,247.00
Other incomes	1,827,222.00	5,881,942.00
Operating Profit	**13,290,931.00**	**5,534,271.00**
Financial income	29,511.00	632.00
Exchange rate profit	1,514,513.00	1,496,408.00
Financial expenses	538,604.00	480,611.00
Exchange rate losses	1,701,731.00	1,284,874.00
Income before taxes	**12,594,620.00**	**5,265,826.00**
Legal expenditures	589,834.00	0.00
Taxes	3,362,054.00	0.00
NET INCOME	**8,642,732.00**	**5,265,826.00**

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

Appendix B: Balance Sheet 2014 & 2015

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

	2014	2015
Liabilities and Equity		
Current Liabilities		
Bank overdrafts	52,648.00	8,651.00
Legal tributes	647,890.00	668,055.00
Salaries and shares	323,246.00	0.00
Payable accounts	3,547,470.00	5,630,698.00
Financial obligations	2,286,144.00	0
Total Current Liabilities	**6,857,398.00**	**6,307,404.00**
Non Current Liabilities		
Financial obligations	574,811.00	0.00
Other payable accounts	50,679.00	0.00
Total Non Current Liabilities	625,490.00	0.00
Equity		
Stockholders equity	2,500,000.00	2,500,000.00
Legal reserves	238,658.00	500,000.00
Retained earnings	3,428,004.00	11,373,686.00
Net income	12,594,619.00	5,265,825.00
Total Equity	**18,761,281.00**	**19,639,511.00**
Total Liabilities	**26,244,169.00**	**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 C: Initial Indicators Suggested

N°	INDICATOR NAME	CALCULATION	STRATEGY	PROCESS	UNITS	FREQUENCY OF MEASUREMENT
1	On time delivery (x Vessel)	ORDERS DELIVERED IN TIME / TOTAL ORDERS	Service Level	delivery	%	Monthly
2	Fill Rate	ORDER FULL DELIVERY / TOTAL ORDERS	Service Level	delivery	%	Monthly
3	Lead Time	DAYS DURING THE APPLICATION UNTIL THE REGISTRATION IN THE SYSTEM	Service Level	import	DAYS	Monthly
4	Documentation without problems	BILLS GENERATED WITHOUT ERRORS / TOTAL BILLS	Service Level	Invoicing	%	Monthly
5	Inventory Level (x Vessel)	INVENTORY LEVEL	Inventory	Inventory	AMOUNT	Monthly
6	Costs of Distribution x operación	COSTS OF DISTRIBUTION OF PERIOD X / NET SALES OF PERIOD X	Costs & Productivity	delivery	%	Monthly
7	Performance	REAL PLANNING COST / BUDGETED PLANNING COST	Costs & Productivity	purchase	%	Monthly
8	Purchases (x Vessel)	PURCHASE AMOUNT	Costs & Productivity	purchase	AMOUNT	Monthly
9	Boats non used time paids	BOATS NON USED TIME PAIDS AMOUNT	Costs & Productivity	delivery	AMOUNT	Monthly

Appendix D: Investment Details

	Responsible	Time required	Cost	Specifications
Phase 1: Culture Change	HR Department	**38 weeks**		
Reinforce labor commitment		8 weeks	-	
Improve leadership skill		4 weeks	S/ 6,000.00	employee/year
Train staff		6 weeks	S/ 12,000.00	employee/year (4)
Phase 2: Redefinition of the processes	Logistics department	**9 weeks**		
Identify critical factors		3 weeks	-	
Align the processes to the vision and mission		3 weeks	-	
Define responsibilities		3 weeks	-	
Phase 3: Systematization of the data	IT and Logistics department	**7 weeks**		
Define the registration of the data		4 weeks	S/ 5,000.00	month employee
Define the technological System to use		3 weeks	S/ 5,000.00	month employee
Phase 4: Development of the Dashboard	Logistics department	**16 weeks**		
Identify main indicators		4 weeks	-	
Identify the origin of the data		3 weeks	-	
Define the way of calculation		3 weeks	-	
Define the target		2 weeks	-	
Define the frequency of measure		2 weeks	-	
Create the Dashboard		4 weeks	-	
		TOTAL	S/ 28,000.00	

Appendix E: Initial Dashboard Prototype

DASHBOARD

N°	INDICATORS	TARGET	ACTIONS NEEDED	ALERT
1	On time delivery (x Vessel)	95%	75%	85%
2	Fill Rate			
3	Lead Time			
4	Documentation without problems			
5	Inventory Level (x Vessel)			
6	Costs of Distribution x operación			
7	Performance			
8	Purchases (x Vessel)			
9	Boats non used time paids			

2017											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
87.5%	66.7%	95.0%	85.0%	73.5%	81.2%	85.6%					

RESULT ANALYSIS - KPI

delivery

INDICATOR NAME	On time delivery (x Vessel)	RESPONSIBLE	0		
CALCULATION	ORDERS DELIVERED IN TIME / TOTAL ORDERS				
FREQUENCY OF MEASUREMENT	Monthly	INFORMATION ORIGIN	0	UNITS	0.9	Tendency	
TARGET	90%	ALERT	85%	ACTIONS NEEDED	75%