CHAPTER II

LITERATURE REVIEW

2.1 Introduction

This chapter consists of the review of previous literatures related to the study. It reviews the overview of oil and gas demand in Algeria and globally. It discusses the production, consumption, exportation analysis and issues pertaining oil and gas industries in Algeria. It also discusses employees' performance, risk perception, work environment satisfaction and further deliberates on the relationship between work environment satisfaction, risk perception and employees' performance. The theoretical framework and justification of the relevance of the selected variables for the study are discussed. These theories help to develop the conceptualized idea and relationship between work environment satisfaction and employees' performance.

2.2 Global Overview of Oil and Gas Demand

Oil consumption, like energy demand in general, is strongly tied to the global economic cycle. Increase in energy consumption, indicates that the economy is improving, and drives higher energy costs (Addi, 2009). World oil consumption was 85 million barrels per day (MBLA) in 2008, according to the International Energy Agency (IEA), and is projected to rise to 105 MBLA by 2030. Gasoline consumption was projected to fall by 320,000 barrels per day from 2007 levels, and to continue to fall (OPEC, 2014).

When demand for energy decreases, so does the price of oil. The capacity of oil corporations to produce and the willingness of oil exporting nations to export determine the

global oil supply. In the past, the price of oil purchased by refiners rose by about 100 percent, resulting in severe shortages in the United States (Osabutey et al., 2013).

Despite 57 percent increase in prices in 2007, however, the quantity of oil sold by the world's major exporters dropped by 2.5 percent in 2007. Oil demand in the world's six biggest exporting countries (Saudi Arabia, Kuwait, Russia, and the United Arab Emirates) is high. Despite, drilling rigs, transportation, and refining networks, such as pipelines, shipping facilities, and refineries, have been destroyed by terrorists and political assaults. Nigerian insurgents launched assaults on key oil pipelines and deep-sea drilling rigs in the nation in the spring of 2008 (Osabutey et al., 2013).

2.3 Overview of Algeria Oil and Gas Industries

Algeria, a country in Northern Africa covered an area of around 2,383 thousand square kilometers territorially. It shares a boarder with Morocco, the Western Sahara, Mauritania, Mali, Niger, Libya, Tunisia, and Mediterranean Sea. Algeria has a population of about 40 million people, with more than 3.5 million living in the capital. The country relies on oil and gas as the backbone of its economy, which account for about 35 percent of the gross domestic products and two-thirds of the total country's export. The country has five oil refineries namely Algiers, Skikda, Arzew, Hassi Messaoud and Adrar.

According to the Oil & Gas Journal, the nation has five oil refineries with a total capacity of 522,800 b/d (Table 2.1). Skikda, Algeria's biggest refinery is situated along the country's northern coast and is Africa's largest refinery. The refinery can process 355,300 barrels of crude oil and condensate per day, which is more than half of Algeria's entire refinery capacity. The Saharan mix, which comes from the Hassi Messaoud oil resources, is processed by Skikda.

Algiers and Arzew, Algeria's two other coastal refineries, can handle 58,100 and 75,000 barrels per day, respectively. Hassi Messaoud and Adrar, the country's inland refineries, are linked to local oil sources and provide oil products to surrounding regions. Table 2.1 provides the breakdown of the refining capacity of each refinery as follows:

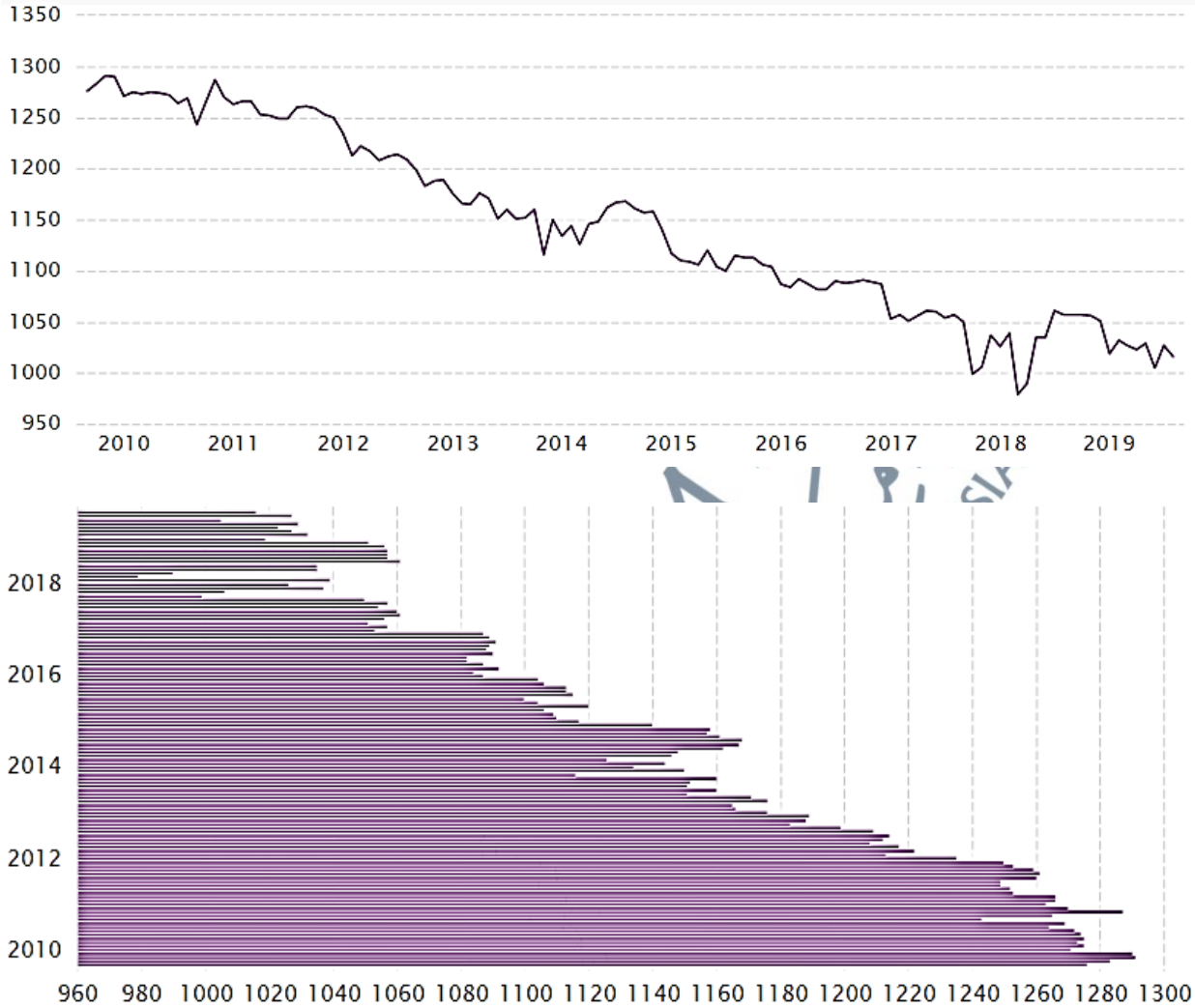
Table 2.1 Oil Refineries in Algerian

Refinery	Capacity	Type	Owner
Skikda	352.7	Crude Oil/Condensate	Sonatrach/Naftec
Hassi Messaoud	163.5	Crude Oil	Sonatrach/Naftec
Algiers (El Harrach)	63.4	Crude Oil	Sonatrach/Naftec
Arzew	58.5	Crude Oil	Sonatrach/Naftec
Adrar	14.4	Crude Oil	CNPC/Sonatrach
Total	652.5	-	-

2.3.1 Algeria's Crude Oil: Production

Algeria's crude oil production was 1,019.000 barrels per day in October 2019, according to figure 2.2 it drops from the previous month's figure of 1,020.000 barrels per day. Algerian crude oil production data is updated weekly, with 214 observations average 1,176.000 barrels per day from January 2002 to October 2019. The statistics peaked at 1,408.000 barrels per day in April 2008 and peaked at 775.000 barrels per day in February 2002.

Figure 2.1: Algeria Crude Oil: Production 2002 - 2019 | Yearly |



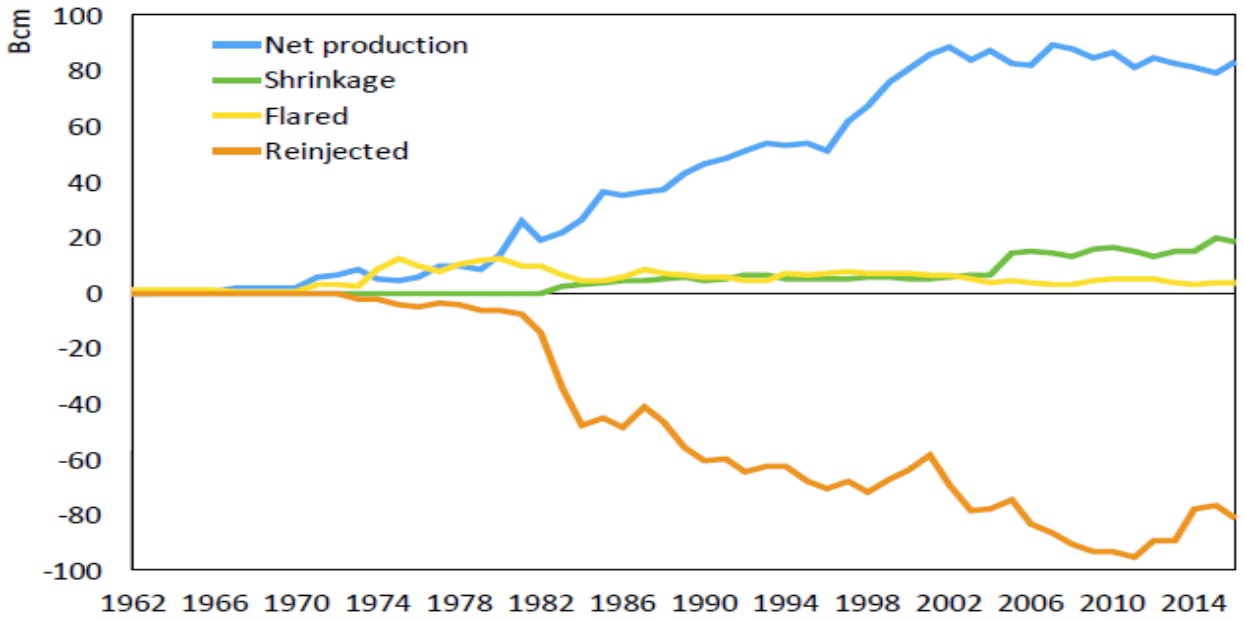
Source: www.cecdata.com/ organization of the petroleum exporting countries

2.3.2 Decline in production

This enormous oil field has reached its peak stage six decades after its creation. Following Sonatrach's takeover of the production because of the hydrocarbon industry's nationalization in 1971, the field underwent a series of changes that transformed it into a leading gas-NGLs production and processing complex with a gross output gas capacity of 100 bcm/year.

The field produced 92 bcm per year at its peak in the 1990s, of which 60 bcm per year was re-injected to relieve pressure and avoid retrograde condensation, as illustrated in Figure 2.2

Figure 2.2: Algeria Natural Gas Net Production, Shrinkage, Flared and Reinjection Components



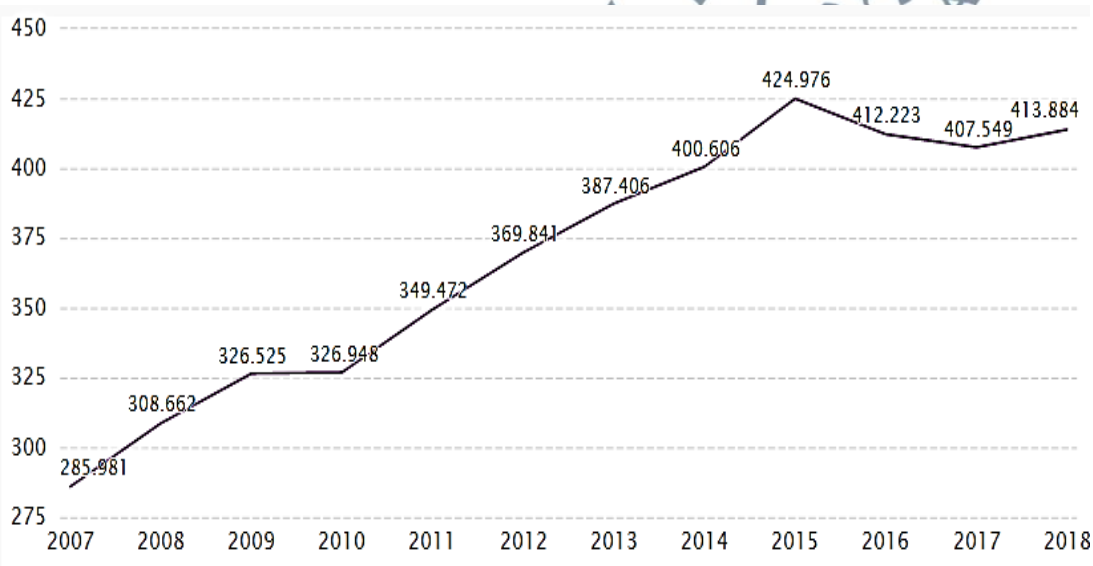
Source: Updated from Aissaoui (2001) using Annual Statistical Bulletins

Subjective evidence, among knowledgeable Algerian experts, revealed that the field, which generated about three quarters of its nominal capacity in the past, had declined and is facing abridged wellhead pressures as shown in figure 2.3. These estimations, although logically coherent, are difficult to derive in the absence of concrete evidence. This is because Hassi R'Mel also serves as a hub for collecting, processing, and cycling increasing gas quantities generated farther afield, as well as transporting the resulting marketable dry gas and NGLs to local and international markets.

2.3.3 Algeria's Oil and Gas: Consumption and Export

In December 2018, Algeria's oil consumption was estimated to be 413.884 barrels per day, as illustrated in Figure 2.4. This increases over the previous month's figure of 407.549 barrels per day. Algerian oil consumption data is updated once a year, with an average of 188.012 barrels per day from December 1965 to December 2018, based on 54 observations. The statistics peaked in 2015 at 424.976 barrels per day and peaked in 1965 at 26.716 barrels per day.

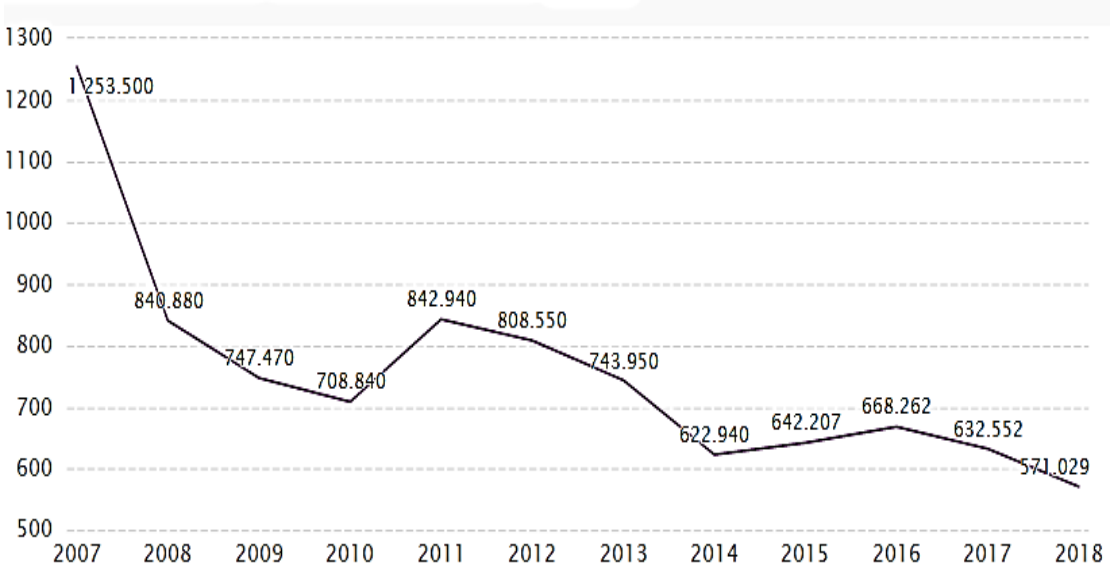
Figure 2.3: Algeria Oil Consumption 2007 - 2018 | Yearly |



Source: WWW.CECDATA.COM I BP PLC

Algerian crude oil exports in December 2018 were 571.029 barrels per day, as illustrated in Figure 2.3. It drops from the previous month's figure of 632.552 barrels per day. Algerian Crude Oil: Exports data is updated once a year, with an average of 521.800 barrels per day from December 1980 to December 2018, based on 39 observations. The statistics peaked at 1,253.500 barrels per day in 2007 and peaked at 181.600 barrels per day in 1984.

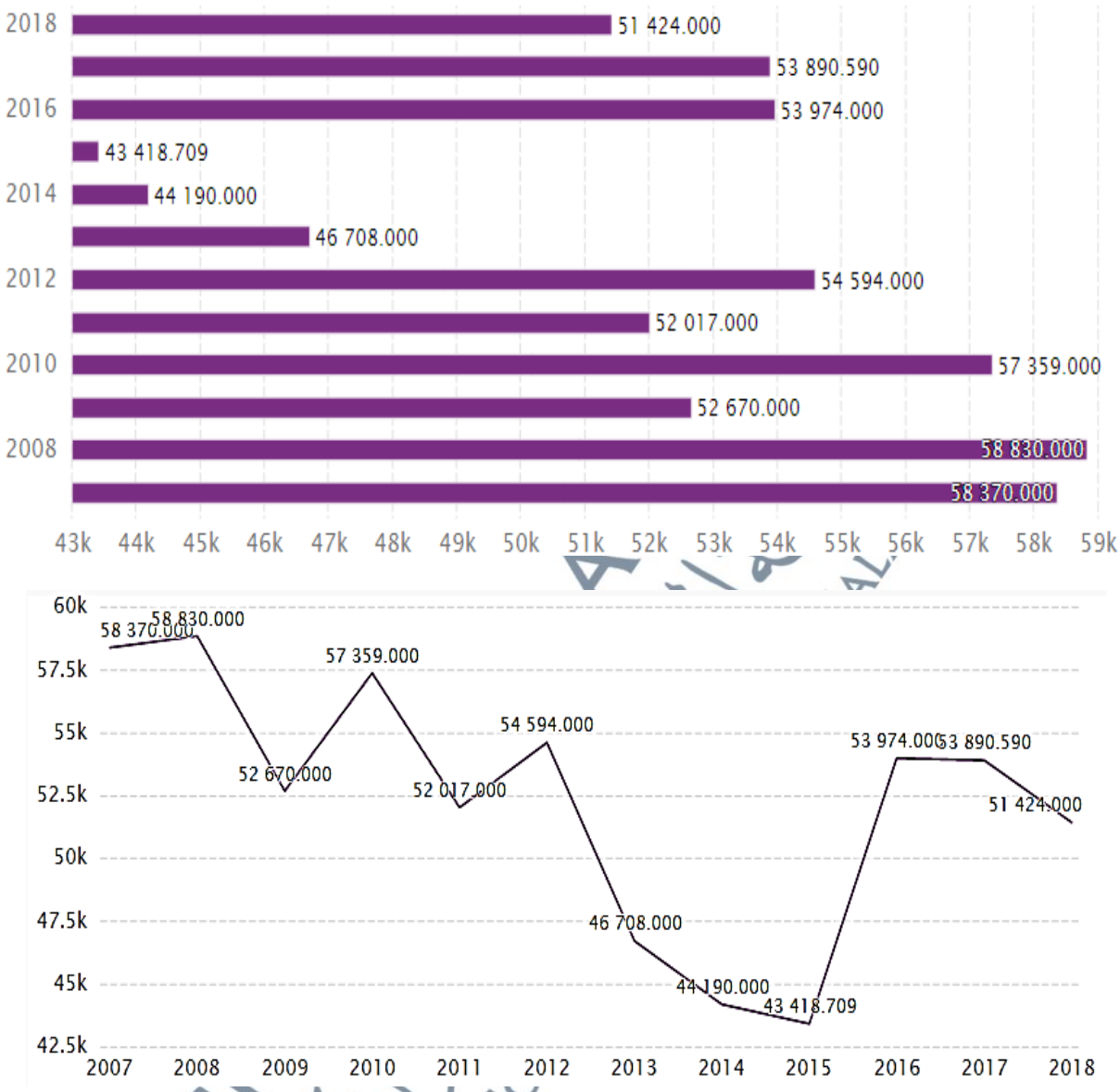
Figure 2.4: Algeria Crude Oil: Exports 1980 - 2018 | Yearly |



Source: www.cecdata.com/ organization of the petroleum exporting countries

Also, Algeria's Natural Gas Exports was reported at 51,424.000 Cub m mn in December 2018 as shown in Figure 2.4. These records decrease from the previous number of 53,890.590 Cub m mn for December 2017. Algeria's Natural Gas Exports data is updated yearly, averaging 29,420.000 Cub m mn from December 1960 to 2018, with 59 observations. The data reached an all-time high of 64,266.000 Cub m mn in 2005 and a record low of 0.000 Cub m mn in 1963.

Figure 2.5: Algeria Natural Gas: Exports 2007 - 2018 | Yearly | Cub m mn |



Source: www.cecdata.com/ organization of the petroleum exporting countries

Sonatrach's market positions seem to have been compromised, Except for gas terra, whose exports to Europe have dropped (mainly because the Dutch government has capped the output of the super-giant Groningen gas field, which it has blamed for causing earth tremors), both other suppliers appear to have largely coped with slowing market conditions, as shown in Figure 2.5.

2.4 Algeria's Oil and Gas Industry: Issues and Implications

2.4.1 Accident in Algeria Refining Sector

Accident is an impairment factor in many types of industries. It has serious effect and constitutes a probable source of human loss, damage of equipment and environmental distortion. As the oil refining industry is by its nature subject to the most hazardous industrial conditions and by taking into consideration, a number of cases, it extreme effect cost millions of dollars. Algeria, a major refining center with five refineries and total capacity of 652.5 barrels as mentioned earlier, the risk of its major accidents is associated with the presence of dangerous substances at such quantities and under such conditions. Every year, industrial accident causes a number of deaths, injuries and property losses due to petroleum refining operation (Chettouh and Hamzi, 2013). Industrial accident has become a menace to human safety i.e., Skikda refinery in January 2004, October 2005 and accident of the Arzew 2007. These accidents are primarily perceived as a major environmental problem but associated with socio-economic effect.

For proper understanding of the situation in the Algerian oil refining sector and the size of the problem, some past accidents were reviewed below, by considering the economic importance of the Skikda oil refinery and the absence of data on accidents in refineries of Arzew, Algiers, Adrar and Hassi Messaoud. Table 2.2 reveals the details as follows:

Table 2.2**: Some of the accidents occurred in Algeria refining sector (Skikda)-2002 to 2013**

Date	Unit	Equipment/ Substance	Ignition source	Primary Accident	Damage
18/08/02	Unit 1050 - 1060	Open drain/ Gas	Contact with a hot point of the boiler	Fire	1 injury + material damage
10/06/03	Unit 100	Heater/Gas	Flame	Fire	3 Injuries
25/08/03	Unit 100	Container/ Acetylene + Oxygen	Spark	Fire	Material damage
19/01/04	Unit 40	LNG	Gas leak	Explosion	27 facilities, 74 injuries, 3 unit are destroyed and 800 million of damage
20/11/04	Central Laboratory	Room Bitumen/ Bitumen	Flame	Fire	Destruction of the conduct of gases and extractor
17/03/05	Unit 1020, section A	First cell cool tower/ Hydrocarbon & gas	Spark	Fire	Destruction of engine, chimneys and wiring
24/09/05	Natural area	Pipe 22 inches/ Crude reduced	Gas leak	Product release	Soil contamination, cracking of pipe section and impact pollution
05/10/05	Tanks 105, 106		Accumulation of gas	Explosion	2 fatalities, 7 injuries and 6 million $ of damages
06/06/06	Industrial area	Pipe/ Crude reduced	Flame	Fire	Calcination of pipe
09/08/06	Plat form SH/ENG	Brushwood	Spark	Fire	An area of 100m^2 brush is burn
24/10/07	Unit 100	Pneumatic transmitter/ Naphta B	Spark	Fire	1 fatality and damage of instrument cables,
11/06/08	Natural area	Sludge pit/ Hydrocarbon waste	Hot point (fiery debris)	Fire	Shutdown of process pump, coolers and pollution
03/04/09	Topping 10	Valve flange/ Gas oil	Braking of flange and fuel release	Fire	3 injuries, damage of pipes and instrument cable
24/09/09	Air condition	Hydrocarbon and gas	Hot point	Fire	Distraction of electrical equipment
12/03/10	Storage area	Water output of tanks/ Gas-oil	Contact of the steam pipe MS	Inflammation electrical failure	Destruction of electrical cables and transformers
11/03/11	Unit 100	Pipe/ Fuel	Leak in the pipe	Leak	Deterioration of the pipeline Pip way
22/10/12	Unit 30		Pipe burst	Leak	Temporary shutdown of the unit
17/12/12	Unit 11		Gas release	Explosion	3 injuries and material damage
03/01/13	Unit 100	Heater 100-F-1 / Naphta B and H2	Burner flames	Explosion	2 injuries, deterioration of heater and electrical cables
09/07/13			Landslide	Landslide	1 fatality & 1 injury

Source: Chettouh and Hamzi (2013)

This is 20 among the 38 accidents/incidents that have occurred between 2002 and 2013. Findings also revealed that fire outbreak use to be the most frequent accident at Skikda refinery, and mainly caused by equipment failures with a frequent involvement of crude oil and LNG (Chettouh et al., 2018). In 2019, Algerian energy experts said the explosions and fire outbreak at GL1Z was the worst incident since 2004 accident in Skikda's LNG complex. The explosion flattened a large part of the gas plant, which claimed the lives of 30 employees and injured 70 others. Sonatrach attributed the explosion to an accident at a steam boiler. This accident cost Algeria $300 million in lost of export revenue in addition to about $1 billion that will be needed to rebuild the facility. The history of major accidents has demonstrated the diversity of risks that companies face and the need to consider "safety" in the design and operation of high-risk refineries (Basheer et al., 2019). The Skikda LNG accident was the worst petrochemical plant fire in Algeria, and the accident was caused by poor maintenance and poor general condition of the site distribution of different units which caused domino effect and there is no perfect prevention, communication system on safety (Ouddai et al., 2012).

2.4.2 Collapse of Price

The falling of global oil and natural gas prices has battered the Algerian economy at a time of degenerating security conditions in Northern Africa (Escribano, 2016). The present budgetary crisis has provided a justification for a long-overdue rise in energy costs. The falling of oil prices that began in mid-2014 had negative impact on nations that heavily relied on oil and natural gas as a source of revenue (IMF, 2014).

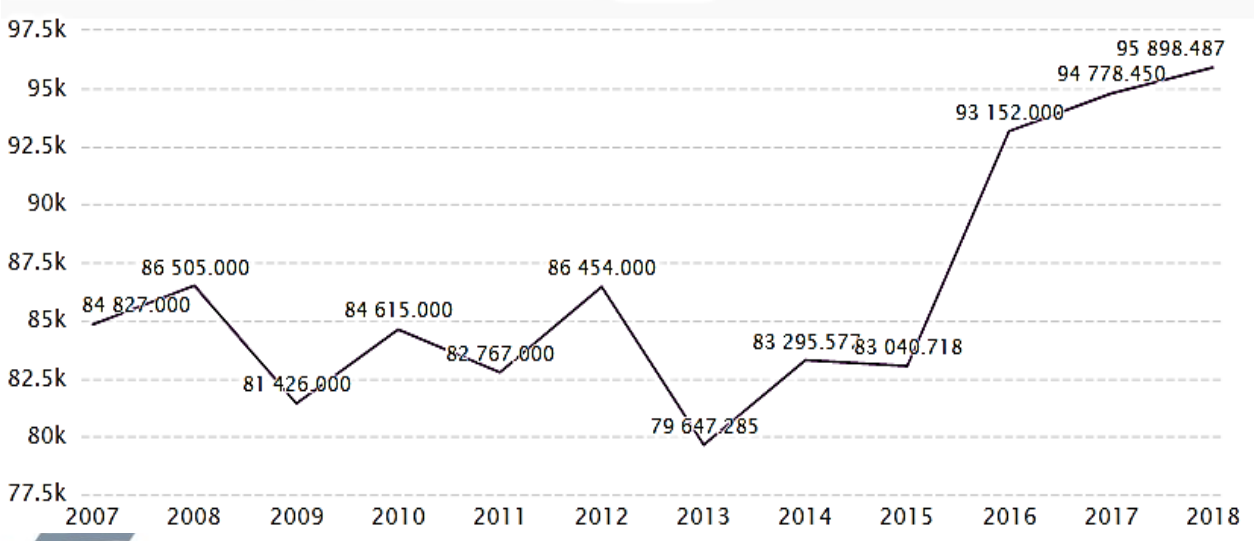
At a regional level, hydrocarbons are the backbone of the economy, accounting for a quarter of GDP, 60 percent of budget revenues, and over 95 percent of export earnings (IMF, 2014). The weakening economy has not only raised concerns about the country’s capacity to

maintain political stability, but also about Algeria's internal security in an unstable neighborhood (Joffe, 2015). An effective reform of the Algerian energy sector to attract foreign investments and increase production would require a drastic overhaul of the hydrocarbon law and the investment code (OPEC, 2016; Mebtoul, 2017).

2.4.3 Algeria's Natural Gas Marketed Production

Algeria's Natural Gas Marketed Production was reported at 95,898.487 Cub m mn in December 2018 as shown in Figure 2.8. This records an increase from the previous number of 94,778.450 Cub m mn for December 2017. Algeria's Natural Gas Marketed Production data is updated yearly, averaging 48,400.000 Cub m mn from December 1960 to 2018, with 59 observations. The data reached an all-time high of 95,898.487 Cub m mn in 2018 and a record low of 0.000 Cub m mn in 1960.

Figure 2.6: Algeria Natural Gas Production: OPEC: Marketed Production 2007 - 2018 | Yearly | Cub m mn |



Source: www.cecdata.com/ organization of the petroleum exporting countries

It should be noted that CREG projected Algeria's domestic gas consumption at 34.6 bcm in 2014, the base year for the above predictions, whereas the actual number turned out to be 8.4% higher at 37.5 bcm, as indicated in Table 2.3. Furthermore, the 2015 number of 39.5 billion cubic meters verifies the significant increase seen in previous years, which CREG seems to have overlooked. Unless ultimate demand for both electricity and gas are controlled via a strategy of strong price rises, the resultant level of almost 70 bcm in 2030 seems to be too close for comfort to present marketed output.

Table 2-3: Natural Gas Annual Demand and Projected Average Growth

			CREG projected annual demand from 2014 estimate (bcm)			Corresponding Annual Average growth by period (%)		
	Actual 2014 (bcm)	CREG base year estimate for 2014 (bcm)	2017	2020	2023	2014-2017	2017-2020	2020-2023
Power Generation	15.7	14.5	15.9	18.3	21.4	3.1	4.8	5.4
Sonatrach's transformative industry	7.9	7.3	10.2	12.9	13.1	11.8	8.1	0.5
Other Industries	3.5	3.2	4.2	5.3	5.9	9.5	8.1	3.6
Utilities public distribution	10.4	9.6	11.5	13.1	14.2	6.2	4.4	2.7
Total Demand	**37.5**	**34.6**	**41.8**	**49.6**	**54.6**	**6.5**	**5.9**	**3.3**

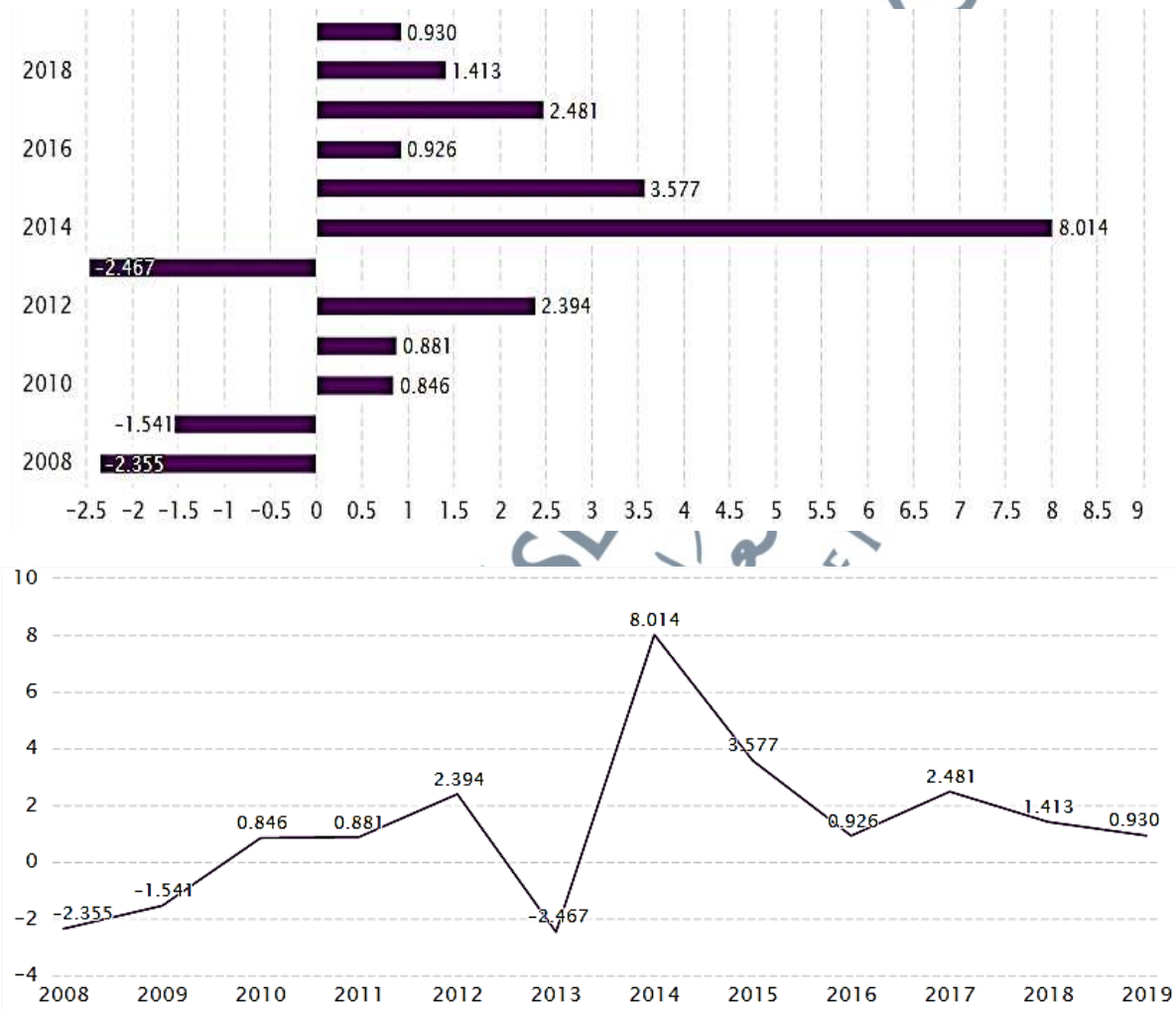
Source: CREG 2015(Power generation demand in 2017 and Corresponding growth rate

2.5. Algeria's Labor Productivity in Oil and Gas Industry

Algeria's labor productivity dropped by 0.93 % y-o-y in December 2019, compared with a growth of 1.41 % in the previous year as shown is Figure 2.7. The data reached an all-time high of 8.01 % in December 2014 and a record low of -5.59 % in December 1997. CEIC calculates Labor Productivity Growth from annual GDP per person employed. The World Bank provides

annual GDP per person employed in international dollars. Purchasing power parity (PPP) GDP is used which is GDP converted to 2011 constant international dollars using PPP rates.

Figure 2.7: Algeria Labor Productivity Growth 1992 - 2019 | Yearly | % | CEIC Data



Source: www.cecdata.com/ceic

In the latest reports, Algeria's Population reached 42.58 million people in June 2018. Its unemployment rate remained the same at 11.70 % in September 2018. Monthly earnings of Algeria stood at 363.38 USD in December 2017. The country's Labor Force Participation Rate dropped to 41.70 % in September 2018.

2.6 Conceptual Framework

2.6.1 Employee Performance

Employee performance may be described as behaviors or activities that are related to the organization's objectives, which is significant in variety of disciplines, as well as services (BosNehles et al., 2013). Traditionally, the primary emphasis of employee performance construct in the area of work and organizational psychology was task performance, which is the competence with which people execute the fundamental substantive or technical tasks essential to their employment (Bos-Nehles et al., 2013). In addition to task performance, the employee performance domain consists of contextual performance and counterproductive work behavior (Bouckenooghe et al., 2013; Ohme & Zacher, 2015). Performance refers to the behaviors that enable the technical core's ability to operate in the organizational, social, and psychological context (Bouckenooghe et al., 2013). Workplace conduct that is harmful to the organization's well-being is known as counterproductive work behavior (Ohme & Zacher, 2015).

Employee performance is vital most especially due to the ongoing globalization of economy; the increasing economic integration and interdependence of national economies across the world through a rapid increase in cross-border movement of goods, service, technology, and capital (Colwell & Joshi, 2013). As such, competition between companies from all over the world increases. It is essential for companies to maintain or improve their competitive ability, therefore employee performance is one of the key indicators for team and company performance, and consequently it contributes to the productivity and competitive ability of companies.

Second, in view of the present economic crisis, which is marked by decreased economic activity, a larger supply of goods than demand, a decline in international commerce, debts, bankruptcies, high unemployment rates, and poor consumer confidence, employee performance

is critical. Companies must reduce expenses to remain afloat in these difficult economic times, for example, by reducing staff numbers and/or exporting labor to lower-cost countries. Employees will also be urged to improve their performance levels in order to enhance business performance and productivity, as well as to improve their performance levels in order to withstand potential reorganizations including staff cutbacks (Merriam-Webster, 2013).

Third, given the rapid expansion of the older working population and the decrease in numbers of the younger working population, employee performance is critical for long-term employability. As a result, a labor shortage seems to be on the horizon (UN, 2008). Also, a smaller number of employees will be required to perform the same - or even more – work, they will be responsible for rising expenses connected with an ageing population, such as retirement pensions, social security, and health-care costs (WHO, 2009). As a result, improving employee performance in the workplace is critical. In addition, in the future years, the retirement age for employees will be raised in order to extend the time that older people remain in the workforce (European Commission, 2020). This implies that workers must perform at a greater level despite any constraints imposed by their advanced age, such as deteriorating health, keeping, enhancing, and maximizing performance.

In order to accomplish the trends in the workplace, workers' performance must be maintained, improved, and optimized. As a result, many methods and answers have been suggested by various scientific disciplines. The area of occupational health has mainly focused on the relationship between health complaints and lost production owing to illness absenteeism, as well as ways to avoid productivity loss due to a specific disease or health impairment. Numerous research has been conducted in this area with the goal of maintaining or improving an employee's performance levels by focusing on their health.

Table 2.4: Precautionary Measures on Employee's Performance and Work Environment Satisfaction

	Concept	Authors
1	Working Conditions	Holden et al., 2010
2	Ergonomics At Work	Leyshon et al., 2010
3	Safety At Work	(Choudhary, 2013; Zohar, 2014)
4	Physical Activity or Healthy Nutrition	(Rongen et al., 2013; Maes et al., 2012)
5	Pre-Employment Examinations	(Fenner, 2011)
6	Health Risk Appraisals	Kim et al., 2013

These interventions studies were carried out to avoid work-related injuries, illnesses, and absences. In addition, to understand, predict, and enhance employee performance, the study of work and organizational psychology has historically been concerned in factors such as employee ability, motivation, and resources (Tho & Trang, 2015). Work and organizational psychologists have long been engaged in hiring and recruiting employees, utilizing techniques such as interviews, biographical data collecting, and knowledge and personality tests to find the best applicant for a position (Schmitt, 2012). Assessment methods were created to assess work achievement and suggest areas for development to enhance employee performance (Guion, 2011). Furthermore, training and development programmers are intended to impart the necessary information, skills, and abilities to help the employees to perform better at work (Khan et al., 2013).

Unlike work and organizational psychology, which focuses primarily on the person, management and economics places a greater emphasis on the whole work system, including variables like work procedures, technical limitations, and organizational structure (Yunis et al., 2013). The balanced scorecard (Susilawati et al., 2013), total quality management (Yunis et al., 2013), high performance work systems (Fernandez & Moldogaziev, 2013), and pay for performance are all tools and methods for improving employee job performance (Garbers & Konradt, 2014).

2.6.1.1 Task performance

A task performance may be described as the proficiency (i.e., competence) with which one executes core work duties, and it is an important component of the employee performance. It covers things like the amount of work done, the quality of the work done, and job expertise (Mahon & Curtin, 2013; Kim, 2014). The Task performance is defined by Mahon and Curtin (2013) as both job-specific task proficiency (core work duties) and non-job-specific task proficiency (tasks not unique to a certain job but required of all employees).

The task performance, according to Al Kahtani (2013), includes productivity, quality, and work expertise. Core job duties may vary depending on the job. For example, Koopmans (2014) defined the task performance as working correctly, being concerned about time and detail, and planning. Traditional functions (e.g., decision making, planning) and occupational acumen and concerns (e.g., work expertise, concern for quantity and quality) were separated into task performance for managers by Hwang (2013).

2.6.1.2 Adaptive Performance

An individual's ability to acclimatize and provide necessary support to the job profile in a dynamic work situation is referred to as adaptive performance (Pulakos et al., 2000). Earlier studies have found that once the employees derive a certain amount of perfection in their assigned tasks, they try to adapt their attitude and behavior to the varied requirements of their job roles (Huang et al., 2007; Pulakos et al., 2000). An effective adaptive performance necessitates employees' ability to efficiently deal with volatile work circumstances (Baard, Rench, & Kozlowski, 2014), for example, technological transformations, changes in one's core job

assignment, restructuring of organization and so on. Evolutions of various new occupations as an offshoot of technological innovation need employees to engage in fresh learning and get oneself adaptable with changes in an efficient manner (Griffin, Parker, & Mason, 2010).

2.6.1.3 Contextual performance

Although the task performance has been the customary focus of research, researchers have come to believe that employee performance is more than meeting prescribed work goals (Campion, 2015). The contextual performance can be defined as individual behaviors that support the organizational, social and psychological environment in which the technical core must function (Campion, 2015). Mahon and Curtin, (2013) described conceptual performance as written and oral communication, showing effort, maintaining personal discipline, enabling peer and team performance, supervision and leadership, and management and administration are just some of the skills required.

The workers' contextual performances, according to Koopmans (2014), include collaborating and taking on additional work, demonstrating responsibility and initiative, interacting with people in the company, and dealing with the public. Communication, effort, and discipline, interpersonal conduct, leading and developing others are all included in the whole span of contextual performance. Planning, problem-solving, administration, and taking responsibility are some of the lesser-known aspects. Not only are the several dimensions linked to the overall element of job performance, but they are also related to each other. Task performance is distinct from the contextual performance, but they are highly positively associated (McDermott et al., 2013). Both behaviors have a significant impact on performance, but they do so in distinct ways (Kell et al., 2014). The difference between task and contextual

performance may grow increasingly blurry as the nature of today's job changes (Dhiman & Maheshwari, 2013). Contextual actions are increasingly being needed as task behaviors, either implicitly or explicitly. In certain professions, some actions are considered task behaviors, whereas in others, they are considered contextual behaviors.

2.6.2 The Concept of Risk Perception

Risk perception is defined by Karau & Williams (2019) as the recognition of a hazard's potential for harm and the estimate of the likelihood of suffering damage. Individual evaluations of a hazard's significance and workers' acceptance of that risk were highlighted in their model, because the risk perception has the ability to affect accident rates. The risk perception is the subjective assessment of the probability of a specified type of accident happening, and how concerned the individual is with the possible consequences. In other words, perceiving risk includes estimation of the probability and the consequences of a negative outcome (Sjöberg et al., 2004).

The risk perception assumes importance also in the design and development of safety training (Morillejo & Munoz, 2002). A key challenge for this study in risk perception is identifying a brief list of qualities that influence risk perception at work.

The notion of the risk perception involves two factors: the magnitude of the potential loss and the probability of its occurrence (Sjöberg, 2000) in other words, the existence or not of different risk factors and occupational accidents. This might explain why people perceive the same risk in very different situations or why the same individual might perceive risk differently depending on when he or she is asked about it (Leoni, 2010). The risk perception is frequently to be an important factor in risk policy matters companies (Sjöberg, 2000), as the exemplified in

this study. It encompasses both personal and work environment-related ideas and constructs, because to perceive it, you must believe in it (Sjöberg, 2000). Therefore, the study of workers' risk perception is important, as individuals are responsible for the risks perceived in the work environment. The risk an individual perceives might have been caused by that individual, which makes the possibility of changes to minimize or even eliminate risk factors related to individual behavior or even in their own working conditions.

Most individuals have a rudimentary grasp of risk and can probably provide an example of what they perceive to be "risky conduct." Scholarly study indicates that there is no uniform understanding of risk or how much risk is there in different activities. Because there are different perspectives on what constitutes a high-risk scenario, some people are more likely to put themselves in dangerous situations, putting others in harm's way. There are occupational and non-occupational reasons why individuals engage in high-risk conduct in and out of the job. According to the National Safety Council (2003), risk is a measure of the likelihood and severity of unfavorable impacts, as well as the likelihood, incidence, and repercussions of an event. An individual's risk perception and risk tolerance determine their capacity to correctly evaluate a risk in a scenario or because of a series of activities.

Risk tolerance is the inability to accurately perceive risk, which can encourage high-risk behavior and the ability of an individual to distinguish and accept a certain amount of risk. It's also conceivable that a person has the capacity to evaluate risk correctly based on the likelihood of an event happening and the potential repercussion of an occurrence yet is prepared to accept the risks. As a result, public campaigns and workplace initiatives must address both risk perception and risk tolerance in order to dissuade risk-taking behaviors.

The ability to recognize risk variables serves as a preventative measure (Ferguson, 2001). The notion that safety procedures represent an ideal kind of safety rather than real-life experience is one reason why employees do not follow them. Kirscenbaum et al. (2000) showed in a follow-up research, based on interviews with 200 injured employees that involved in an accident sensitizes workers: they have more severe perceptions of occupational hazards and a weaker feeling of control over those risks. Employees find it more challenging to establish effective control in confusing work environments. Many injuries occur as a result of employees failing to follow safety measures (Bennett, 2003). This propensity is especially noticeable among employees who do hazardous jobs.

The employees' perceived control over safety modulates the connection between a safety environment and self-reported occupational injury, according to previous research (Huang et al., 2007). To put it in another way, a good safety environment leads to better risk management and more accurate self-reporting of workplace injuries. A positive safety culture encourages employees to take more responsibility for their own safety performance. This research focused on operational hazards that may pose a catastrophic danger to oil and gas company profitability, emphasizing the need of the risk management and process safety. Three major variables affect the likelihood of workers engaging in safe behavior: first, the existence of the risk perception; second, the perceptions about the severity of the consequences; and third, perceived control over the danger (Rundmo, 1994). Other research (Mearns et al., 2001; Rundmo, 1996) linked working circumstances, occupational safety training programmed organizational culture, and organizational attitudes toward safety to the likelihood of injuries happening. The categories of significant hazards in the oil and gas sector are summarized in Table 2.5.

Table 2.5: Major risks to Oil and Gas Industry

Category	Risk	Description
Economic	Commodity Price	Volatility and decreases in oil or natural gas prices leading to worsened operating results and prospects.
Environmental	Natural Disaster	Natural catastrophe leading to interrupted or reduced production or industrial accident
Operational	Industrial Accident	Major accident or oil spill resulting in loss of life, environmental damage, regulatory fines, civil liability, loss of license to operate and reputational damage.
Political	Political Instability	Disruption of supply due to war, civil war, guerrilla attack, terrorism or other political instability.
Resource	Resource Availability	Material changes in estimates regarding oil and gas reserves or development potential.

Source: Institute and Faculty of Actuaries (2016)

Despite various accidents that happened in oil and gas industries, risk perceptions had not been looked at in details especially in relation to employee work satisfactions and employee's performance especially in Algeria. This is one of the reasons for conducting this study.

2.6.2.1 Nature of Environmental Risk Factors

2.6.2.1.1 Perceived Probability of Environmental Contamination

Marquit (2008) focused on the risk perception and perceived impact on personal and community life using 289 returned surveys; the data were examined to determine the possible link between threat perception and the decision to engage in specific pro-environmental and avoidance behaviors. However, the result revealed that threat perception predicted some pro-

environmental and avoidance behaviors. Janmaimool and Watanabe (2014) carried out a study on the nature of environmental risk factors and the findings revealed that the risk is based on collective factors.

Research on risk perception has been aimed, generally, at identifying and explaining the employees concerns associated with risk, explaining the context of risk situations, identifying the cultural meanings and associations linked to specific risk areas; helping articulate policy objectives in risk beyond risk minimization, such as improving equity and institutional trust and reducing inequality and vulnerability, designing programs for participation and joint decision making and designing programs for the evaluation of risk management and organizational structures to identify, monitor and control risks (Oltra & Sala, 2014). Risk perception is prejudiced by potential catastrophic consequences and likelihood of an occurrence (Yang et al., 2016).

2.6.2.1.2 Perceived Probability of Receiving Impacts

Janmaimool and Watanabe (2014) showed that the potential predictor variables were perceived probability of environmental contamination and perceived benefits from industrial development. Janmaimool (2016) conducted research of 193 employees using one-way analysis of variance (ANOVA) which was performed to justify the effect of individual threat appraisal and coping appraisal on the engagement in sustainable work environment behavior. The results demonstrated that the perceived probability of being impacted from pollutants influenced the entire sustainable environment and however, the perceived severity of adverse consequences caused by pollutants highly influenced reuse and recycle behaviors. It could be suggested that PMT is well suited for investigating low-cost and simple sustainable environment.

Also, risk judgments involve judgments of probability, severity of catastrophic consequences, and perceived control (Slovic, 1987). This result is supported by Janmaimool and Watanabe (2014) that the significance of employees' variables in predicting risk perception scores revealed risk perception is significant statistically.

2.6.2.2 Psychological & Cognitive Risk Factors

2.6.2.2.1 Perceived Ability to Control the Risk

Perceived ability to control the risk is done through the control of risks resulting from major work accident hazards, which have the possibility of affecting a major part of the offshore workforce and the integrity of the oil and gas installation itself; risk resulting from the industries day to day operational activities and industrial health risks linking to the operational environment (Thapa, 2016).

Sjöberg, (2004) argued that safety systems should be designed to reduce the amount of risk in different areas. Expressing and evaluating the tolerable amount of risk is very difficult. It will also vary among employees and nature of work. Why should risk be so important? In related work, we found that people are more easily sensitized to risk than to safety. Mood states have been found to be more influenced by negative expectations than by positive ones.

2.6.2.2.2 Concerns about Family Member

The environment, broadly defined, plays a significant role in shaping human health. Understanding how environmental health risks are perceived by different people, in different

places, and at different times is critical to their management (Sjöberg, et al., 2004). Therefore, family concern matters.

2.6.2.2.3 Previous Experiences in Facing Polluted Air

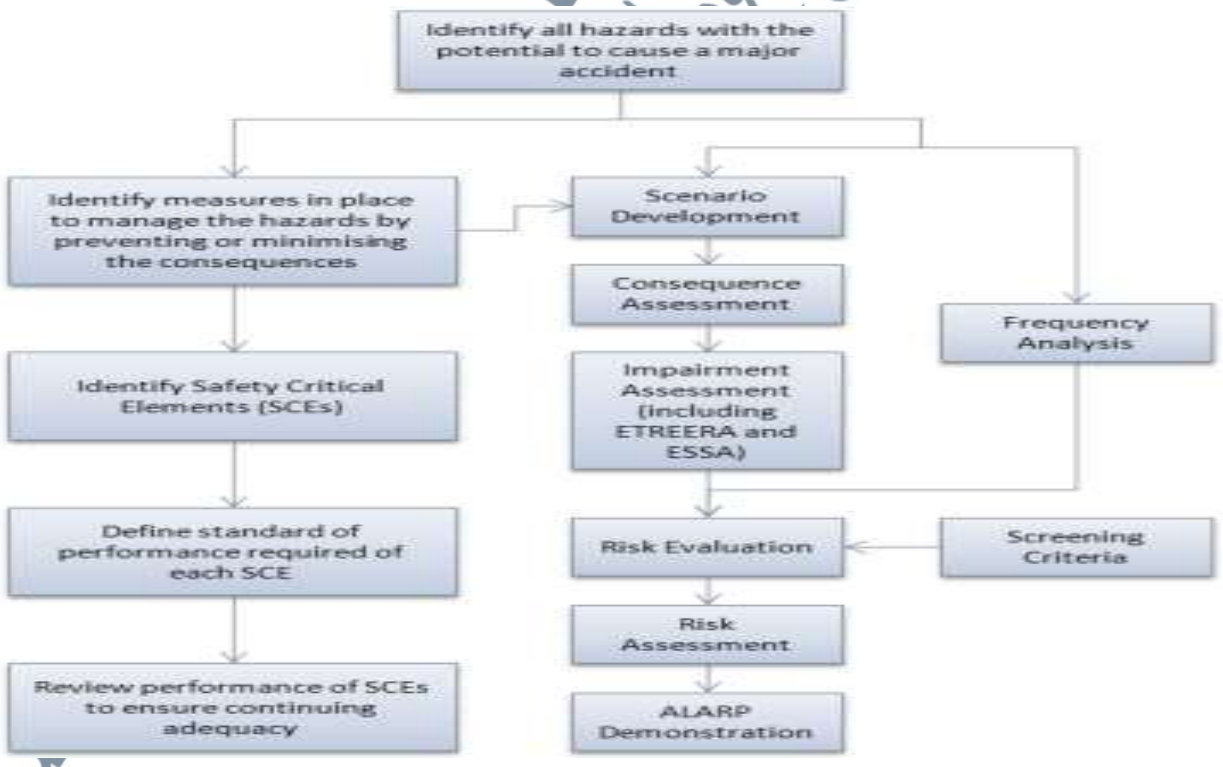
Nriagu et al. (2016) conducted a study with 600 participants where oil pollution is rampant. The findings revealed that most of the participants suffered direct exposure to oil in their environment. The result further revealed that risk perception in the study area was mediated, to a large extent, by dreaded hazards (catastrophic fears of pipeline explosions and oil spill fire), visual cues (gas flares and smokestacks) and chemo-sensory cues (off-flavor in drinking water). The exposure metrics were found to be significant predictors of the health effects and influencing factors (emotional reactions).

Chakraborty et al. (2017) used multivariate estimation model to extend environmental risk perception research by exploring how potential health risk from exposure to industrial and vehicular air pollutants, as well as other contextual and socio-demographic factors, influence racial/ethnic differences in air pollution health risk perception. The findings revealed significantly higher risk perceptions and those exposed to greater cancer risk from industrial pollutants. It also indicated that gender influences the relationship between race/ethnicity and air pollution risk perception. These findings highlight the need to incorporate measures of environmental health risk exposure in the future analysis of social disparities in risk perception in which this study is taken cognizance of.

2.6.2.2.4 Perceived Benefits from Industrial Development

Perceived benefits from industrial development comprise one of the psychological factors that have been widely investigated whether it is associated with perceived risks (Janmaimool & Watanabe, 2014). Perceived benefits from industrial development could lead to economic incentives such as more employment opportunities and tax benefits due to the localization of such oil and gas industries in such area (Dawson & Johnson, 2014). However, the urbanization of such installation could increase CO2 emissions and damage Eco-systems, which may increase the likelihood of climate change, species extinction, and biodiversity loss. Figure 2.8 represents the Risk Management Process in Oil and Gas.

Figure 2-8: Risk Management Process in Oil and Gas



Source: Adapted from Thapa, 2016

2.6.3 Work Environment Satisfaction

Work environment is "a work setting in which policies, procedure, and systems are designed so that the employees are able to meet the organizational objectives and achieve personal satisfaction in their work" (Kieft et al., 2014). In another words, workplace environment is workplace surroundings including inside, outside and in a cubicle (Rezaul, 2014). However, it has been argued that the quality of workplace environment has huge effect on the job performance and motivation (Chandrasekar, 2011). Employees will feel satisfied if workplace setting is in line with their obligations (Farh, 2012). Chandrasekar (2011) revealed that the organizational settings will influence the employees' performance. Thus, work environment involves both positive and negative factors that could influence employees' performance in their workplace.

One of the key factors that could influence the employees' performance is job satisfaction (Arman, et al., 2008). Fisher (2013) believed that happy workers are those who are productive and satisfied with their jobs, and they are likely to be better performers in the organizations. This is because performance may lead to rewards and in turn, the rewards will create satisfaction. Those who are complaining on the discomfort and dissatisfaction are those whose job performance is affected by the workplace environment (Leaman, 1995). The components are common features of satisfactory work environments, regardless of whether an organizational classification or a philosophical approach is employed to define them (Blake & colleagues, 2013). Employees are treated with respect and fairness in a satisfied working environment.

To begin with, there is obvious care and worth for everyone. Second, a satisfactory work environment is characterized by a high level of trust between management and workers. Employees are involved and empowered in decision-making, risk-taking, and personal and

professional development at their companies. Third, satisfactory work environments include an organizational culture that encourages communication and cooperation, sees people as assets, and limits decision-making to not only financial concerns, but also the influence of choices on the organization's purpose and members. Fourth, a satisfactory work environment has a "feeling tone" that encourages people to feel physically and emotionally secure. Workplaces are often described as having a feeling of family, and there is a lot of laughter among coworkers and across the company.

A prevalent feature that defines the feeling of a satisfactory work environment, according to Hoffman et al., (2014), is the sense of team or community that is apparent across disciplines in order to get the organization's job done. Communication, trustworthy connections, and collegial support (Paquet et al., 2013) are all important aspects of teamwork and partnerships in order to establish satisfactory work environments. Organizations with satisfactory work environments have more favorable work environment views (Choi et al., 2013), overall better results (Kutney-Lee et al., 2013; Van Bogaert, 2013), and other desirable work environment characteristics (Blake et al., 2013). On the other hand, not only do unhealthy work environments endanger companies and employees (Blake et al., 2013), but the circumstances that exist in unhealthy work environments endanger employee safety and performance.

Working environment, according to Opperman (2002), is a composite of three main sub-environments: technological environment, human environment, and organizational environment. Tools, equipment, technological infrastructure, and other physical or technical components make up the technical environment. Employees can execute their duties and actions because of the technological environment. Peers, those with whom workers engage, team and work groups, interactional problems, leadership and management are all part of the human environment. This

atmosphere is created in such a manner that it promotes informal workplace contact, thus increasing the chance to share information and ideas. This is the foundation for achieving optimum productivity. Systems, processes, practices, beliefs, and philosophies are all part of the organizational environment. The organizational environment is within management's control. Employees will have little motivation in assisting those workers who are attempting to enhance quality under a measurement system where individuals are paid based on quantity. As a result, problems with the workplace environment satisfaction have an impact on employee productivity (Bushiri, 2014).

Since late 90's, the factors that determine of work environment had changed due to the changes in several factors such as the social environment, information technology and the flexible ways of organizing work processes (Hasun & Makhbul, 2005). When employees are physically and emotionally fit, they have the desire to work and their performance will increase. Moreover, a proper workplace environment helps in reducing the number of absenteeism and thus can increase the employees' performance which leads to increased productivity at the workplace (Boles et al., 2004). One important tool for motivating employees is praise (Kuranchie-Mensah & Amponsah-Tawiah, 2016). Effective project managers must learn how to cultivate this powerful method of worker motivation. While oftentimes largely ignored by managers in the workplace, praise has, in countless examples shown productivity.

Another assumption is that the management has the ability and the responsibility to provide satisfactory work environments and conditions that give workers the best opportunity to do their jobs well and consequently these factors will result in satisfaction and the motivation to do even higher-quality work. These assumptions have been influenced by supervisory techniques for hundreds of years and have been supported by scientific findings over the years (Reed et al.,

2013). Satisfactory settings are ones that welcome others in via an admissions procedure, promising emotional, psychological, and physical safety. These three layers of protection are outlined in anti-abuse legislation, which prohibits physical, emotional, and psychological abuse (Djukic et al., 2013). Many organizations do a good job of delivering this level of service to the people they serve, but not so much to the people who serve them. Supervisory and management staff must understand this process and assist their employees in order to provide them with safe surroundings in which they may give safety to others.

Members of staff must have a high level of physical, psychological, and emotional safety in order to work effectively. Employees are not adequately protected cannot offer adequate services. Creation of safety will aid the creation of a satisfactory work environment where low-level violence may be monitored via mediated dialogue (Lewis & Malecha, 2011).

The main goal of any organization is to take the lead in providing physically, emotionally, and mentally secure workplaces. When individuals feel secure, they can concentrate on their relationships, which are often the basis for success. Maslow (1954) proposed that human beings need safety after they had met their fundamental needs for subsistence. Human beings' physical, psychological, and emotional safety is required for healthy brain development in children (Giddings et al., 2013) as well as the continued development of social structures that link us together in human societies.

Work environment is a wide term that refers to how workers view their workplace's operations (Giddings et al., 2013), and it includes perceptions of leadership and management techniques, as well as organizational structures and procedures. Leaders that recognize and use the power of participation via feedback mechanisms like as employee surveys may alleviate a lot

of the stress that comes with working in any setting. The most important element in shifting away from coercion and toward building welcoming and engaged workplaces is leadership (Bowen et al., 2011).

In the industrialized world, the promotion of safety in the workplace strives to improve the quality of work life and prevent occupational injuries. Despite constant improvements in working conditions over recent decades, the number of accidents at work continues to be a major problem (Robertson & Berling, 2013).

2.6.4 Risk Perception, Work Environment Satisfaction and Employee's Performance

There is macro, meso, and micro-level factors that influence risk perception. The macro level is concerned with structural or institutional issues, whereas the meso level is concerned with communal issues, and the micro level is concerned with individual psychological issues. At the macro-level, an organization's or community's safety culture and degree of safety leadership may have a significant impact on individual risk perception and tolerance.

The study of Arezes and Miguel (2008) which was carried out using 516 oil and gas workers argued that the risk perception in workplaces can the influence employees' behavior and, consequently, their exposure to some occupational risks. However, only few literatures stressed the relationship between the risk perception and the occupational risk. The existing studies rarely include quantitative variables related to the risk perception and the occupational risk. Workers' opinion about the company's safety climate also seems to play an important role as predictor.

Literature indicates an impact of work environment satisfaction on risk perception for example, the 'optimism bias's (DeJoy, 2012) predicts that people who find themselves capable of handling and managing the risk, will underestimate the risk. The negative consequences of the risk altered employee's performance. Also, changing organizational setting may lead to loss of income, loss of job or decreased career opportunities (Jex & Beehr, 2009). For example, in the health, the perception of cancer risk was identified as the perception of the risk of having cancer in the future; these negative consequences as a result of changes in a work environment will alter employees' performance. When individuals perceive more job insecurity, they tend to re-assess their existing relationship with the employer and adjust their work attitudes and behaviors accordingly (Wong et al., 2005). As more and more employees feel insecure about the future employment due to organizational restructuring, downsizing, outsourcing, bankruptcy, mergers, and acquisitions (Sverke et al., 2010), this definitely affect their performance.

According to Hashiguchi et. al. (2020) risk perception had a negative effect on the feeling of safety and the proactive work behavior among older workers but showed no significant relationship among young workers. However, regardless of workers' age, it was clear that the feeling of safety affects the workplace environment satisfaction, and that the work skills and proactive work behaviors affect the perceptions regarding team performance. Based on these discussions, the following hypotheses are developed:

H_1: There is significant difference in employees' risk perception and their performance among staff of Skikda oil refineries in Algeria.

H_2: There is significant difference in the effect of work environment satisfaction and employees' performance among staff of Skikda oil refineries in Algeria.

H_3: There is significant difference in employee's risk perception level and work environment satisfaction among staff of Skikda oil refineries in Algeria; and

H_4: Employees' risk perception mediates the relationship between work environment satisfaction and employees' performance among staff of Skikda oil refineries in Algeria.

2.7 Islamic View on Risk Perception, Work Environment Satisfaction and Employees' Performance

According to Quran Chapter 2 verse 195; Allah says:

> "Spend in the Way of Allah and do not cast yourselves into destruction with your own hands; do good, for Allah loves those who do good." (Al-Baqarah, 2:195)

From this verse, All-Mighty explained that He does not allow us to throw ourselves into destruction. The meaning of destruction is an exposure to damage (Mohd Noor et al. 2018). However, the concept of risk perception itself has been recorded in the Quran through God's command which means negative outcomes. In a specific context of risk, if a product or service was exposed to damage and not being managed properly, it will face destruction. Exposing workers to danger at work will result in unfavorable results especially in oil and gas industries. Based on this verse, risk perception is a negative action with unfavorable outcome.

Kabuye (2017) explained that humankinds are not satisfied with what they have; they are ungrateful. According to the Qur'an, "…For Allah is full of bounty to mankind, but Most of them are ungrateful." (Qur'an 2: 243). Therefore, workplace environment satisfaction has been a major challenge in my many organizations because Quran has confirmed that environment satisfactions are inexhaustible. However, firms need to engage in best practices that can

minimize the negative influence of workplace satisfaction on productivity especially in oil and gas industries that are prone various accidents and production processes.

Similarly, the impact of accidents, problem framing on workplace environment in relation to oil and gas industries in Algeria will be mediated by risk perception. However, risk perception is used as mediator because it affects the strength and clarity of employees' positive or negative perceptions of aspects of work environment satisfaction and workers' productivity.

2.8 Empirical Studies

2.8.1 Studies on Skikda Oil and Gas Refinery

In a study carried out by Dweck & Boutillon (2004) using literature review methodology, the results showed that evacuation planning and Skikda's training was ignored, and there was no pre-determined shelter on the site for retreat in the event of an accident. This finding was supported that petroleum industry holds long- and short-term environmental risks (Lidia, 2013). The principal environmental risk associated with the petroleum industry is the risk of fluid spill/emission to the environment. Although in recent decades the risk analysis methodologies have matured, to date there is still no universally accepted methodology for environmental risk assessment in petroleum industry. The overview of pollution sources with associated environmental risk is given along with the analysis of the causes and consequences of incidents in the petroleum industry. Graham, et al. (2014) revealed that perceived risk is likely to increase as the technology use more widely in oil and gas industry, but any public outrage is likely to be attenuated because of perceived benefits and related forms of risk compensation for employees and communities.

Chettouh and Hamzi (2015) used Numerical Dispersion Model to analyze the accidents rate in Skilda oil and gas, however, the study presented a statistical analysis of all reported accidents in Skikda refinery from 2003 to 2013 and concluded that the problem of lack of information on industrial accidents may give erroneous conclusions. The study revealed that regulators should review possible outcomes, determine acceptable risks for operations, and then let industry carry on operations consistent with those acknowledged risks. On the other, regulators should presume that risks are unacceptable, and then demand that industry prove them wrong before permitting oil and gas operations. One risk faced by industry is that public outrage and distrust will so influence the discussion of risk that both the public and the regulators will demand that industry prove that its operation are safe before it can conduct business (London et al., 2015). Chettouh et al., (2016) used historical review and uncovered evidence that employees lacked safety awareness around fire protection, and they did not have the general knowledge to effectively lead themselves to safety in the event of a fire accident at Skikda refinery. This view was supported by previous studies that the risk levels are in all cases very paramount and range from more than 250 mg/L in some spots of the Skikda Bay (Benmecheta & Belkhir, 2016; Chettouh et al., 2018). Zhang et al. (2019) used Analytical Hierarchical Process and concluded that there is need for improvement in terms of sustainable safety development in oil and gas industries. Human factors are the root cause incidents leading to oil accidents. The oil industry is becoming more employee-centered and must make effort to improve safety performance.

Bendib et al. (2020) carried out a recent study using Bowtie Methods and Simulation (ALOHA modeling), however the result showed that the scenario had global effect on refineries since the pipe was located in the red zone which means that the fire was extended to reach other units in time of explosion. Dettori et al. (2020) however presented work using a cross-sectional

study and concluded that it is imperative to articulate interventions aimed at oaring the population objective tools to enable them to interpret the risks themselves. In this regard, a fundamental role is played by adequate communication between the competent bodies, political decision-makers, and the population.

These previous studies, focused on accident and lack of effective safety awareness and provision which call for improvement of sustainable safety development in oil and gas industries, for human factors are the root of accidents leading to oil and gas accident. However, the novelty of this study is crystal by the fact that, this structural analysis of oil and gas risk perception and employee's performance is realized for the first time in Algeria. This is due to the difficulty of obtaining data on employees' accidents in the Algerian refining sector. For this reason, the study has limited our study to the Skikda refinery.

2.8.2 Studies on Employees' Performance

Many empirical studies were conducted to examine the relationship between employee performance and its predictors. For instance, among the most widely reported predictors of employee performance is the work environment. A study demonstrated that workplace environment factors have significant impact on the respondents' job performance (Naharuddin, & Sadegi, 2013; Caruso, 2014). In a study conducted among 254 workers in Bristol, England, the results showed a strong link between work environment variables and job performance, emphasizing that a pleasant working environment should be emphasized since it assists workers in doing their tasks (Jayaweera, 2015).

Prior research also suggested that employee's job performance level depends on the factor of workplace environment (Naharuddin & Sadegi, 2013). Thus, when the workplace environment is inappropriate, employee productivity and performance will also decrease. Hamid

and Hassan, (2015) reported a weak association between work environment and job performance in their study of 150 respondents selected from 10 government offices in Malaysia investigate the effect of workplace environment's factors towards employees' performance. In a related study by Naharuddin & Sadegi (2013) on 139 employees from three main workplace of Miyazu-Malaysia, the finding showed that workplace environment had a significant relationship towards the employees' performance.

Mathews & Khann (2016) reported that work environment has great impact on the performance level of 100 employees of a textile manufacturing sector in India. In a study by Jabbour et al., (2013) on The Influence of Environmental Management on Operational Performance (OP) in 75 Brazilian automotive Companies, the findings revealed an adequate goodness of fit, showing a positive relationship. According to Ismail et al. (2010), the physical office environment influences employee functions and determines the well-being of companies. The physical work environment also comprises the interior and exterior workplace layout, temperature, comfort zone, and work setup or arrangement, according to them.

Literatures in human resource have stressed the relationship between safety and employee performance. A study by Wanberg et al., (2013) in a construction company on 32 building construction employees indicated a significant relationship. Morrow (2014) studied 2,876 employees of a nuclear power plant, the findings from the study showed significant relationship between safety culture and nuclear power plant performance. Similarly, studies by Hon et al., (2014) in a private property management performance company on 396 respondents, revealed a significant relationship between safety climate and employee performance.

Longitudinal studies have reached mixed conclusions about the relationship between safety culture and safety performance. Mearns et al. (2003) found some support for a relationship between safety climate and safety performance in offshore oil and gas installations. However, the study suffered from a lack of statistical power when the data were analyzed at the organization level because only 13 installations were included in the study. Correlations between the organizations' safety climate survey results and measures of accident and incident rates were in the expected directions, but were not statistically significant, and the effects were much stronger in time one as compared to time two. Neal & Griffin (2006) found support for group-level safety climate as a predictor of safety motivation, which subsequently influenced safety behaviors. The study tested these relationships over a five-year period, focusing on the causal chain linking safety climate to safety performance.

Study by Dar et al., (2011) on 143 employees of different multinational companies revealed a negative relationship between Job stress and employees' job performance and showed that job stress significantly reduces the employee's job performance. Job stress although has belittling impact on any organization and individual's performance but can shape dire consequences when related to health care (Westermann et al., 2014). The stress in work environment reduces the intention of employees to perform better in jobs with the increasing level of stress the employees thinking demoralize and his tendency to work well also decreases (Dar et al., 2011). In another related studies, job stress has been shown as a major factor which leads to declining job performance of employees (Gilboa, et al., 2008; Lepine et al., 2005). High level of exhaustion leads to decline in employees' capability to learn new things, more depressive symptoms, withdrawal, and hostility (Lepine et al., 2004). It was discovered in research that there was negative correlation between quality of services delivered to customers

and work-related stress, that is, highly stressed employees have failed to provide high quality services as compared to less stressed ones (Varca, 2009). Moreover, employees, who are responsible for customer services, report chronic stress and they perform poorly in their jobs (Beehr et al., 2000).

The study by Mukama and Omondi (2010) noted that with excessive pressures, the job demands cannot be met; relaxation turned to exhaustion and a sense of satisfaction replaces with the feelings of stress. However, motivation sheds away and the workers start losing interest in the work and hence performance chart shows a negative trend. The performance of individuals also decreased when stress is caused by inability of individual to maintain a reasonable balance between family life and work life as he/she must spend a lot of time in his/her working (Abdi, 2001). Riketta (2002) did a study in Ghana about the effect of job stress on employee performance and identified that work overloads and time constraints were significant contributors to work stress among employees. Suleiman & Iles (2000) studied an association between job stress and job performance between managers and blue-collar employees. Therefore, the current study bridges the literature gap of the previous research by examining the mediating effect of employee risk perception between the work environment satisfaction and employees' performance among staff of oil refineries in Algeria.

2.9 Theoretical Framework

In a study, theoretical framework is the structure that holds and maintains the theories that explains the basis behind the study (Khan, 2010). In this study, theoretical framework was used to examine the theoretical relationship between the research variables and to the study hypothesis; to justify the findings based on the concepts and approaches related to the suggested theories for the study. Experts suggest that a logical conclusion in research reflect on the

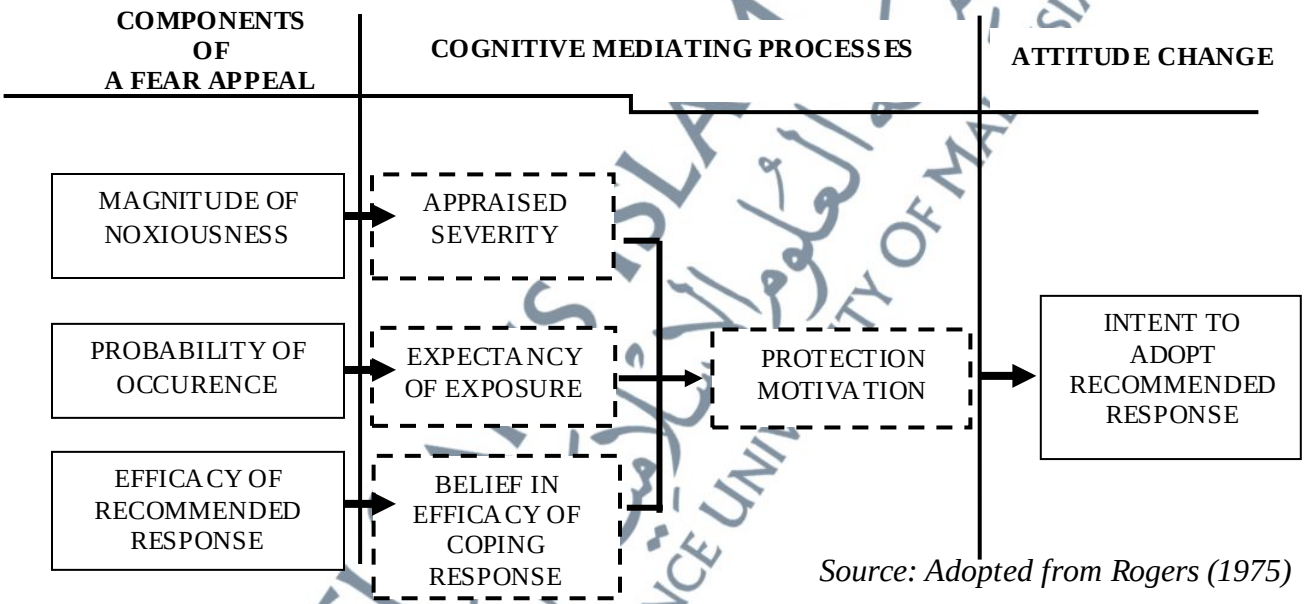
theories, models and concepts that are applicable to the understanding of the phenomenon that directs the study (Johnson & Christensen, 2000).

Many theories have discussed the risk perception in the past and focus on how human confusion and the processing of human information can cause human error (Hale & Glendon, 1987), Risk Compensation Theory (RCT) (Wilde, 1988) and Risk Behavior Theory (RBT) (Naatanen & Summala, 1974) are examples of theories that focus on behavioral adaption and address responses. The fundamental motivation to study the defect in subjective judgment is the assumption that "correct" perception of risk will prevent accidents from happening because of "managing the risks in emergency situations need a realistic assessment of the situation "(Marek et al., 1985). Accidents occur when potential subjective assessments of risk sources do not match the actual situation. When risk perception is in line with the "real" situation of human action will be taken to avoid accident if necessary. This is the reasons Wagenaar, and Causes (2011) showed that elimination of risk factors associated with the working conditions often has a greater impact on the level of risk than measures aimed at reducing unsafe action. In the 60s, the study of the risk perception arose out of the surveillance that individuals often disagreed about how unsafe various technologies and environmental hazards were. Paek and Hove (2017) identified two dimensions of risk perception: the cognitive dimension, which relates to how much people know about and understand risks, and the emotional dimension, which relates to how they feel about them. These dimensions are core to the existence of the Protection Motivation Theory as discussed in the latter subheading.

2.9.1 Protection Motivation Theory (PMT)

Out of the number of theories related to risk perceptions and risk tolerance, Protection Motivation Theory (PMT) is one of the most cited (Inouye, 2014). Protection motivation theory arises from the cognitive appraisal of a depicted event as noxious and likely to occur, along with the belief that a recommended coping response can effectively prevent the occurrence of the aversive event (Rogers, 1975).

Figure 2-9: The Protection Motivation Theory Framework



Source: Adopted from Rogers (1975)

Employees are more likely to defend themselves, according to this idea, when they foresee unfavorable repercussions, want to avoid them, and believe they have the power to avert them, as illustrated in Figure 2-9. Some may see parallels between PMT and the health belief model (Sun, et al., 2013), which claims that individuals evaluate variables including the severity of the danger, their own susceptibility, and the potential advantages of preventive measures before deciding whether to accept a risk.

Overall, PMT assumes that there is a link between risk perception and injuries and accidents, and that individuals will take preventive action if they are motivated and have the authority to do so. Sheeran et al. (2013) discovered that improving risk appraisal components (such risk perception and perceived severity) had a combined beneficial impact on altering intentions and behavior toward safety. It takes time to make the choice to adopt preventive measures in the job (Lindell & Perry, 2012). As a result, workers balance the expenses spent against their response effectiveness and self-efficacy (i.e., feeling of agency). Personal protection equipment (PPE) and other protective measures are more often used when these behavior s become more accepted and habitual, and as employees understand that they may take steps to ensure their own safety.

When employees have causes to be concerned, typically as a result of a prior event, the risk perception and usage of personal protective equipment rises based on protection motive theory (Inouye, 2014). Offshore oil employees, for example, who had encountered an incident in the previous two years felt less safe and had a higher sense of work task risks than those who had not (Mearns et al., 2008). Workers who had previously suffered an occupational accident were more likely to express worry about hazardous products and workplace air quality as viewed by Kiefer et al. (2016). Workers' worries and incentives to protect them were heightened in each of these instances as a result of firsthand encounters with accidents or injuries. The protection motive hypothesis has been used to target safety campaigns and has been found to be more successful than other approaches in reducing young adults' intentions to speed while driving (Glendon & Walker, 2013). In general, according to PMT, being motivated to protect one requires not just a good sense of danger, but also the tools and abilities to take preventative

action. Those who take greater risks are less risk conscious and lack the self-efficacy or agency to protect themselves (Inouye, 2014).

The theory has been applied to matters within a wide range of spheres (Pugno & Depedri, 2010). The idea was that the quality or type of motivation of a person is the most important compared to the overall amount for predicting significant outcomes such as psychological health and well-being, effective performance, creative problem solving and deep or conceptual learning. With regards to performance, employees who are motivated through the provision of a good working condition both physical and non-physical can have an impression of fun, safety and peace which can spur the feelings of satisfaction (Koopmans et al., 2014). This can give a positive influence on employee performance to develop a sense of personal capability to learn new skills or to pursue their goals clearly (Wang et al., 2010).

With regard to this research, the employees experienced a kind of motivation whereby they become self- integrated that leads to effective functioning In order words, it is expected that an appealing safety policy and management commitment in the working environment will foster high performance resulting to boosting of employee's morale which is often interrelated with productivity in the work environment (Koopmans et al., 2014).

2.9.2 Social Exchange Theory (STE)

One of the most important theoretical frameworks for analyzing employee workplace behavior is social exchange theory (SET) (Markos, 2010). It is the most generally recognized and used theory in contemporary employee performance research (Dajani, 2015). Its ancient origins may be traced back to the 1920s, spanning fields such as social psychology and sociology (Cook et al., 2013; Burke, 2006). Even though various perspectives on social trade have developed,

scholars agree that social exchange entails a sequence of encounters that result in responsibilities (Cropanzano & Mitchell, 2005). These interactions are often seen as interdependent and reliant on the activities of another person in SET (Markos, 2010).

The concept of workplace connections has gotten much more study attention in recent management studies than any other element of SET (Shore et al., 2004). Certain workplace antecedents lead to interpersonal interactions, referred to as social exchange relationships, according to this SET model (Cropanzano et al., 2001). Employers that "take care of their workers" develop social exchange connections, which have a positive impact.

In other words, the social exchange connection is a beneficial and equitable transaction between strong relationships that results in successful work behavior and good employee performance. This line of reasoning has gotten a lot of attention, and most of it is based on Blau's (1964) framework for describing social exchange interactions (Markos, 2010).

Meta-analytic evidence speaks for a strong relationship between cognitive ability and job performance. Individuals with high cognitive abilities perform better than individuals with low cognitive abilities across a broad range of different jobs (Hung et al., 2017; Jackson et al., 2016) Most authors assume an underlying mechanism of cognitive ability helping to acquire job knowledge and job skills which in turn have a positive impact on job performance (Schaufeli, 2012; Zhang et al., 2013).

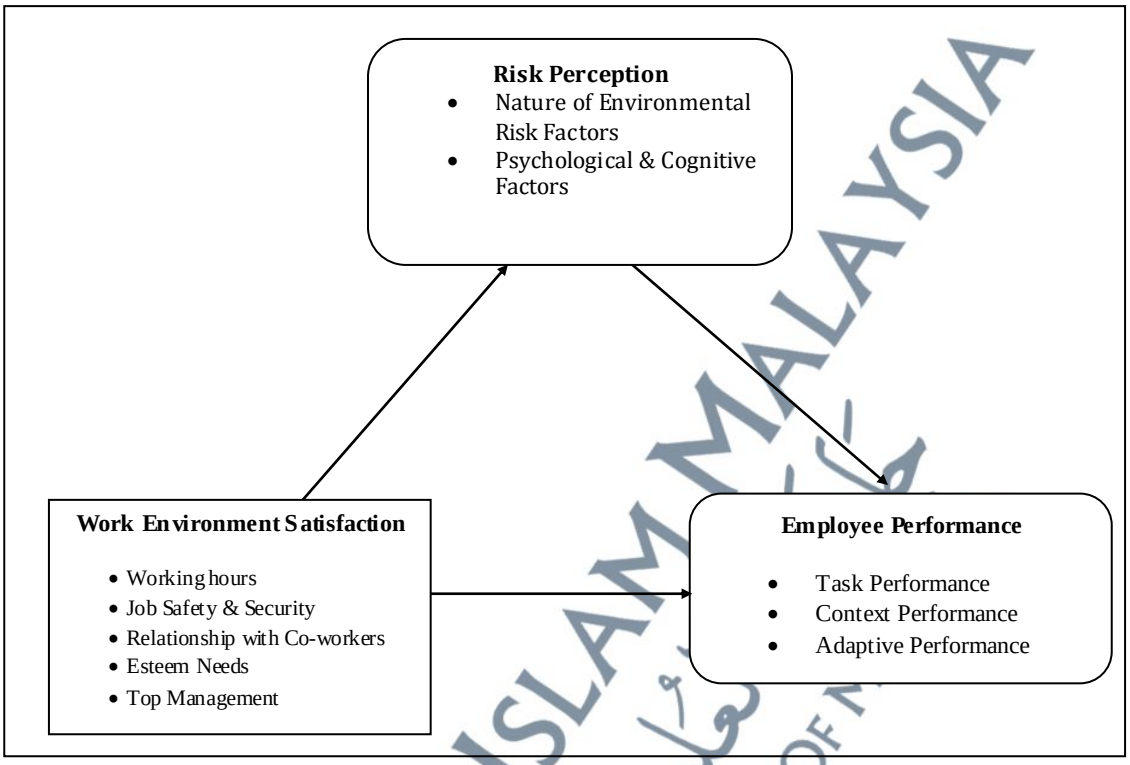
Researchers also addressed the question whether personality accounts for performance differences across individuals. Meta-analyses showed that the general relationships between personality factors and job performance are relatively insignificant, but a strong relationship emerged for neuroticism/emotional stability and conscientiousness (Kappagoda, 2013).

However, the relevance of specific personality factors for performance varies between different jobs (Cubel et al., 2016; Kramer et al., 2014).

2.10 Research Framework

In this study, research framework is the organization of concepts derived from the reviewed theories. Social Exchange Theory as adopted in this study explained the notion of workplace relationships (Hom et al., 2009; Shore et al., 2004). Certain workplace antecedents lead to interpersonal interactions, referred to as social exchange relationships, according to this SET model (Cropanzano et al., 2001). It backs up the idea that employee motivation and happiness lead to better performance. Given the significance of risk perception in the oil and gas industry, and the protection motive theory (PMT) being one of the most recognized (Inouye, 2014) risk perception theories, this research used it to create its conceptual model. People are more inclined to protect themselves if they foresee bad outcomes, try to avoid them, and believe they have the power to avert them, according to this hypothesis. However, this study adopted the framework of Janmaimool and Watanabe (2014) that coined the protection motivation theory in assessing the determinant of risk perception in oil and gas sectors. Based on this, the researcher attempts to show the inter-connectivity between concepts of work environment satisfaction and employees' performance based on the previous literature in order to offer a clear understanding of the relationship. The Figure 2-10 illustrates the relationship between the dependent variable (employees' performance), the independent variable (work environment satisfaction) and mediating variables for the study (risk perception).

Figure 2-10: Research Framework



2.11 Chapter Summary

In summary, this chapter provided information about the global overview of the oil and gas demand and Algeria in particular. Algeria's oil and gas industry, challenges, issues, and implication pertaining Algeria's oil and gas industry were discussed. In all sectors of hydrocarbon development, Sonatrach and its officials should pave the way for new win-win scenarios and collaborations. Such strategy may have a greater chance of correcting the worrisome tendencies discussed and generating more diverse wealth for Algeria's future.

Other aspects such as the work environment satisfaction, employees' performance as well as the concept of risk perception were discussed. Empirical literatures were provided, the theoretical and research framework were also presented.