International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Evaluation of Upstream Oil and Gas Accident Risk Assessment Effect on Project Time Performance in Ghana

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Abstract
In Ghana's upstream oil and gas industry, a developing nation, this article seeks to explore the effects of accident risk assessment on project timeline performance, with management and staff roles as the moderators in Ghana's upstream oil and gas industry. Purposive sampling was used to choose employees and supervisors who were involved in project management and risk assessment responsibilities as respondents, and quantitative data were gathered from 242 Ghanaian upstream oil and gas sector personnel in Ghana's Western Region. These volunteers have been in the industry for at least six months. The study demonstrates a positive correlation between accident risk assessment and project accident risk assessment. Amitai Etzioni's Theory of Compliance, Situational Awareness Theory, Theory of Attitude Formation, and finally, Henry Mintzberg's Management Theory serve as the foundation for the study's theories and hypotheses. In the upstream oil and gas sector, accident risk assessment has been found to have an impact on project timeline performance. This was accomplished by drawing stakeholders' attention to employee feedback and emphasizing it.

Keywords: Ghana, Project time performance, Emerging economy, Accident risk assessment

Introduction

The upstream oil and gas industry uses a project-based style of management. Because of this, about 80% of management is project-based. Timeliness plays a big role in the industry, and because of this, employees work in shifts, and their outputs at any given time are important. Accidents at work can be caused by many things, such as bad leadership, a bad safety culture, a lack of safety monitoring, insufficient management supervision, broken equipment, resistance to change, competing goals, and wrong safety behavior when the concentration is on how projects can be completed on time (McBride & Collinson 2011). In the oil and gas industry, these dangers are made worse because workers are constantly exposed to or use dangerous chemicals, fossil fuels that can catch fire, tight spaces, high places, and heavy machinery (Pinheiro et al. 2011; Robb & Miller 2012). This requires a lot of attention because corporate executives typically prioritize productivity over safety issues and this may have a bad effect on employees if an accident happens (Kines et al., 2010; Stride et al., 2013). In the oil and gas business, this kind of pressure—or perceived pressure—is common since any delay in drilling may result in a significant loss of income (Pinheiro et al. 2011). Safety in the oil and gas sector became a major concern for governments and professional organizations after the devastating Piper Alpha catastrophe in the North Sea on July 6, 1988.

Regulations have been enacted by several nations to improve the safety of industrial facilities and procedures. For instance, the European Union twice updated the Seveso I Directive (originally established in 1976, a few months after a disastrous accident at a chemical facility in Seveso, Italy) in 1987 and 1988 to include in its scope facilities that store hazardous materials (European Commission 2015). A developing country like Ghana, where upstream oil and gas exploration is still relatively young compared to some other nations like Saudi Arabia, the United States of America, Russia, Iraq, Iran, and others who have extensive experience in the field, won't have too much trouble assessing accident risk because they will likely have better health and safety systems in place. The question is: does Ghana have the right employees and management team with the right attitude, who aware of the various accident risks around them, and readiness to comply with accident risk assessment working in the upstream oil and gas industry? There are three main parts of the oil industry: upstream, midstream, and downstream (Burclaff, 2021). The upstream unit is in charge of looking for, developing, drilling, and making crude oil or natural gas. Some lists that can be used to assess accident risks include task analyses, Hazard and Operatability (HAZOP), Quantitative Risk Assessment (QRA), Event Tree Analysis (ETA), Petri networks, Bayesian networks, etc. In this study, however, both the traditional statistical method and the method for predicting accidents, which is called the stochastic approach, were used. Upstream oil and gas operations are the activities that take place before crude oil and gas are produced. These activities include oil and gas exploration as well as the production of crude oil and gas (Wright & Gallun, 2008). Research in geology and geophysics (G&G) is also included in this category, along with activities such as drilling for oil and extracting both oil and natural gas from the earth. The main aim of this research is to find out the effect of accident risk assessment on project time performance, with management and employee roles as the moderating factors. A thorough evaluation of accident risks will aid in reducing or preventing accident occurrences in the upstream oil and gas industry, ensuring that projects are always finished on time, and increasing the likelihood that wealth will be created in Ghana's economy for national development, especially in a developing country where widespread poverty and underdevelopment exist.

Research Question

1. What is the moderating role of staff and management in accident risk assessment in the upstream oil and gas industry?
2. Does accident risk assessment influence project time performance in the Ghanaian upstream oil and gas industry?

Literature Review

The concept of risk

In future research, the idea of risk will need to be looked at more closely. Renn (1992) says that there must be risk for there to be uncertainty, which means that the future is not set and depends on what people do now. In contrast to the idea of absolute certainty, Bernstein (1998) says that you can never be sure of anything because most of what you know is wrong or not enough. So, uncertainty is an important and permanent part of life. Adams' (1997) short review of Bernstein (1998) uses "virtual dangers" instead of "uncertainty." Such risks can't be predicted because they come from people's imaginations (such as the possibility of an extraterrestrial assault). In an attempt to break down uncertainty, Klinke and Renn (2002) split it into four parts. Examining the components is the best way to figure out how people feel about risk. However, because they are usually closely related, it is usually enough to study only one of them. Knight

(1921) said that risk is quantifiable uncertainty, and the word "uncertainty" is only used in a negative way. In other words, risk is most likely uncertainty, and the likelihood of occurrence is one of the characteristics that distinguishes it. Renn's (1992) way of thinking is that the second thing that describes risk, the risk outcome, is a future condition of reality. The way the outcomes are added up and how likely they are to happen together make up the third and final element that describes the level of risk (Renn, 1998).

Management Roles

Denison (1990) and O'Reilly et al. (2014) say that the way management shares information has a big impact on how well business accident risk assessments are done. Improving the performance of an organization can be done by setting up a good management information dissemination culture (Fusch & Gillespie, 2012). Uddin et al. (2013) say that the effectiveness of business accident risk assessment and the management's culture of sharing information are strongly linked in a positive way. However, Childress (2013) said that the way management shares information does have an effect on how well business accident risk assessment works, either for the better or for the worse. According to Polychroniou and Trivellas (2018), a positive correlation exists between the management's information dissemination culture strength and the performance of the internal accident risk assessment (innovation capability and interpersonal interactions), as well as the results of the company (profitability, growth, and reputational assets). The culture of information distribution within management has a detrimental effect on the efficiency of the organization's accident risk assessment. According to Unger et al. (2014), there is a link between the success of accident risk assessment and the management's interpersonal role culture. According to Berg and Wilderom (2012), the performance of accident risk assessments may be affected by the interpersonal culture of management. According to the findings of Sengottuvel and Aktharsha (2016), performance may be strongly described by all dimensions of management's interpersonal culture, with strategic focus serving as the most important predictor of organizational accident risk assessment performance. According to research conducted by Eisenfuhr (2011), the efficacy of an organization's process for assessing the potential for accidents has a positive correlation with the speed with which management makes decisions. Khakheli and Morchiladze's (2015) research shows that there is an inverse relationship between how much a company's management decisions are influenced by politics and how well the company's accident risk assessment works.

Employee Roles

In the upstream oil and gas business, the examined scientific literature found a strong correlation between a worker's attitude toward accident risk assessment and the project's accident risk assessment. [Citation needed] (Harrison, Mullen, and Green, 1992; Adler, Matthews, 1994; Van der Pligt, 1994; Norman, Conner, 1994; Armitage, Conner, 2000; Chaiklin, 2011). In their research from 2015, Bin Atan and colleagues investigated the impact of awareness on the performance of workers. According to the results, there is a significant connection between the workers' level of performance on accident risk assessments and their level of effective accident risk awareness. Chatzoglou and Diamantidis (2014) found that the design of an awareness program has the most significant influence on how well firm workers comprehend the risks associated with accidents. Studies by Adowa and Okereke (2013), Arasa and Ottichilo (2015), Berisha-Vokshi, Xhelili-Krsniqi, and Ujkani (2015), Bokpin (2013), and Juhmani (2015) show that employee compliance makes accident risk assessments more accurate (2012). Lama (2013) and Tan (2015) say that compliance and accident risk assessment performance are two important parts of corporate governance. Das (2014), Hassan (2013), Omar (2015), and Peterson (2013) all did studies that showed a strong link between compliance and the accuracy of accident risk assessments, which backs this up.

Risk assessment

This is a clear example of a common risk assessment method: people argue every day about whether or not a certain course of action is safe (Denning and Budnitz, 2017). But people need to know about the dangers that come from the sources of hazards in order to take the right steps, make decisions, and use safety measures (Sullivan-Wiley and Short Gianotti, 2017). Every day, the upstream oil and gas sector needs an accident risk assessment to be done before any project work can begin. It is important to know that the four main steps of accident risk assessment are identifying hazards, assessing risks, reducing risks, and keeping track of risks (Mokhtari et al., 2012). The first step in figuring out how to assess and deal with accident risks is to find the hazards (Cameron et al., 2017). The second step is the risk assessment, which is basically the act of putting a number on the dangers that could happen (Singh, 2017). The goal of a risk assessment is to look at the risks that could lead to something bad happening. Then, the possible risks, their effects, and how likely they are to happen must be looked at. Also, a plan must be made to figure out if the risk of an accident is acceptable or what needs to be done to make it so, taking into account the many unknowns or assumptions. This method should also help find known, unexpected, and surprising events and figure out how likely they are to happen and what kind of effects they might have (Aven, 2017). At its most basic level, a risk assessment process should answer the question, "What could go wrong?" "How likely is it?" and "What are the consequences and how bad are they?" (Apostolakis, 2004; Pasman et al., 2017). Pasman et al. (2017) argued that research or methods that could be used to evaluate risks are needed right away because of the harmful accidents in the oil-based industry. Because of these things, governments started telling businesses they had to take steps to reduce risks and work at a level where accidents were less likely to happen (Pasman et al., 2017; Silbergeld, 2017). This is because government agencies know that if accident risks are not managed well, they can lead to accidents that hurt a company's performance and a country's economy as a whole.

Project Management

Sydow, Lindkvist, and DeFillippi (2004) and Bredin and Soderlund (2011) agree that a project is a type of work that is done over a set amount of time and has a clear beginning and end. This is a different way to run a business than the way most traditional companies do things, which are by definition iterative and repetitive (Tonnquist, 2009). Projects are used to come up with good ideas when a normal organization doesn't have enough time or money to do so on top of its regular tasks (Sanghera, 2019). A project can be external, with people from more than one organization taking part, or internal, with only people from the organization taking part (Tonnquist, 2009; Lundin et al., 2015). Work breakdown structure (WBS) is the process of breaking up tasks in a project into smaller subprojects so that they can be better planned and managed (Slack, Brandon-Jones, & Johnston, 2016; Project Management Institute, 2017). A work package should include related tasks that are different from those in other work packages. It shouldn't take more than 10 days to finish, if possible (Slack, Brandon-Jones, & Johnston, 2016). During the planning phase of a project, time management is planned for. This is part of the project management strategy (Heales, Susilo, & Rohde, 2011). A project timeline lets project managers show in a visual way how long the project is expected to take by listing the start and end dates for each job that is part of the project (Solis-Carcano, Corona-Suarez, & Garcia-Ibarra, 2015).

The next step is execution, which is when the action plans are put into action (Slack, Brandon-Jones, & Johnston, 2016). The project is finished in the closing phase, which also looks at how well it worked and brings its life to an end (Tonnquist, 2009; Slack, Brandon-Jones, & Johnston, 2016). In the early stages of a project, a baseline is set and agreed upon so that it can be tracked and evaluated (Shivakumar, 2018).

Time, cost, and quality are often looked at when measuring the success of a project (Belout, 1998; Bredin & Soderlund, 2011). These parts are often used to set the project's internal goals, which are often set up as milestones and stage gates (Slack, Brandon Jones, & Johnston, 2016). If a project starts to move away from its baseline, the baseline must be changed, and the project must be put back on track by either revising the baseline correctly or allocating the resources it needs (Belout & Gauvreau, 2004). Because project complexity is linked to delays, cost overruns, limits on how well the organization performs, and a drop in satisfaction (Ham & Lee, 2019). Human resources are very important in the field of accident risk assessment and in project activities in general, since projects often involve people from other departments or even different organizations (Heizer & Bender, 2011; Slack, Brandon-Jones, & Johnston, 2016). Managing organizations with multiple projects well means giving staff the power to make decisions about project activities, assessing the risk of accidents, and openly reviewing the job (Bortnar & Pucihar, 2014). In the upstream oil and gas business, the main job of project management is to plan, coordinate, and oversee the completion of project goals while keeping the needs of stakeholders in mind (Harris & McCaffer, 2013).

Project Time Management and Accident Risk Assessment Relationships

Lawrence's (2015) research found that accident risk assessment management practices used during the planning stage affected how well a project met its deadline. Analyzing the findings of previous studies revealed a strong relationship between project performance and how accident risk is managed. Accident risks have a big effect on how quickly a project can be done (Chang et al., 2018). Adeleke et al. (2018) looked into how managing the risk of accidents affected how quickly a project was finished. The main goal of their research was to find out how often businesses use accident risk assessment management. The results show that putting into practice accident risk assessment management practices makes project timelines much better. They also show that having an accident risk manager around speeds up the time it takes to finish a project. Hartono et al. (2019) also looked into how project accident risk assessment management affects project time performance. The results of their study show that putting into practice project accident risk assessment management practices makes it much more likely that a project will be finished on time. Aarthipriya et al. (2020) showed that there is a link between accident risk identification and accident risk assessment that affects the project's ability to be finished on time, on budget, and according to technical requirements.

Although other researchers have established that accident risk assessment influences project time performance in other sectors, as shown above, such a relationship is not yet known in the oil and gas sector, particularly in Ghana, where exploration has only recently begun.

Research Model

This section starts by looking at Amitai Etzioni's Theory of Compliance, which helps us look at the roles of employees in project accident risk assessment when it comes to compliance. Then, we talk about the Situational Awareness Theory, which helped us figure out the roles of employees in terms of awareness, and the Theory of Attitude Formation, which helped us figure out the roles of employees in terms of attitude in project accident risk assessment in Ghana's upstream oil and gas industry. The last thing that was looked at was Henry Mintzberg's management theory, which helps us figure out who is responsible for what in a project accident risk assessment. Then, we show our study model and what we think will happen.

Amitai Etzioni's Theory of Compliance

Etzioni came up with a new way to look at organizational structure in 1975. He called it "compliance theory." He puts people and organizations into groups based on how much power they have and how much they take part. Etzioni says that there are three types of organizational power: coercive, utilitarian, and normative. These are related to feeling alone, being smart, and doing the right thing.

Coercive Power

Coercive authority uses fear and force to keep people in their place. Some examples of institutions that use coercive force are prisons, mental health facilities where people have to be locked up, and basic military training.

Utilitarian Power

Compensation or extra benefits are used by utilitarian power to control people at a lower level. Most businesses place a high priority on these outside benefits. Some of these rewards include salary, bonus pay, working conditions, and job security. Along with many businesses, unions, farmers' cooperatives, and different government agencies are all examples of utilitarian organizations.

Normative Power

Normative power is used to get people to do things that are good for them in and of themselves, like work, setting goals, and contributing to society. In this situation, management has power because they can control symbolic incentives, distribute symbols of esteem and prestige, set up rituals, and change how acceptance and positive reactions are spread throughout the company. Normative organizations hire a large number of professionals. This will help the researcher find out from the upstream oil and gas staff if they follow all of their companies' accident risk assessment procedures and whether normative power is employed in the upstream oil and gas industry since workers in this sector are supposed to be professionals. As a result, hypothesis 1

H1: Compliance is positively related to a staff role in accident risk assessment procedures in the upstream oil and gas industry.

Situational Awareness Theory

The definitions that gave origin to the concept, as well as the manner in which situational awareness is assessed in the actual world, are inextricably linked to situational awareness theories. The three most common ones are information processing, activity, and ecological theories. The best illustration of the information processing approach is Endsley's (1995) three-level theoretical model of situational awareness. When situational awareness grows, higher-order cognitive processes are seen. Bedny and Meister's (1999) description of reflective-orientational activity says that situational awareness is one of many different parts of the activity-theoretic approach. Situational awareness is shown by the perceptual cycle model as a dynamic interaction between people and their surroundings. The people who support this strategy say that situational awareness is determined by the situation (Smith & Hancock, 1995; Adams, Tenney, & Pew, 1995). We will talk about each of these views in turn.

Three-level model

The three-level situational awareness model (Endsley, 1995) was first made to understand aviation tasks, such as aircraft piloting and air traffic control, where people must keep up with a constantly changing environment. However, it has been suggested that it could be used in other fields, such as power generation, petrochemicals, nuclear, command and control, medicine, etc. Situational assessment studies and applications can be used for almost any job that requires people to keep track of things that happen. The researcher chose this model because this study is about the upstream oil and gas business, also called the petrochemical industry. In Endsley's paradigm, the three levels of evaluating a situation are set up in a hierarchy. Each level is a necessary (but not enough) step to get to the next, higher level. This model shows how information is processed in a cycle, from perception to interpretation to prediction. From the lowest to the highest level of situational awareness, these are the steps:

Level 1 SA: Perception of the accident risk assessment elements in the environment

This level of situational awareness, which is the most basic one, encompasses the staff's perception of accident risk assessment, the attitudes of other employees toward accident risk assessment, the other accident risks that are being evaluated or will be evaluated, and the environment in which accident risk is being evaluated. This level of situational awareness is also the most basic one. The data that make up the accident risk assessment are not being analyzed at this stage; rather, they are being used to demonstrate how the information was first obtained in its unprocessed version.

Level 2 SA: Comprehension of the current situation

The impression of the accident risk assessment could lead to understanding. It is said that understanding is the key to understanding the importance of the accident risk assessment and having a sense of what's going on. This is because the employees who take part in the accident risk assessment need to know how the data can be combined and analyzed to make an accident risk assessment. This lets the staff check to see if the things they are doing to assess the risk of an accident are having the desired effect. Endsley says that the level of understanding shows how good the staff is at assessing the risk of accidents in the upstream oil and gas industry. People with less skill may have a lower Level 2 SA, even if they have the same Level 1 SA as their more skilled peers. This is done to help the researcher figure out if workers in Ghana's upstream oil and gas sector really understand the processes and methods that companies use to estimate the risk of an accident.

Level 3 SA: Prediction of future accident risk status

This is the highest level of situational awareness in assessing accident risk. It is linked to being able to predict how accident risk factors will change in the upstream oil and gas sector. Accuracy at Level 1 SA and Level 2 SA is a big part of how well accident risk can be predicted. When employees know how likely it is that an accident will happen in the future, they have more time to deal with problems and make a plan. In a similar way, other staff members who are working on tasks that need to be done on time rely on accident risk prediction to see problems coming and deal with them quickly.

Endsley's three-level model from 1995 says that as more information is processed at higher levels, consciousness grows. She says that understanding means combining what you know and what you want to do with information from the outside world. This, in turn, changes how you think the world will change. Since the model is based on common ways that people think, it seems to be general and gives a wide theoretical framework that could be used in many ways. Endsley says that system-specific subcategories like mode awareness, spatial awareness, and time awareness are usually used to define situational awareness in dynamic systems. Hence, hypothesis 2

H2: Awareness is positively related to a staff role in accident risk assessment procedures in the upstream oil and gas industry.

The Theoretical Principles of Attitude Formation

We are always influenced by the social groups and organizations we are a part of. This is why attitude formation is a process that happens over the course of our lives. It can be thought of as a change from not having an opinion to having one that likes or dislikes a certain outcome, such as having a positive or negative opinion about the risk of an accident while being influenced by certain factors in the upstream oil and gas sector. Attitude, on the other hand, is "silent," but it comes out and becomes active when decisions about accident risk assessment are needed to decide how to act in certain accident risk situations.

In the upstream oil and gas industry, attitudes are formed and stored in the minds of the people who work there for the rest of their lives (whether to participate, lead, etc.). Based on a review of scientific literature, there are two ways to show how attitudes form in the upstream oil and gas industry:

1. as a phenomenon influenced by cognitive or affective factors.
2. as a result of a multi-component process consisting of certain components (cognitive, affective, and behavioral).

The Attitude Formation as A Phenomenon Influenced by Cognitive or Affective Factors

Some of the researchers who have studied how attitudes are formed include Zajonc and Markus (1982), Petty, Fabrigar, and Wegener (1997), Ajzen (2001), Maio, Haddock, and Verplanken (2019). Their research shows that both mental and emotional factors play a role in how attitudes are formed. Affective factors, which are feelings and reactions, play a role in how the upstream oil and gas industry decides how likely an accident is. These thoughts have an emotional effect. This way of thinking comes from personal opinions that are shared in the upstream oil and gas industry (of self, others, and events). Accident risk assessment in the upstream oil and gas industry is shaped by how a person is socialized through first-hand experience, interactions with the environment, and interfaces or external relationships with other people, whether they work in the same industry or not. Cognitive factors include the effects of outside things and are related to socialization and the way our social environment affects us. These beliefs are based on how people think. In the end, affective (emotional) attitudes toward accident risk assessment in the upstream oil and gas industry are affected by internal factors like a person's wants, values, feelings, sensations, and other internal personal factors. In this case, a person's or a worker in the upstream oil and gas industry's attitude toward accident risk assessment is based on their own psychological needs that can be met (expressing certain values, emotions, habits, regrets, etc.). Cognitively based attitudes about accident risk assessments are shaped by external environmental stimuli, information from the outside, or the process of external socialization, either in the oil and gas industry or outside of it, based on the associations between the object of the attitude and the outside environment.

The Attitude Formation as A Result of a Multicomponent Process

Breckler (1984), Edwards (1990), Eagly and Chaiken (1993), and others see employees' attitudes toward accident risk assessment as the result of a multi-step process with certain parts (cognitive, affective, and behavioral). In the most talked-about three-component model of employee accident risk assessment attitude formation, also called the ABC model in the scientific literature, each successive component can be categorized as cognitive (experience, knowledge), affective (emotional), or conative (behavioral). The employee accident risk assessment attitude formation process in the upstream oil and gas industry will be looked at in more depth to see how it works at each of the above levels and what factors affect it. Therefore Hypothesis 3 was framed.

H3: Attitude is positively related to a staff role in accident risk assessment procedures in the upstream oil and gas industry.

Henry Mintzberg's Management Theory

Managers take on different roles to meet all of the needs that come up while doing their jobs. A "role" is a set of behaviors that are expected of someone. Mintzberg, in 1973, made a list of ten things that every manager must do. From his point of view, the 10 roles can be put into three groups: interpersonal, informational, and decisional. The same manager can take on different managerial roles and responsibilities at different times and to different degrees, depending on the level and function of management (Mintzberg, 1973). Even though each role is defined separately, they all work together as a single unit.

Interpersonal Roles

Interpersonal roles are part of every part of a manager's job. The three interpersonal roles are all about getting along with other people. act as the head of the organization: The manager speaks for the company in all official matters. From the point of view of people outside the organization, the top management speaks for the company legally and socially. When the workgroup needs to talk to higher management, the supervisor acts as a go-between and a representative. The figurehead plays a symbolic role in society or the law. In this setting, the manager is seen as a symbol of power and reputation for all social, incarceration, and ceremonial duties (Schwarz, 2015). Liaison role: The manager talks to both people inside and outside the company. The supervisor uses the liaison role to make sure that work goes smoothly every day. Top management, on the other hand, uses it to get information and ask for favors. The work unit keeps getting information from networks of contacts and interested parties. explains what a manager needs to do with spoken and written information. To gain access to knowledge bases, you have to talk to other people and do business (Laud et al., 2016). What the leader does: It talks about the relationship between the bosses and the workers. The manager builds relationships with the team, keeps them motivated, and gives them direction. The relationship between a manager and a subordinate is based on their jobs. For example, a manager's job is to encourage subordinates to get better, plan for and oversee their development, and find a good balance between effectiveness and efficiency (Peaucelle & Guthrie, 2012). Hence, hypothesis 4

H 4: The interpersonal role of management is positively related to accident risk assessment

Decisional Roles

According to Henry Mintzberg (1973), there are four decisional roles that significantly rely on information. Entrepreneur Role: Change and new projects are started by the manager, who also comes up with new ideas and gives them to others. The contractor could also be a creator, an inventor, or someone who brings about change. Managers are pushed by their roles to work on delegating and making development projects so they can give groups more power and manage them through the improvement process (Mintzberg, 1973). Disturbance Handler Role: Threats to the company are dealt with by the management. The manager solves problems between subordinates, responds well to problems or emergencies, and adjusts to disasters in the environment (Mintzberg, 1973). Resource Allocator Role: The manager decides who gets resources, sets priorities and deadlines, sets budgets, and chooses which areas the business will focus on (Mintzberg, 1973). Negotiator Role: On behalf of the organization, the management participates in the negotiation process. The negotiator is the business's representative in an assigned job during early negotiations that have an influence on the supervisor's areas of duty as the public face of the company and in its beneficial resource allocation obligations (Shannak, 2013; Laud et al., 2016). The decisions that affect the whole firm are made by the top management, whereas each supervisor is responsible for making decisions that affect just their own work unit. Hypothesis 5, developed for testing, is as indicated below.

H 5: The decisional role of management is positively related to accident risk assessment.

Informational Roles

Informational roles make sure that information gets to the right people. Henry Mintzberg wrote in 1973 that the main focus of the three informational positions is on the information-related parts of management. As a monitor, the manager's job is to get information about how an enterprise is doing and put it all together. The manager asks stakeholders and people inside the organization for information about things that could hurt the business. The progress of a department must be tracked, problems and opportunities must be found, and future internal operations must be analyzed. All information received on this capability must be kept on file and updated (Oliveira et al., 2015). Disseminator Role: Any important information is shared with the company by the management. The top manager communicates with the outside world more than the supervisor does (Mintzberg, 1973). Spokesperson: The manager's job is to explain what the organization does to the public. So, the supervisor is seen as an expert in his or her unit or department, and the top management is seen as an expert in the field (Mintzberg, 1973). The role of management as a source of information also needed to be tested; therefore, hypothesis 6 was developed for testing and is as indicated below.

H 6: The informational role of management is positively relat ed to accident risk assessment.

Heinrich Domino's theory of accident causation

Heinrich was one of the first people to think about how accidents happen. He talked about the theory behind why accidents happen, how people interact with machines, how often and how bad accidents are, what causes people to take risks, how management can help prevent accidents, how much accidents cost, and how safety affects productivity (Hagan et al., 2001). Heinrich figured that, based on data from accident reports, 88 percent of accidents are caused by risky worker behavior, 10 percent by a dangerous work environment, and 2 percent by acts of God like natural disasters. Heinrich wrote in his study that an accident is "an unplanned and uncontrolled event in which the action or reaction of an object, substance, person, or radiation causes or is likely to cause bodily damage" (Abdelhamid & Everett, 2000). Heinrich (1959) looked into how accidents happen, how people interact with machines, how often and how bad accidents are, why people do dangerous things, the role of management in preventing accidents, how much accidents cost, and how safety affects efficiency, as shown in Figure 1.

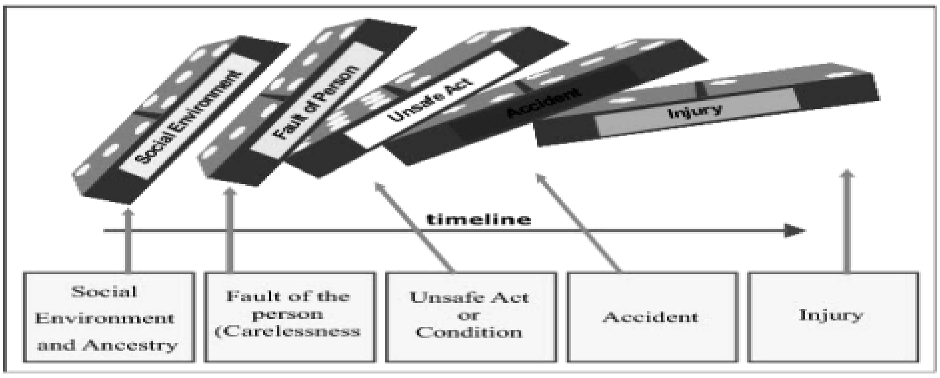

Figure 1: The Domino Theory of Accident Causation

Heinrich developed the "Domino hypothesis," which is based on five consecutive variables, as follows (Taylor, Easter, & Hegney, 2004):

1. Ancestry and social environment: Ancestry and social environment refer to the process of learning traditions and skills in the workplace. A person's fault will result from a lack of skills and knowledge in executing activities, as well as from inadequate social and environmental settings.
2. Personal fault (carelessness): personal faults or carelessness are undesirable aspects of a person's personality that can be acquired. Carelessness leads to dangerous acts or conditions.

3. dangerous act and/or mechanical or physical condition: dangerous acts and conditions include the faults and technological failures that cause the accident.
4. Accidents: Accidents are caused by risky acts or conditions that result in injuries.
5. Injury: Accidents result in injuries.

Heinrich's domino theory is made up of five dominoes that fall one after the other if the first domino (ancestry and social environment) falls. The accident can only be stopped by breaking the chain of events, such as by stopping the dangerous act or condition. Heinrich's contributions to the theory of what causes accidents can be summed up in two points: people are the main cause of accidents, and management is in charge of preventing accidents (has the power and ability to do so) (Jhamb & Jhamb, 2003). People have said that Heinrich's domino theory oversimplifies how people can be controlled in an accident. Heinrich Domino's theory was the basis for many more studies on accident-cause models, with a focus on the role of management in preventing accidents. These studies are called the management model or Domino's updated model. Management models say that accidents happen because of the management system (Abdelhamid & Everett, 2000). The question here is whether or not the personalities of oil and gas workers in the upstream sector can affect how Ghanaians act on the rig. If that's the case, the staff could either learn from the expatriates or foreigners who have a lot of experience in oil exploration and figure out how likely an accident is in the upstream oil and gas industry, or they could pick up bad habits from their coworkers or the social environment and cause an accident. This research will help us find out if the people who work in the upstream oil and gas industry, most of whom are Ghanaians, have the right attitude about assessing the risk of accidents.

H7: Accident risk assessment is positively related to a project time performance in Ghana's upstream oil and gas industry.

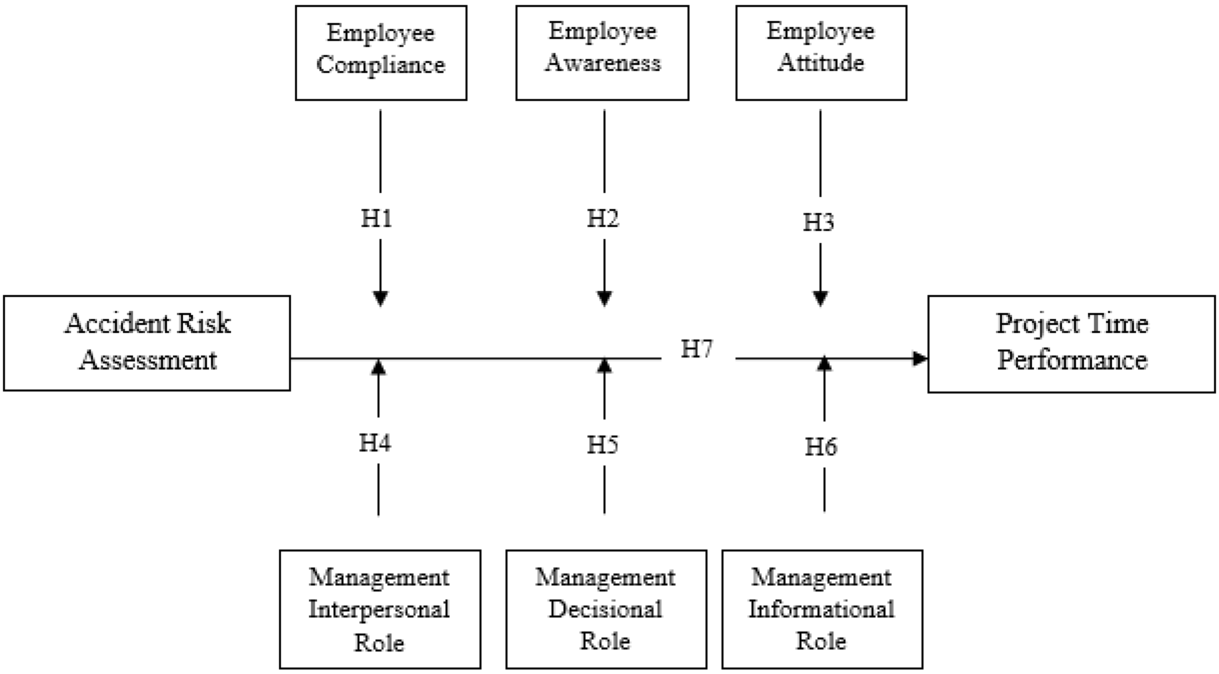

Figure 4: Research Model

Methodology

Sampling and instrument development

242 upstream oil and gas workers in Ghana who worked in the Jubilee Field in Takoradi, in Ghana's Western Region, between January and June 2021 gave quantitative data. The respondents were purposefully chosen as a sample, and non-probability sampling was used (Patton, 2002) to demonstrate how upstream oil and gas professionals feel about project responsibilities and risk assessment. On a 1–5 Likert scale, people were asked to rate how much they agreed or disagreed with what was said (from strongly disagree to strongly agree). The questionnaire was tested ahead of time to make sure it was easy to answer research questions (Saunders et al., 2009). Twenty people from different oil and gas companies in Takoradi took part in the pilot testing.

Staff Attitude Towards Accident Risk Assessment

Under the staff attitude towards accident risk assessment, there were six questions, and the descriptive statistics reveal that the range of values for the means and standard deviation ranged from (Mean = 3.01–3.46; SD = 0.92-1.07). Each item, as shown in Table 1, was rated above neutral as all the estimated means were above 3.00, suggesting that there is a high level of agreement in the response provided. As evidenced in the results indicated in Table 1, out of the six items (see Appendix I for a description of scales used), SREAT 1 was highly rated with an estimated mean value of 3.46, whilst the least rated item was SREAT 5 with an estimated mean value of 3.01. as shown all the six items under staff attitude towards accident risk assessment have skewness and kurtosis values ranged from (Skewness = 0.47 to - 0.72, Kurtosis = -0.72 to 0.64) an indication that normality is achieved. This means that the data obtained under the staff's attitude toward accident risk assessment is close enough to normal to indicate that the statistical tool can be used without concern.

Table 1: Descriptive Statistics and Normality Analysis for Staff Attitude Towards Accident Risk Assessment

Item	Mean	Std. Deviation	Skewness	Kurtosis
Staff Attitude Towards Accident Risk Assessment				
SREAT 1	3.46	0.95	0.47	-0.42
SREAT 2	3.24	0.96	0.55	-0.43
SREAT 3	3.15	0.95	0.76	0.09
SREAT 4	3.06	0.97	0.94	0.47
SREAT 5	3.01	0.92	0.91	0.64
SREAT 6	3.33	1.07	0.50	-0.72

Source: Field Data (2021)

Staff Accident Risk Assessment Compliance

Staff accident risk assessment compliance had eleven items, and the estimated mean and standard deviation for the items ranged from (Mean = 2.81–4.24; SD = 0.57–1.03). The results suggest that SREC 1 recorded the least mean value of 2.81, below 3.01, which suggests that respondents disagree with the item. Aside from SREC 1, the rest of the items were highly rated above 3.0 suggesting that there is some level of agreement as shown in Table 2 (refer to Appendix I for a description of the scales used). Among the 11 items in the constructs, item (SREC 3) received the highest rating. Also, the normality of the responses was computed, and the results suggest that all items have skewness and kurtosis within the recommended range of - 2.00 to 2.00, indicating that normality was achieved. which means that the data obtained under staff accident risk assessment compliance is close enough to normal to indicate that a statistical tool can be used without concern.

Table 2: Descriptive Statistics and Normality Analysis for Employee Accident Risk Assessment Compliance

Item	Mean	Std. Deviation	Skewness	Kurtosis
Staff Accident Risk Assessment Compliance				
SREC 1	2.81	0.79	0.93	1.05
SREC 2	3.66	0.97	0.27	-0.81
SREC 3	4.24	0.96	-0.43	-0.68
SREC 4	3.53	0.99	0.44	-0.43
SREC 5	3.67	1.03	0.30	-0.88
SREC 6	3.73	0.84	0.32	-0.33
SREC 7	3.86	0.90	0.13	-0.78
SREC 8	3.84	0.57	1.54	1.87
SREC 9	3.74	0.89	1.41	1.74
SREC 10	3.94	0.98	1.45	1.67
SREC 11	3.87	0.77	1.47	1.64

Source: Field Data (2021)

Staff Accident Risk Assessment Awareness

The study formulated six items (SREAW 1 to SREAW 6, as indicated in Appendix I), and the mean and standard deviation for all the items ranged from (Mean = 3.00–4.10; SD = 0.69–0.96), as shown in Table 3. It can be observed that all items were rated highly (above 3.00), an indication that there is a high level of agreement with the responses provided. For instance, SREAW 1 recorded an estimated mean value of 4.07 and a deviation of 0.70, an indication of agreement. Furthermore, the results indicate that all items have skewness and kurtosis between -2.000 and 2.000, indicating that normalcy has been achieved. This means that the data obtained under the staff's accident risk assessment awareness was close enough to normal to mean that the statistical tool can be used without concern.

Table 3: Descriptive Statistics and Normality Analysis for Employee Accident Risk Awareness

Item	Mean	Std. Deviation	Skewness	Kurtosis
Staff Accident Risk Assessment awareness				
SREAW 1	4.07	0.70	-0.90	1.95
SREAW 2	4.10	0.69	-0.37	-0.03
SREAW 3	2.72	0.89	0.33	-0.43
SREAW 4	3.09	0.92	- 0.27	-0.69

SREAW 5	3.00	0.95	- 0.07	-0.87
SREAW 6	3.03	0.96	- 0.09	-0.92

Source: Field Data (2021)

Management's Accident Risk Assessment Informational Role

The analysis shown in Table 4 displays the results for the management informational role. As evidenced by the results, five items (SBInfR 1 to SBInfR 5) formed the constructs, and the estimated means and deviations for the items ranged from (mean = 3.71 to 4.12; SD = 0.58 to 0.79), which depicts a high level of agreement. As shown in the result, SBInfR 1 had an estimated mean and deviation of (mean = 3.87, SD = 0.68). (SBInfR 2) had an estimated mean and deviation of (Mean = 4.12, SD = 0.58), both above neutral, to suggest that there is a high level of agreement (refer to Appendix I for a detailed description of scales used). The result obtained suggests that there is normality, which indicates that the data acquired under management's informational role on accident risk assessment is sufficiently close to normal to allow the use of statistical tools without hesitation in the responses provided since all the skewness and kurtosis were within the recommended range of -2.00 to 2.00.

Table 4: Descriptive Statistics and Normality Analysis for Management's Accident Risk Assessment Informational Role

Item	Mean	Std. Deviation	Skewness	Kurtosis
Management's Accident Risk Assessment Informational Role				
SBInfR 1	3.87	0.68	- 0.67	0.98
SBInfR 2	4.12	0.58	- 0.66	1.57
SBInfR 3	3.93	0.70	- 0.87	1.96
SBInfR 4	3.71	0.79	- 0.59	0.54
SBInfR 5	3.75	0.77	- 0.80	1.22

Source: Field Data (2021)

Management's Accident Risk Assessment Decisional Role

There were five items under the management decisional role as a construct. They ranged from SBDR 1 to SBDR 5 (refer to Appendix I for a detailed description of the scales used). The result suggests that all items have a mean and a deviation within an acceptable range to represent agreement. The mean and standard deviation ranged from (Mean = 3.75–3.88; SD = 0.73–0.82), as indicated in Table 5. Also, all the items have skewness and kurtosis values between - 2.00 to 2.00 suggesting that the responses provided were normally distributed. This signifies that the generated data under management's accident risk assessment decisional role was close enough to normal that the statistical tool can be utilized without fear.

Table 5: Descriptive Statistics and Normality Analysis for Management's Accident Risk Assessment Decisional Role

Item	Mean	Std. Deviation	Skewness	Kurtosis
Management's accident risk assessment decisional role				
SBDR 1	3.88	0.73	- 0.98	1.21
SBDR 2	3.88	0.75	- 0.71	1.30
SBDR 3	3.75	0.77	- 0.79	1.19
SBDR 4	3.75	0.73	- 0.75	1.32
SBDR 5	3.91	0.82	- 0.78	0.84

Source: Field Data (2021)

Management's Accident Risk Assessment Interpersonal Role

The management interpersonal role construct has five items ranging from SBIR 1 – SBIR 5 (refer to Appendix I for a detailed description of the scales used). As evidenced in the result, the estimated mean and deviation for all the items ranged from (Mean = 3.98 -4.05; SD = 0.69 - 0.71) as shown in Table 6 suggests that there is agreement whilst the skewness and kurtosis result for the items ranged from (Skewness = - 0.73 to - 0.61; Kurtosis = 0.99 to 1.41). This suggests that there is normality in the responses provided by the respondents. This suggests that the data obtained under management's accident risk assessment interpersonal role was close enough to normal that statistical tools may be utilized without fear.

Table 6: Descriptive Statistics and Normality Analysis for Management's Accident Risk Assessment Interpersonal Role

Item	Mean	Std. Deviation	Skewness	Kurtosis
Management's accident risk assessment interpersonal role				
SBIR 1	4.03	0.71	- 0.72	1.04
SBIR 2	3.99	0.70	- 0.73	1.41
SBIR 3	3.99	0.71	- 0.61	0.99
SBIR 4	3.98	0.69	- 0.61	1.18
SBIR 5	4.05	0.70	- 0.58	0.91

Source: Field Data (2021)

Accident Risk Assessment

The findings of the descriptive statistics on the items used for risk assignment are shown in this section. The study included five items, numbered AccRA1 through AccRA5 (Appendix I gives a detailed description of AccRA1–AccRA5). As shown by the findings, all of the items' estimated means and standard deviations were within the range of (mean = 3.75–3.88; SD = 0.73-0.77), as shown in Table 7. This suggests a high level of agreement because the estimated mean values were above neutral. The estimated mean and standard deviation for item 1 (AccRA 1) are as follows: mean = 3.75; SD = 0.77. Due to the fact that all estimated values were within the permitted range of - 2.00 - 2.00, the findings include skewness and kurtosis information. As a result, normalcy is attained. This shows that the data gathered during accident risk assessment was sufficiently close to normal to allow for the fearless use of statistical methods.

Table 7: Descriptive Statistics and Normality Analysis for Accident Risk Assessment

Item	Mean	Std. Deviation	Skewness	Kurtosis
Accident Risk Assessment				
AccRA 1	3.75	0.77	- 0.79	1.19
AccRA 2	3.88	0.73	- 0.98	1.21
AccRA 3	3.88	0.75	- 0.71	1.30
AccRA 4	3.75	0.77	- 0.79	1.19
AccRA 5	3.75	0.73	- 0.75	1.32

Source: Field Data (2021)

Project Time Performance

The analysis, as displayed in Table 8, provides a summary of the project time performance data. As demonstrated, five items, ranging from Prp 1 to 5, were involved (Appendix I gives a detailed description of Prp 1–5). The calculated values for the items' means and standard deviations were (mean = 2.73–3.65; SD = 0.71-0.97). This outcome demonstrates that the items were largely agreed upon by the respondents. Additionally, skewness and kurtosis were used to assess normalcy, and the results show that all of the items had skewness and kurtosis ranges between - 0.98 and 0.16 and - 0.99 and 0.77, indicating normalcy. This means that the statistical tool may be used without hesitation because the data obtained under project time performance was sufficiently near normal.

Table 8: Descriptive Statistics and Normality Analysis for Project Time Performance

Item	Mean	Std. Deviation	Skewness	Kurtosis
Project Time Performance				
Prp 1	3.31	0.82	- 0.54	- 0.61
Prp 2	2.73	0.71	0.16	- 0.99
Prp 3	3.65	0.91	- 0.98	0.77
Prp 4	3.14	0.96	- 0.19	- 0.89
Prp 5	3.17	0.97	- 0.20	- 0.86

This table displays the descriptive statistics and normality analysis of the information gathered from Ghana's upstream oil and gas sector personnel.

Source: Field Data (2021)

Measurement Model

Construct Reliability

Composite Reliability (CR), which assesses a construct's dependability in the measurement model, was used to access the constructs' reliability in the structural model. The CR evaluates the consistency of the construct itself, including stability and equivalence, and takes a more retroactive approach to total dependability (Hair et al., 2014). A reliability score of at least 0.70 is regarded as acceptable for adequate scale reliability. The reliability value ranges from 0.00 to 1.00. (Hair et al., 2014). The findings for composite reliability are displayed in Table 5 under the CR. Assuming that all latent variables have acceptable reliability, the composite reliability of all latent variables has a reading above 0.70, and its values range from 0.809 to 0.943. As a result, the item scale exhibits a high degree of internal consistency.

Table 12: Model Reliability and Validity Measures

	CR	AVE	MSV	MaxR (H)	1	2	3	4	5	6	7	**8**
1. Staff Attitude Towards Accident Risk Assessment	0.938	0.719	0.077	0.951	*0.848*							
2. Management's Accident Risk Assessment Interpersonal Role	0.943	0.768	0.297	0.953	-0.110 *	*0.876*						
3.Accident Risk Assessment	0.903	0.652	0.011	0.924	-0.007	0.105 †	*0.807*					
4. Management's Accident Risk Assessment Decisional Role	0.901	0.696	0.462	0.912	-0.073	0.545 ***	0.040	*0.834*				
5. Staff Accident Risk Assessment Awareness	0.886	0.663	0.158	0.915	-0.277 ***	0.314 ***	0.076	0.205 ***	*0.814*			

6. Staff Accident Risk Assessment Compliance	0.819	0.531	0.126	0.821	-0.184**	0.287***	-0.041	0.151*	0.355***	*0.729*		
7. Management's Accident Risk Assessment Informational Role	0.809	0.517	0.462	0.824	-0.147*	0.539***	0.055	0.679***	0.398***	0.284***	*0.719*	
8. Project Time Performance	0.817	0.529	0.472	0.831	0.124*	0.541***	0.054	0.681***	0.4321**	0.324***	*0.412****	0.727

Significance of Correlations: † p < 0.100; p < 0.050; ** p < 0.010 ;*** p < 0.001*

Table 13: Summary of Model Fit Indices

Measure	*Model Estimate*	*Threshold*	*Interpretation*
Chi-square (χ^2)	907.467	--	--
Degrees of freedom(df)	443	--	--
Chi-square/df	2.048	Between 1 and 3	Excellent
CFI	0.967	> 0.95	Excellent
GFI	0.961	> 0.95	Excellent
SRMR	0.041	< 0.08	Excellent
RMSEA	0.053	< 0.06	Excellent
PClose	0.176	> 0.05	Excellent

This table is showing the summary of all the test done to check for normality of the data collected from the staff at the Ghana's upstream oil and gas industry.

Source: Field Data (2021)

Construct Validity Analysis

Convergent and discriminant validity are the two categories of validity. According to Hair et al. (2014), discriminant validity measures how truly separate or independent a concept is from other constructs, whereas convergent validity measures the degree to which indicators of a given construct converge or share a significant percentage of variation (Hair et al., 2014). According to the findings of the confirmatory factor analysis, the results of the analysis, as shown in Table 7, display the item loading and coefficient of determination through the factor loading coefficient. To calculate how much variance is explained by each item in the structural model, Hair et al. (2014) recommended that the item loading be at least 0.50. According to the results, the items' loadings varied from 0.619 to 0.934, and the R-squared value was between 0.384 and 0.872. This implies that convergent validity has been achieved. By contrasting the average variance extracted (AVE) value with the correlation squared, it was possible to determine the constructs' independence (Fornell & Larcker, 1981). As shown in Table 5, the AVE of two constructs must be greater than the square of the correlation between the provided two constructs in order to meet the criteria for discriminant validity. On the table's diagonal, the square root of the AVE is displayed. There was discriminant validity since no associations were equal to or larger than the square root of the AVE. Each AVE value is found to be greater than the correlation square, supporting discriminant validity or, in other words, the absence of multicollinearity (Byrne, 2001).

Model Adequacy Measures

The assessment of the model fit was ascertained using several model fit indices to examine the hypothesized conceptual framework by performing a simultaneous test. Table 6 depicts that the goodness-of-fit for the model was met: Chi-square/df = 2.048; CFI = 0.967; GFI = 0.961; SRMR = 0.041; RMSEA = 0.075. The overall values provided evidence of a good model fit. All the model-fit indices exceed the respective common acceptance levels suggested by previous research, following the suggested cut-off value, demonstrating that the model exhibited a good fit with the data collected. Thus, it was possible to proceed to examine the path coefficients. It also implies that the goodness of fit index has been fulfilled, which demonstrates that the theoretical model of measurement for the indicators is compatible with empirical data.

Data analysis for research question 1

Hypothesis 1 examines the influence of staff attitude on accident risk assessment, and the results obtained suggest that staff attitude has a positive and significant influence on accident risk assessment (*β = 0.375, CR = 6.920, p-value = 0.000*). Hence, hypothesis one is positive and supportive as indicated in Table 15. This result indicates that staff attitude in the upstream oil and gas industry can affect the way accident risk is assessed, meaning that if the staff have a positive attitude, accident risk assessment can be performed well, and if the staff do not have a positive attitude, an accident risk assessment will not be performed well and may lead to accidents in the upstream oil and gas industry.

Hypothesis 2 seeks to examine the influence of staff awareness on accident risk assessment. The result shows that staff awareness has a positive and significant influence on accident risk assessment (*β = 0.405, CR = 7.736, p-value = 0.000*). Hence, hypothesis two is positive and supportive as shown in Table 15. According to this finding, staff accident risk in the upstream oil and gas industry can influence how accident risk is assessed. In other words, if the staff is fully aware of the various accident risks through education and training, an accident risk assessment can be performed well. However, if the staff is not made aware of the various accident risks, an accident risk assessment will not be performed well and may result in accidents in the upstream oil and gas industry.

Hypothesis 3 examines the relationship between staff compliance and accident risk assessment, and the result obtained suggests that staff compliance has a positive and significant influence on accident risk assessment (*β = 0.503, CR = 7.499, p-value = 0.000*). Hence, hypothesis three is positive and supportive as shown in Table 15. this means that, the more staff comply to rules and regulation regarding accident risk assessment, the better accident risks can be assessed and will lead to accident reduction in the upstream

oil and gas industry.
Under the management role, three hypotheses were formulated and tested as follows:
Hypothesis 4 suggests the role of management's interpersonal role in accident risk assessment. The result obtained suggests that management's interpersonal role has a positive and significant influence on accident risk assessment (β = *0.327, CR = 9.360, p-value = 0.000*). Hence, hypothesis four is positive and supportive as shown in Table 15. This means that the kind of relationship that exists between management and staff plays an important role when it comes to accident risk assessment in the upstream oil and gas industry. The more cordial the relationship is, the better accident risk can be assessed; when there is no cordial relationship between management and staff, it may lead to a bad assessment of accident risk, which in turn leads to more accidents happening.
Hypothesis 5 seeks to examine the role of management's decisional role on accident risk assessment, and the results suggest that management's decisional role has a positive and significant influence on accident risk assessment (*β = 0.396, CR = 10.117, p-value = 0.000*). Hence, hypothesis five is positive and supportive as shown in Table 15. This means that management's decisions on accident risk assessment determine how good or bad accidents can be assessed by staff in the upstream oil and gas industry.
hypothesis 6 seeks to examine the role of the management Informational Roles on accident risk assessment and the result obtained was statistically significant and positive (*β = 0.225, CR = 7.189, p-value = 0.000*). Hence, hypothesis six is positive and supportive as shown in Table 15. The result shows that the information provided by management on accident risk assessment also determines how well or poorly staff will assess accident risks because information plays an important role in assessing accident risks.
In summary, all formulated hypotheses were statistically significant, positive, and supported at a 5 % significance level.

Table 15: Relationship Between Accident Risk Assessment, Staff Role and Management Role (Model)

Variable	*Estimate(β)*	*S.E.*	*C.R.*	*p value*	*Remark*
Staff Role					
H1. Staff Attitude	0.375	0.054	6.920	0.000	Support
H2. Staff Awareness	0.405	0.052	7.736	0.000	Support
H3. Staff Compliance	0.503	0.067	7.499	0.000	Support
Management Role					
H4. Management Interpersonal Roles	0.327	0.035	9.360	0.000	Support
H5. Management Decision Role	0.396	0.039	10.117	0.000	Support
H6. Management Informational Roles	0.225	0.031	7.189	0.000	Support

This table is showing the relations that exists between the role of staff, management and accident risk assessment in the upstream oil and gas industry.
Note: *Dependent Variable: Accident Risk Assessment; β is standardized weight*
Source: Researcher (2022)

Data analysis for research question 2
The findings in Table 16 demonstrate that Hypothesis 1 is correct, with an inverse connection between project time performance and accident risk assessment (*β = -0.353, CR = -4.196, p-value = 0.000*). This suggests that the hypothesis was supported at a 5% significance level and was statistically significant. This

indicates that when accident risk assessment is properly carried out, there won't be any accidents, which results in projects being completed on schedule. However, inefficient accident risk assessment in the upstream oil and gas sector can cause project delays as a result of unintended events that might either halt or postpone the project.

Table 16: Relationship Between Accident Risk Assessment and Project Time Performance.

	Path	(β)	S.E.	C.R.	pvalue	Remark
H	Accident risk assessment → Project Time Performance	-0.353	0.110	-4.196	0.000	Support

β is standardized weight; SE is standard error; CR is critical ratio

Source: Field Data (2021)

Discussion and Conclusion

The positive contribution of accident risk assessment to project time performance (see Table 16) is supported by Lawrence's (2015) research; according to him, project timeline performance was impacted by the control of accident risk throughout the planning stage. It is also in line with the discovery that the effectiveness of project timelines was impacted by accident risk assessment management approaches at the planning stage (Adeleke et al., 2018). Furthermore, a substantial association was found between project success and accident risk management in Al Ajmi & Makinde's (2018) review of prior studies. A project's completion time is significantly impacted by the likelihood of an accident (Chang et al., 2018). Additionally, adopting accident risk assessment management techniques considerably increases the probability that a project will be finished on schedule, according to Hartono et al. (2019). The ability of a project to be finished on time, within budget, and in accordance with technical specifications is also impacted by the link between accident risk identification and accident risk assessment, according to Aarthipriya et al. (2020).

Conclusion

Lastly, the study found that accident risk assessment has an effect on project time performance in Ghana's upstream oil and gas industry, which is an emerging economy. This means that projects in the upstream oil and gas industry will always be finished on time if management and employees do their jobs well when assessing the risk of accidents. The study has implications for the Ghanaian upstream oil and gas industry's management and policymakers. The current study shows that the role of management and staff in assessing accident risks in the upstream oil and gas industry in Ghana does affect how well projects are finished on time. Since about 80% of management in the upstream oil and gas industry is by project, it is very important for management to care about how accident risks are assessed because it affects project-time performance.

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