1. Introduction

Onshore oil and gas pipeline damage due to explosion, leakage, and other problems is an undesired event. The hazard radius of gas release increases as the pipeline length decreases or hole leakage or pipeline diameter and the operating pressure increases (Dong et al., 2010; Yang et al., 2012); hole leakage diameter is one of the parameters of gas release rate (Moloudi and Esfahani, 2014). Interference from third party damaged was the considered main cause of the damage for this type of pipeline (Papadakis et al., 1999; Papadakis, 1999). Accidents cause significant negative impact such as loss of life, destruction of private and public property and serious environmental damage. In fact, this event is capable of tarnishing the pipeline owner’s reputation and of jeopardizing the confidence level of their internal and external stakeholders such as investors, employees, customers, and the public (Noor et al., 2008). In a famous quote, Warren Buffet, the chief executive officer (CEO) of Berkshire Hathaway warned: "It takes 20 years to build a reputation and five minutes to ruin it. If you think about that you will do things differently". (Gaultier-Gaillard et al., 2009; Bibi, 2011; Vallens, 2008). This quote emphasized the importance of protecting and enhancing the stability of the company reputation to decrease negative perception among stakeholders and eventually improve the company’s profit margin.

Pipeline are susceptible to failure even though they are the most economical, fastest, and safest means of transporting natural gas and hazardous liquids in large quantities (Dziubinski et al., 2006; Carvalho et al., 2008; Brito and Almeida, 2009; Brito et al., 2010; Furchtgott-Roth, 2013). The number of gas transmission pipeline incidents has increased over the past 15 years, according to the United States Department of Transportation (USDOT) of Pipeline and Hazardous Material Safety Administration (PHMSA) online data source (PHMSA, 2015). Pipeline failure events can harm the public, the environment, assets and production. The reputation of pipeline owners is endangered regardless of how the pipeline was operating prior to the failure event. Pipeline failure has great financial costs for pipeline owners. For gas transmission pipelines alone, failure events have cost pipeline owners approximately one billion USD over the past 15 years (2000–2015) (PHMSA, 2015).

Onshore pipeline accidents have become common in recent years. In 2014, for example, there were a number of pipeline explosion events such as Kaohsiung in Taiwan, Andhra Pradesh in India, and Sarawak in Malaysia. The current consequence of failure assessment calculates the monetary losses of these pipeline damage events, i.e., human loss, production loss, asset loss and environmental loss, because they are quantitatively countable and visible, unlike reputation loss. The effects of post-accident reputation loss on stakeholder perceptions are neglected due to difficulties in quantifying factors (Khan and Haddara, 2004; Arunraj and Maiti, 2009; Way et al., 2013). Moreover, the factors are time-dependent (Dunbar and Schwalbach, 2000; Bie, 2006); multidimensional (Fombrun, 1996); behaviour-dependent (Bie, 2006); and influenced by stakeholder experience (Spence, 2011). Although most industry players choose to exclude post-accident reputation loss due to its qualitative nature and the subjectivity of the factors, the effects are vital to most organizations (Cravens et al., 2003) due to endangering profit margins (Money and Hillenbrand, 2006). However, previous published research on forecasting the pipeline failure consequence is very limited (De Cunha, 2016).

The reputation of a company depends on its stakeholders’ beliefs. Each company has at least four major types of stakeholders, including investors, customers, employees and the public. Pipeline accidents impact all stakeholders directly or indirectly. Stakeholders’ post-accident negative beliefs and responses to the loss of human life, economic damage and environmental damage due to a pipeline damage event can be considered indicators of company reputation loss. Stakeholder perceptions and expectations differ and are highly incident-dependent. Pipeline damage may affect stakeholders physically or mentally and has a negative impact on the pipeline owner’s reputation — an intangible asset capable of generating tangible loss.

As pipelines age and the risk of a failure event increases, there is a need to account for additional factors such as reputation loss in pipeline consequence assessments. The inclusion of reputation loss in pipeline consequence assessment makes it more conservative. Great effort is needed to develop a comprehensive consequence assessment incorporating the intangible elements of reputation loss for comprehensive pipeline risk assessment. To reach this milestone, a detailed investigation on reputation loss factors is crucial. Hence, there is a need to identify factors that may affect the reputation of the pipeline owner in regard to events involving damage to the society exclusively (Libriati et al., 2015). Thus, the aim of this article is to comprehensively review and identify the owner reputation-threat factors that lead to negative perceptions among stakeholders after pipeline damage, as reported in selected onshore pipeline explosion case studies. Apart from quantified losses such as people, asset, production and environmental losses, this article concentrates on the relationship between reputation loss and stakeholder perceptions resulting from a pipeline explosion by observing the responses of company stakeholders’ (investor, customer, employee and public) after the event.

2. Literature review

2.1. Reputation loss and its definition

Reputation is a level of one’s belief regarding another person or an organization. The reputation of a company is also known as corporate reputation, which involves the beliefs of the stakeholders regarding a company and its attributes (Fombrun, 1996). Bennett and Kottas define corporate reputation as follows (Trotta and Cavallaro, 2012):

“an amalgamation of all expectations, perceptions and opinions of an organization developed over time by customers, employees, suppliers, investors and the public at large in relation to the organization’s qualities, characteristics and behaviour, based on personal experience, hearsay or organization’s observes past actions”.

In contrast, loss of reputation can be defined simply as a degradation of the level of beliefs among the stakeholders regarding the company and its attributes. There are four major constituents of a company, namely investors, customers, employees and the public (Fombrun, 1996). An investor is defined as a person who allocates capital with the expectation of a future financial return; a customer is a person or an organization that purchases goods or services; an employee is a person who works and gains wages or salary from the company or his employer, including the executives, temporarily-hired contractors, and so on; and the public is individuals other than the aforementioned. These groups can also be classified as internal (employee) and external (investor, customer and public). These stakeholders’ expectations differ, but the impact is similar; it can jeopardize the reputation of the company, which significantly influences the company’s operations (Macnamara, 2006).

2.2. Reputation and expectations

Onagh Mary Harpur mentioned that a company is worthy of a