Safety Science 70 (2014) 419–428

Contents lists available at ScienceDirect

Safety Science

journal homepage: www.elsevier.com/locate/ssci

Do incentives work? A qualitative study of managers' motivations in hazardous industries

Sarah Maslen *,[1], Andrew Hopkins [2]

School of Sociology, College of Arts and Social Sciences, The Australian National University, Australia

ARTICLE INFO

Article history:
Received 27 March 2014
Received in revised form 25 June 2014
Accepted 4 July 2014

Keywords:
Incentives
Motivation
Major accident risk
Senior managers
Sociology

ABSTRACT

Incentive schemes are one way that companies seek to align the interests of their employees with corporate goals. Indicators of major accident risk management have been historically excluded from such incentives. However, analyses of the recent BP disasters found that the incentives worked against process safety, and it was recommended that companies move to include indicators to support the safe management of their complex technologies. The extent to which this recommendation has been applied, and its appropriateness in practice has not been the subject of systematic inquiry.

Drawing on the literature on human motivation and incentives, this article addresses the present and potential role of incentives to manage major accident risk in hazardous industries. It focuses on the extent to which senior managers are motivated by incentives in their daily decisions. This analysis is based on qualitative interviews, observation, and document analysis in 11 case study companies across the oil and gas, petrochemical, pipeline, and mining sectors.

We argue that despite discomfort with the concept that safety decisions might be influenced by money, incentives influence priorities and behaviours because they do not rely for their effect on economic self-interest alone. Instead they tap a number of human motives, among them the need for approval, and the need to be recognised as making a valuable contribution. We conclude that if incentives continue to be used as a motivation strategy for financial and business performance, safety – particularly as it relates to major accident prevention – must also be incentivised in this way.

1. Introduction

Events in recent years such as the BP Texas City disaster have triggered interest in the use of incentives, and their impact on major accident risk. Accident analyses highlighted the way that incentive structures for BP senior executives worked against process safety (Hopkins, 2010). They directed attention towards business and financial objectives, and where safety was included it was exclusively measured in terms of personal safety. One commentator, Bergin, saw this as a root cause of the Texas City disaster. He said: 'Managers did not act to prevent Texas City because every incentive and potential penalty they faced told them not to' (Bergin, 2011, p. 85). The same could be said for the Gulf of Mexico blowout (Hopkins, 2012).

In the aftermath of the BP Texas City disaster, the Baker panel report (an independent review of the company's corporate safety culture, safety management systems, and corporate safety oversight at its US refineries) made the following recommendations:

> A significant proportion of total compensation of refining line managers and supervisors [should be] contingent on satisfactorily meeting process safety performance indicators and goals ... A significant proportion of the variable pay plan for non-managerial workers ... [should be] contingent on satisfactorily meeting process safety objectives (Baker et al., 2007).

Based on these recommendations, BP fundamentally modified its incentive arrangements. The recommendations have also been more broadly influential. In recent years many companies in hazardous industries have recognised that the criticisms levelled at BP applied to them as well, and have moved to include some indicators of major accident risk management in their incentive arrangements. The move appears positive. However, the incentive arrangements in place and their likely effects on major accident risk have not been the subject of systematic inquiry. Our research, a part of which this article reports on, has sought to contribute to this knowledge gap.

* Corresponding author. Address: School of Sociology, College of Arts and Social Sciences, Haydon-Allen Bld (22), The Australian National University, Acton, ACT 0200, Australia. Tel.: +61 2 6125 8481.
E-mail address: Sarah.Maslen@anu.edu.au (S. Maslen).
[1] Research Fellow.
[2] Emeritus Professor.

http://dx.doi.org/10.1016/j.ssci.2014.07.008
0925-7535/

This article begins with an overview of the literature on human motivation and incentives, including a discussion of the limited relevant research for our purposes. It then continues with our findings on the architecture of incentive arrangements. We next empirically address the motivational effects of incentives through analysis of the impact of performance agreements, performance evaluations, and financial bonuses. The potential for unintended consequences is a primary reason to abandon incentives, so we explicitly address this in relation to major accident risk. A claim made by many companies and individual managers is that safety is a 'special case' when it comes to motivation. We conclude with an evaluation of this claim.

We argue that despite discomfort with the concept that safety decisions might be influenced by money, incentives influence priorities and behaviours because they do not rely for their effect on economic self-interest alone. Instead they tap a number of human motives, among them the need for approval, the need to belong and the need to be recognised as making a valuable contribution. We conclude that if incentives continue to be used as a motivation strategy for financial and business performance, safety – particularly as it relates to major accident prevention – must also be incentivised in this way.

2. Human motivation and the use of incentives

Using incentives to align organisational and individual goals is a popular strategy in some sectors, including hazardous industry. Research on incentives has been focused on evaluating (and quantifying) their effectiveness (for a review in the healthcare context, see Van Herck et al., 2010). A conclusion common to this research is ambivalence over whether incentives can motivate the right behaviour. Human motivation is complex. However, to date, the incentives research has largely failed to explore this complexity in the context of incentive outcomes (McDonald, 2014). Given this, we start with arguments about human motivation in a general sense, before moving to the limited inquiry in the context of incentives.

2.1. Theories of motivation

There is a literature across the disciplines of sociology, psychology, and economics that has engaged with the question of human motivation. Collectively, this literature includes a spectrum of views. We look at each of these in turn.

At one end, neo-classical economic theory starts from an assumption that people are rational, self-interested actors. Accordingly, from this perspective, people respond in predictable ways to financial incentives because they act to maximise their financial advantage. This logic is what underpins pay-for-performance arrangements. This theoretical approach is both straightforward and well known, so hardly needs further explanation. It has also been used as the foundation for much analysis of incentive scheme efficacy (for example, see Dixit, 2002).

At the other end, sociology, psychology and more recently behavioural economics argue that people are driven by a variety of motives, in addition to self-interest. Sociological theorists, in particular, have argued that these alternative motives are much more significant. The discipline of sociology began as a reaction to the idea that the rational self-interested individual is the indivisible building block of which society is constructed. The sociological view is that humans are constructed by the societies or communities in which they are embedded. Their beliefs, values, and motives vary, depending on this social context. If modern western individuals act to maximise financial advantage, it is because they are embedded in capitalist societies that encourage them to behave in this way (Putnam, 1993). On the other hand, in feudal society, glory and honour were often more important than wealth, and people in certain social classes were willing to die for these ends, as did so many European knights who went off on the crusades. These holy warriors behave in ways that are incomprehensible to classical economics but are entirely explicable in terms of the norms and values of the societies from which they come. This line of argument suggests the importance of broader motives. It also suggests that people may not necessarily select the most rational means to achieve their goals: their choice of means is influenced by their values and emotions (see Etzioni, 1988).

These ideas are echoed in psychology. Maslow's theory of the hierarchy of needs gives one example. Maslow identified eight needs, starting with the most basic, biological and physiological needs, and culminating in transcendence (helping others to achieve self-actualisation) (Maslow, 1943, 1970). Among these were safety and security; social needs; esteem needs (self-esteem, achievement, mastery, independence, status, dominance, prestige, managerial responsibility); cognitive needs (knowledge, meaning); aesthetic needs; and self-actualisation needs (realising personal potential, self-fulfilment, seeking personal growth and peak experiences). These capture broad ranging motivations, and challenge the view that humans are simply calculating economic agents. Even if not correct in all its details, this theory calls into question any organisational strategy that relies purely on money to motivate people.

In recent years the sociological critique of neoclassical economics has been popularised by behavioural economists (Ariely, 2009). One of the most famous experiments in behavioural economics is the so-called 'ultimatum game'. Two players are given a sum of money, say ten dollars, which is to be divided between the two provided they can agree on the division. Player 1 proposes a division. Player 2 then decides whether to accept the offer. If the offer is declined, neither player gets anything. Suppose player 1 proposes to keep 9 dollars and give 1 dollar to player 2. Will player 2 accept? The choice for player 2 is either one dollar or nothing. If player 2 acts in a rational, self-interested way, s/he will accept. Experiments show however that player 2 typically rejects the offer in these circumstances, because the division is perceived to be unfair. This is just one of numerous pieces of data assembled by behavioural economists that demonstrate that people will act contrary to their economic interest where other motivations and values are at stake.

This brief review aims not to be comprehensive, but to raise concepts that we later explore. It suggests that the theory of incentives rests on an impoverished conception of human motivation, and for this reason it cannot be taken for granted that they will determine behaviour. Whether we can expect incentives to be motivational in the case of hazardous industries, and particularly in directing attention to major accident risk, is then an empirical question, as it depends on the precise circumstances.

2.2. Research on the outcomes of incentives

There have been no systematic empirical studies that have examined the incentive arrangements in place in hazardous industries, with a particular sensitivity to their implications for major accident risk management. In addition to this, safety incentives in the broadest sense have only been the subject of a small number of studies, which were described in a recent Special Issue in the Scandinavian Journal of Work, Environment and Health as of inadequate quality (Elsler et al., 2010; Verbeek, 2010). Given incentives are a substantial feature of the remuneration landscape and have been identified as a contributing factor in recent disasters, this lack of research is highly problematic.