Goal Setting and the Emergence of the Safety-Efficiency Trade-off in Organizations

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Abstract: This article aims to shed light on the trade-off between safety and efficiency that arises in organizations when management sets overly demanding efficiency goals. To explore the dynamics and relationships between management's goal setting and the safety-efficiency trade-off, we have chosen to analyze the extreme and illustrative case of the Herald of Free Enterprise disaster – a ferry that sank on March 6, 1987, resulting in the deaths of 193 passengers and crew members. The case shows how the management's imposition of very tight schedules for embarkation and disembarkation operations at the port of Zeebrugge promoted the emergence of risky practices, namely the regular violation of procedures by the crew. We argue that these violations, aimed at increasing the speed of operations to meet the time goals, were a central factor, though not the only one, in the etiology of the accident. The case provides evidence that when management sets overly strict performance goals, it directs employees' attention and efforts toward efficiency at the expense of safety. As a result, safety is compromised, leading to an increased risk of incidents, which can harm employees' health and cause economic and legal damage to the organization.

Keywords: Goal Setting; Risk; Safety; Organizational Deviance; Organizational Incident; Organizational Practices.

1. Introduction

Goal setting, encompassing both the characteristics of the goals and the process of defining them, is widely regarded as an effective managerial tool for enhancing organizational performance (Locke and Latham, 1990; 2002). Goals typically boost individual employees' commitment, performance, and satisfaction while directing their efforts toward the tasks management considers most important. However, goal setting can also encourage behaviors that might be detrimental to the organization in the long term (e.g., Ordóñez et al., 2009; Larrick et al., 2009).

The aim of this article is twofold. First, through the analysis of an illuminating case study, it aims to theorize the role of goal setting in the emergence of the efficiency vs. safety trade-off in organizations and in organizational incidents. We chose the case study research design because it allows for an in-depth analysis of processes and has been effectively used to develop testable hypotheses (Eisenhardt and Graebner, 2007). Following the example of well-regarded scholars such as Weick (1993), who studied the Mann Gulch disaster; Galunic and Eisenhardt (2001), who examined high-performing companies; and Allison and Zelikow (1999), who investigated the Cuban missile crisis, we selected an extreme case rather than a representative one because extreme cases are "particularly suitable for illuminating and extending relationships and logic among constructs" (Eisenhardt and Graebner, 2007, p. 27).

The case in question is the disaster of the ferry Herald of Free Enterprise on March 6, 1987. The ferry sank only four minutes after leaving the port of Zeebrugge (Belgium), leading to the death of 193 passengers and crew members. Access to the investigation documents following the disaster provided us with detailed reconstructions of the facts and dynamics of the night of the disaster. The case shows how management's imposition of very tight schedules for embarkation and disembarkation operations at the port of Zeebrugge promoted the emergence of risky practices, namely the regular violation of procedures by the crew. We argue that these violations, aimed at increasing the speed of operations to meet the time goals, were a central factor, though not the only one, in the etiology of the incident.

Second, the article aims to stimulate an extensive debate on the role of leadership in reconciling safety culture and business objectives. Specifically, the article aims to discuss the practical implications of this case, particularly the role of organizational leadership in counteracting the development of entrenched dysfunctional and harmful practices. These practices might be more efficient in the short term but risk damaging the safety culture by increasing the acceptance of risks (Rasmussen and Svedung, 2000; Catino, 2023). Additionally, they may produce adverse effects in the medium and long term, such as increased costs, decreased organizational well-being, and a corporate reputation crisis, which can irreparably undermine the stability and sustainability of a business.

2. The Harmful Consequences of Goal Setting

Employees' behavior is largely guided by goal setting. This influence is not only unconscious but also conscious, as employees strategically decide the direction, effort, and persistence of their actions based on goals (Locke et al., 1981). Numerous studies conducted in both simulated and real-world settings across various tasks and countries consistently found that goals improve performance (Locke and Latham, 2002) and that challenging and specific goals tend to enhance employees' performance more than vague directives like "do your best" (Locke and Latham, 1990). In their review of 35 years of research on goal setting theory, Locke and Latham (2002) identify four mechanisms through which goals influence performance. First, goals focus attention on goal-relevant activities at the expense of those that are not. Second, challenging goals increase effort. Third, goals lead to more sustained efforts. Fourth, goals promote goal-oriented strategic behavior, involving the use of the most appropriate available knowledge and strategies or the development of new ones.

Nevertheless, some authors have pointed out that steering employees' behavior through goal setting can be trickier for managers and organizational leaders than expected. Kerr (1975) highlights that defining specific, challenging, quantitative goals may not always yield the expected results in terms of performance improvement. The reason is that the selection of indicators to measure performance is a subjective process that may overlook aspects important but that are difficult to observe and measure, while including irrelevant ones.

Another difficulty in predicting the effects of goals arises from the fact that employees, especially when tasks are complex, often have to cope with multiple goals simultaneously, forcing them to prioritize one goal over the other (Gilliland and Landis, 1992). Moreover, the existence of interdependencies among goals increases the risk of maintaining the status quo because it is challenging to establish a course of action that improves performance across various interdependent tasks (Ethiraj and Levinthal, 2009). Therefore, while goal setting has proven to be a valuable managerial tool for improving performance and directing actions and efforts, it also has side effects that managers may be unaware of and which can harm the organization (Ordóñez et al., 2009). Specifically, we will discuss how goal setting may hinder overall organizational performance, promote unethical behavior, and encourage excessive risk-taking.

While goal setting can improve performance on specific tasks or aspects of a task, it may be detrimental to the overall productivity of the organization (Ordóñez et al., 2009). Challenging goals may promote harder and longer efforts, but in the long run they can also lead to employees' dissatisfaction with their own achievements. Dissatisfaction in turn can reduce employees' perception of self-efficacy, commitment and effort. Goal setting can damage performance also by favoring the overlook of those aspects crucial to performance that are not explicitly defined within the goal setting framework (Staw and Boettger, 1990; Tenbrunsel et al., 2000). For example, the engineering and development teams working on the Pinto car model were given extremely tight deadlines by management, forcing them to accelerate the usual process at the expense of quality. As explained by Gioia (1992, p. 380) "Under normal conditions design, styling, product planning, engineering, etc., were completed prior to production tooling. Because of the foreshortened time frame, however, some of these usually sequential processes were executed in parallel". As a result, the car was produced in 25 months, compared to the industry average of 43 months but the problem with the fuel tank was not detected in time because "tooling was already well under way (thus "freezing" the basic design) when routine crash testing revealed that the Pinto's fuel tank often ruptured when struck from the rear at a relatively low speed".

Goal setting can also harm the organization by promoting unethical behaviors, defined as actions that are either illegal or morally unacceptable (Jones, 1991, p. 367). According to Barsky (2008), goal setting fosters unethical behavior through two key psychological mechanisms. The first is ethical recognition, which involves recognizing the ethical dimensions of issues and actions. Challenging and narrowly defined goals, by focusing employees' attention on goals-related aspects, tend to hinder acknowledgement of the ethical dimension of goals or to favor neglect of ethical issues that are not linked to goals. The second mechanism is moral disengagement, which consists in justifying unethical behavior. Goal setting underpins moral disengagement by providing a moral justification for unethical actions taken in pursuit of goals. Because goals are set by the organization, employees can displace responsibility for their own unethical behaviors by claiming that they were merely following orders and had no other viable options. Failure in ethical recognition and moral disengagement are further reinforced by two characteristics of the goal setting process. First, the lack of employees' involvement in choosing and defining goals prevents them from considering ethical aspects and shifts responsibility away from themselves. Second, rewards dependent on goal achievement reinforce moral disengagement by emphasizing the importance of the goal to the organization. This emphasis makes goal attainment even more crucial for employees, further narrowing their focus and increasing their efforts toward the goal. For example, in the early

1990s, the management of Sears and Roebuck and Company, a major American department store chain, reduced the hourly wages of its mechanics and service advisers, introduced a commission system and set extremely strict sales quotas for its automotive repair personnel. An employee reported that he was given a goal of 147 Dollars of sales in parts and services per hour, along with specific sales quotas for front-end alignments, shocks, and brakes. To reach the targets, employees systematically performed unnecessary repairs (Gellene, 1992). Lastly, goal setting may encourage unethical behavior when employees do not achieve their goals. In an experiment involving 154 undergraduate students, Schweitzer et al. (2004) found that individuals are incentivized to misreport results by exaggerating their own performance to avoid the psychological costs associated with admitting failure, such as negative self-evaluation and dissatisfaction.

Finally, goal setting tends to promote risk-taking behaviors. According to Larrick et al. (2009), goal setting alters risk preferences by establishing goals as the new reference points (Heath, Larrick and Wu, 1999) against which employees evaluate the type of situation they are in. In other words, employees decide if they are acting in a “gain” or “loss” scenario by comparing outcomes to their goal. Therefore, when outcomes represent an improvement over the initial situation but fall short of goals they are interpreted as losses rather than gains. This shift in interpretation is crucial because, according to Prospect Theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992), individuals tend to be risk-averse in situations of gain and more willing to take risks in situations perceived as losses. In other words, faced with a choice between suffering a certain loss and a “risky” loss, people typically prefer the risky option because it offers a chance to avoid the loss.

A second way in which goals can favor risky behaviors is by narrowing employees’ focus. As discussed earlier, goals enhance performance by directing employees’ efforts toward specific aspects or tasks. However, this narrowed focus may lead to neglect of issues that, while not directly related to performance, are nonetheless important (Tenbrunsel et al., 2000). One of those potentially neglected aspects is safety. To meet the productivity goals set by management, workers may adopt practices and strategies that enhance efficiency, even if these practices compromise safety. As a result, the likelihood of individual incidents and organizational disasters may increase. In his classic study of a gypsum plant and its mine, Gouldner (1954) observes that the persistence of risky behaviors is a deliberate decision by the workers, and it is not due to their recklessness or lack of awareness about safety issues. For instance, mill workers resisted the introduction of “bag rests” that would have allowed them to lift a filled bag of plaster without bending over. The introduction of bag rests was meant to enhance their safety because approaching the sack closely was indeed dangerous: a rupture and the consequential powder spillage could damage eyesight. However, since workers assessed that bag rests would “cut productivity by fifty per cent", the old, albeit riskier practice was not abandoned (Gouldner, 1954, p. 203).

Ordóñez (2009) suggests that goal setting may underpin also organizational disasters. The remaining part of this article will delve deeper into this possibility by analyzing the role played by goals in the disaster of the Herald of Free Enterprise.

3. The Disaster of the Herald of Free Enterprise

The ferry Herald of Free Enterprise, owned by the English company Townsend Car Ferries Limited and directed to Dover (England), sank on March 6, 1987, at 18:28, just 4 minutes after leaving the port of Zeebrugge (Belgium). At the time of the sinking, Captain David Lewry was in command and onboard there were 80 crew members, 459 passengers, 81 cars, and 50 vehicles, including 47 trucks. The sinking occurred because water entered through the bow door (the access to Deck G, the main garage), which had not been closed after completion of loading operations. Despite favorable navigation conditions, just a few minutes after the departure a significant amount of water had already entered the main garage. The reason is a combination of the squat effect, that trimmed down the bow, and an increase of wave height. Both factors were exacerbated by the acceleration from 14 to 18 knots ordered by the captain upon leaving the port of Zeebrugge. Indeed, experiments conducted during the subsequent investigation with the sister ship, Pride of Free Enterprise, showed that at a speed of 18 knots, wave heights reach 2 meters above the top of the rudder blade (Department of Transport, 1987, p. 7).

Because of the water taken on from the bow door, the ferry listed and then capsized 90 degrees to the port side (left). Fortunately, the Herald grounded less than a kilometer from the Belgian coast on a shallow seabed, allowing the starboard side (right) to remain above the water's surface. Despite this condition facilitated rescue efforts, 193 passengers and crew members lost their lives in the disaster, many succumbing to hypothermia due to the freezing waters.

3.1 The Role of Goal Setting in the Disaster of the Herald of Free Enterprise

The inquiry commission identified three crew members closely involved with the failure of closing the bow door: Mark Stanley, the assistant boatswain who did not closed the bow door because he had fallen asleep in his cabin during the break (he woke up when the ferry capsized); first officer Leslie Sabel, who left the loading deck before Stanley's arrival, without making sure that the doors were closed; and captain David Lewry, who ordered the departure from the port without verifying the state of the doors. Since closing the doors is crucial for navigation safety, it seems paradoxical that neither the first officer nor the captain ensured that the doors were closed before departing. The article contends that, besides personal responsibilities, a key contributing factor to the incident of the Heral were two risky practices and that those practices had developed in response to a particularly challenging and specific goal set by the company managers. Those practices are not the sole contributing factors to the incident; however, for the purposes of this article, we will focus on their role.

Townsend Car Ferries Limited's ferries serving the Zeebrugge – Dover – Calais route used to accumulate delays due to insufficient time allocated for loading and unloading operations at the Dover port. In an internal memorandum dated August 13, 1986, the Commander of the Free Enterprise VIII remarked: “Finally, one of the reasons for such late arrivals is due to late departures from Dover the cause of which is rarely due to any inefficiency on the port of Dover staff - just lack of time available to handle both discharge and loading together with storing (often only 30-40 minutes). This situation can often be assisted by an early sailing from Zeebrugge the previous voyage: Zeebrugge staff MUST be made aware of such necessity immediately upon arrival” (Department of Transport, 1987, p. 11). To mitigate delays, the company defined a very specific and challenging goal, namely leaving Zeebrugge in advance on the time schedule, and emphasized its utmost importance. In an internal memorandum dated August 18, 1986 (less than a year before the disaster), the operation manager at Zeebrugge wrote: "There seems to be a general tendency of satisfaction if the ship has sailed two or three minutes early. Where a full load is present, then every effort has to be made to sail the ship 15 minutes earlier…I expect to read from now onwards, especially where FE8 is concerned, that the ship left 15 minutes early…. put pressure on the first officer if you don’t think he is moving fast enough. Let’s put the record straight, sailing late out of Zeebrugge isn’t on. It’s 15 minutes early for us" (Department of Transport, 1987, p. 11). It seems plausible that the two risky practices (discussed below) aimed to speed up embarking and disembarking operations were developed by the crew in response to strong pressure exerted by the company on officers to depart from the Zeebrugge port as quickly as possible and ideally 15 minutes ahead of the official timetable.

Practice 1. The general directives and instructions governing the embarking and disembarking operations of the Herald stipulated that it is the responsibility of the " The officer loading the main vehicle deck, G Deck, to ensure that the watertight and bow/stern doors are secured when leaving port" (Department of Transport, 1987, p. 14). However, if the first officer were to remain on Deck G until the doors were closed as required by the directive, the captain would have been compelled to wait until the doors were closed before ordering the crew to take their positions for departure. The obvious reason for the delay is that the first officer needs time to reach his position on the bridge. To speed up operations, the officer in charge of embarking used to communicate the bridge to issue the order as soon as he estimated that the time for completing the operation was equal to the time needed by the crew to reach their positions (Department of Transport, 1987, p. 10). According to this practice, the day of the disaster the officer in charge, Leslie Sabel, went to the bridge right after the embarking was completed, without waiting for the arrival of the assistant boatswain Stanley, responsible for closing the doors.

Practice 2. According to order no. 01.09 "Ready for the Sea" of Townsend Car Ferries Limited, "Heads of Departments are to report to the Master immediately they are aware of any deficiency which is likely to cause their departments to be unready for sea in any respect at the due sailing time. In the absence of any such report the Master will assume, at the due sailing time, that the vessel is ready for sea in all respects" (Department of Transport, 1987, p. 12). All commanders of the Herald, including Lewry, considered the absence of critical reports at the time of departure as an indication that everything aboard the ship was ready. Consistent with this practice, on the day of the disaster, the commander did not ask the first officer arriving from Deck G confirmation of the closure of the doors. According to the inquiry commission, this was a risky practice because "Captain Lewry was entitled to assume that the assistant bosun and the Chief Officer were qualified to perform their respective duties, but he should not have assumed that they had done so. He should have insisted upon receiving a report to that effect" (Department of Transport, 1987, p. 12). Nevertheless, we can assume that on the day of the disaster the pressure to speed up operations was particularly high because the Herald was late and indeed departed five minutes late from Zeebrugge.

4. Discussion

Goal setting is generally considered an effective managerial tool to improve performance by focusing employees' attention on specific aspects (Locke and Latham, 2002). However, Ordóñez et al. (2009) highlight that goal setting also entails potentially significant negative effects. If not carefully formulated, "The very presence of goals may lead employees to focus myopically on short-term gains and lose sight of the potential devastating long-term effects on the organization" (2009, p. 8). Among the undesired and harmful effects is the promotion of riskier behaviors (Larrick et al., 2009). The case of the Herald of Free Enterprise illustrates how goal setting can facilitate the adoption of risky practices that lead to organizational incidents and disasters. Specifically, it seems plausible to hypothesize that the adoption of risky practices for embarking/disembarking operations was the crew's strategic response to the goal setting by the company.

We argue that the goal of departing from Zeebrugge 15 minutes in advance on the schedule created a trade-off between efficiency and safety goals that was resolved by prioritizing efficiency over safety considerations. The mechanisms of influence over employees' behavior are those already highlighted by the literature. On one hand, the case appears to confirm that, once set, goals become the new point of reference and increase the individual risk preferences by broadening the number of situations categorized as "loss". The Zeebrugge manager reveals this mechanism when he stresses that sailing two or three minutes early should not be a cause for satisfaction because the goal is to depart 15 minutes early. In other words, the manager categorizes departures less than 15 minutes early as a "loss" situation.

It is also plausible that the extremely challenging and specific nature of the goal (early departure by 15 minutes) further enhanced the propensity for risk, thus confirming that goals can focus employees' attention and effort on the goal-related activities. In this case, the focus on "early departure" comes at the expense of safety considerations, resulting in the development of strategies aimed at speeding up loading and unloading operations that made the system (the ferry) more vulnerable to errors and to incidents.

5. Conclusion

The article analyzed the role of strict efficiency goals in the disaster of the Herald of Free Enterprise. The case sheds light on the role of the management of organizations in creating trade-offs between safety and efficiency and in encouraging the emergence and persistence of risky behaviors. Through goal setting they communicate to organizational members which behaviors are positively valued by management (Staw and Boettger, 1990) but "When managers set targets for specific dimensions of a problem, they often fail to anticipate the broader results of their directives" (Ordóñez et al., 2009, p. 8). The case of Herald highlights the need for management to adopt a reflective and context-aware approach in goal setting. Overlooking the possible side effects of goal setting such as the development of risky or unethical practices, can be harmful to the organization in the medium to long term because organizational incidents are possibly associated with severe economic, legal, reputational, and human life costs.

The article bears both theoretical and practical implications. Theoretically, it contributes to the literature on goal setting by highlighting an organizational aspect that remains relatively underexplored despite its theoretical relevance and practical significance: the interconnections between different goals. Given these interconnections, the introduction and definition of new goals must take existing ones into account to avoid inconsistencies. An inconsistent goal system forces operators to manage trade-offs among goals, requiring them to prioritize some while disregarding others. Additionally, the article contributes to the literature on organizational wrongdoing by identifying trade-offs between conflicting goals – namely, efficiency-related targets and safety-related goals—as potential factors underlying organizational misconduct. The article relies on a single case study, which, through in-depth analysis, aims to illuminate new aspects of goal setting and pave the way for future research. To generalize the findings, further studies are necessary, comparing different types of organizations operating in various sectors, with outcomes less extreme than a disaster.

For practitioners, the case of Herald corroborates Ordóñez et al.'s (2009) call for caution in goal setting. Managers must be aware of the potential negative effects inherent in goal setting, and these negative effects must be duly considered when selecting and defining goals. These reflections outline a new possible agenda for education and intervention, which could call into question all those dangerous practices, often taken for granted, that represent a latent risk, both for operators and for all individuals who, in various capacities, interact with organizations. Goal setting requires awareness of managers of the complexity of organizations and a thorough understanding of the organizational context and interactions among different organizational components and processes. This becomes particularly problematic when, as in the case of the gypsum factory (Gouldner, 1954) and the Herald, a contradiction between efficiency and safety goals arises. In such cases risks can build up in the organization in the unawareness of leadership. For all these reasons it is crucial that organizational leadership is aware of the negative effects of goal setting and, in particular, the need to continuously monitor the systemic coherence of goals, which accumulate over time, often in a poorly coordinated and unconscious manner.

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