

UNDERSTANDING BARRIERS TO EFFECTIVE SAFETY MANAGEMENT AND THEIR IMPACT ON EMPLOYEE SAFETY BEHAVIOR IN OMAN'S HIGH-RISK INDUSTRIES: A QUALITATIVE STUDY BASED ON PUBLICLY AVAILABLE EVIDENCE

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ABSTRACT

The high-risk industries of Oman, such as oil and gas, construction, petrochemical, and manufacturing are at the core of the Omani economy's diversification strategy encapsulated in Oman Vision 2040, but are also exposing a large and mostly expatriate workforce to severe occupational risks. While Oman also boasts a robust legal framework for occupational safety and health (OSH), the consistent pattern of incidents documented in official statistics, corporate reports, and scholarly articles implies that formal OSH management systems often do not translate to safe employee behavior. This study investigated the barriers to effective safety management in Oman's high-risk industries and followed their impact on employee safety behavior. We employed a qualitative secondary research study. We conducted a document review and reflexive thematic analysis of 42 publicly accessible materials, such as Omani legal instruments, official statistical publications, corporate sustainability reports, and peer-reviewed studies of the Omani, Gulf, and other relevant high-risk industry settings. We produced 214 initial codes, 17 focused categories, and five themes: (1) diluted leadership commitment by pressure for production; (2) communication and language issues with multicultural workforces; (3) safety training, skill, and knowledge deficits; (4) constrained worker voice, involvement, and near-miss reporting; and finally (5) a regulatory-to-workplace gap between compliance and implementation. We demonstrate that these barriers act by thinning out a safety climate, safety knowledge, safety motivation, and trust, which ultimately suppress safety compliance and safety participation. The paper contributes a context-based barrier mechanism behavior model for Oman and practical implications for organizational leaders, safety professionals, and regulators at large to bridge formal safety with lived safe behavior.

Keywords:

Safety management; safety climate; safety behavior; employee safety participation; occupational health and safety; Oman; high-risk industries; qualitative document analysis.

1. INTRODUCTION

Work-related injury and ill health are a global public health and economic concern of first order. The International Labour Organization (2024) estimates that nearly three million workers die from work-related injuries each year while hundreds of millions more suffer non-fatal injuries, and global modelling calculates the annual burden of occupational accidents to be several hundred thousand fatalities alone (Hämäläinen et al., 2017). High-risk industries, and the oil and gas sector in particular, concentrate this burden in a disproportionate degree: systematic reviews document that workers in oil and gas occupations experience fatality rates several times the all-industry average, even in jurisdictions with well-developed regulatory regimes (Zara et al., 2023).

In Oman, these patterns intersect with a distinctive national context. Hydrocarbons and heavy industry underpin the Omani economy, and the construction and infrastructure buildout associated with Oman Vision 2040 has extended hazardous work activity across the Sultanate. The workforce conducting this work is large and multinational, with expatriate workers from South Asia, Southeast Asia, and elsewhere constituting the bulk at many construction and industrial sites (Santos et al., 2022). Omani legislation, most recently consolidated under the Labour Law issued by Royal Decree no. 53/2023 and its occupational safety and health instruments, imposes substantive duties on employers (Sultanate of Oman, 2023). But official statistics, corporate reporting, and

academic studies continue to document occupational injuries and fatalities in the nation's high-risk sectors, implying a consistent gap between safety management in principle and safety management in practice.

The present study addresses this gap. Its premise is that the most consequential barriers to effective safety management in Oman are not fundamentally barriers of legal design, but barriers of organizational and behavioral implementation: diluted leadership by pressure for production, communication problems in multilingual workforces, training and knowledge deficits, constrained worker voice, and uneven regulation enforcement. The study examines how this translates to the behaviors through which safety is enacted at the front line, namely safety compliance, safety participation, and risk-taking. It asks, using only available public evidence, three questions: (1) What barriers to effective safety management are evidenced in Oman's high-risk industries? (2) Through what mechanisms do these barriers influence employee safety behavior? (3) What do the findings imply for contextually appropriate safety improvement in Oman?

The question, then, is not whether Oman regulates safety, but why regulation so incompletely governs the behavior of the people who determine, through their own actions, whether workers come home injured on a given day. Answers to that question depend on the interpretation of organizational life rather than further measurement of its outputs.

The remainder of the paper is organized as follows. Section 2 establishes the research problem in the Omani context. Section 3 reviews the literature, and Section 4 defines the theoretical framework. Sections 5 and 6 identify the research gap and questions. Section 7 describes the qualitative methodology. Sections 8 and 9 present and discuss the findings, and Sections 10 to 12 articulate implications, limitations, and conclusions.

2. BACKGROUND AND RESEARCH PROBLEM

Oman's economy is structurally reliant on high-hazard activity. Oil and gas drives exports and government revenue, while petrochemicals, metals, cement, logistics, and a rapidly growing construction sector, fuelled by Vision 2040 infrastructure and tourism initiatives, sustain high levels of physically hazardous employment. Work in these sectors is characteristically organized through layered contracting arrangements, while frontline workforces consist mostly of migrant workers whose first languages are not Arabic or English (Mearns & Yule, 2009; Santos et al., 2022).

The Omani regulatory framework, by comparison, is comprehensive. Ministerial Decision 286/98 specifies employer duties pertaining to workplace safety, protective equipment, first aid, training, and the appointment of safety officers and committees in establishments of defined sizes (Sultanate of Oman, 1998). The Labour Law issued under Royal Decree no. 53/2023 retains a dedicated occupational safety and health chapter requiring employers to provide a safe working environment and workers to observe prescribed precautions (Sultanate of Oman, 2023). Enforcement responsibilities are divided between the Ministry of Labour, which conducts workplace inspections, and the Civil Defence and Ambulance Authority, which investigates incidents. Engagement with international standards, including the adoption of ISO 45001 in leading companies, also strengthens this architecture.

Against this backdrop, the observable safety record is less comforting. Official Omani occupational injury statistics, as tabulated in international databases, show continuing work-related injury incidence, while worker federations have repeatedly drawn public attention to the numbers of injuries in the private sector (International Labour Organisation, 2024). Corporate sustainability reporting from Oman's largest energy companies documents continuing lost-time injuries and process safety events despite stated ambitions for zero harm. Peer-reviewed evidence specific to Oman, while thin, has proven instructive: Santos et al. (2022) found that imported safety climate instruments fail to map onto the Omani construction context, and created a seven-factor, 62-item assessment tool reflecting local conditions, implicitly confirming that in Oman, as elsewhere, safety management challenges are contextually specific, not simply technical.

Demographic structure also compounds these institutional features. Omani nationals are concentrated in public-sector and supervisory roles, while physically hazardous frontline occupations are performed primarily by migrant workers hired through contractors and sub-contractors (Mearns & Yule, 2009). Contracting chains distance principal employers from day-to-day conditions on the ground, while high workforce turnover shortens the organizational memory on which safety learning depends. Omani statistics, compiled for publication internationally, are publicly available with lags and limited sectoral resolution, occluding precisely the high-risk industries where prevention is most important (International Labour Organization, 2024).

The consequence is an information environment in which corporate self-reporting, fragmented official data, and a limited and small body of scholarly research each illuminate part of the problem. There is no single public source that describes how safety management is experienced and enacted at the Omani front line; triangulating the available sources is both a methodological necessity and a substantive opportunity.

The research problem is accordingly an implementation paradox. Oman possesses the legal instruments, institutional structures, and, in its leading firms, the managerial systems that safety science associates with good performance; and yet injuries persist. Further, the problem is compounded by an evidence gap: there is no consolidated, publicly grounded qualitative account of what impedes safety management in Oman's high-risk industries or of how those impediments convert into unsafe behavior at the front line. This study addresses that problem through a systematic qualitative analysis of publicly available evidence.

3. LITERATURE REVIEW

Three research streams inform this study. The first concerns safety climate and safety behavior. Zohar introduced safety climate as employees' shared perceptions of the priority of safety in their organization (1980), and subsequent theory distinguished safety climate from deeper safety culture (Parker et al., 2006; Antonsen, 2017). A substantial empirical literature demonstrates that safety climate predicts safety behavior and injuries: meta-analytic reviews find meaningful climate behavior associations across industries (Clarke, 2006; Christian et al., 2009). Griffin and Neal (2000) and Neal and Griffin (2006) demonstrated that safety climate operates through safety knowledge and safety motivation to produce two distinct families of behavior: safety compliance (required behaviors such as following procedures and wearing protective equipment) and safety participation (discretionary behaviors such as reporting hazards and helping coworkers). Neal, Griffin, and Hart (2000) and Hofmann and Stetzer (1996) further showed that these relationships operate at both the individual and group levels.

The second concerns safety management practices and their behavioral intermediaries. Vinokumar and Bhasi (2010) demonstrated that safety management practices, including training, reporting systems and management commitment, influences safety behavior principally through knowledge and motivation, while Wachter and Yorio (2014) showed that safety management practice reduces accidents partly by engaging workers psychologically and not only by controlling them procedurally. Leadership research converges on the same conclusion: a systematic review of leadership styles and safety performance in high-risk industries found consistent evidence that active, transformational, and visibly committed leadership is associated with better safety performance (Ta et al., 2022), while Naji et al. (2022) showed that safety communication mediates the relationship between safety culture and safety performance. Newnam and Goode (2019) added that supervision's everyday safety conversations are a distinguishing feature of effective workplaces, while Zara and et-al (2023), reviewing four decades of safety communication research in high-risk workplaces, identified communication climate, mechanism, satisfaction, and effectiveness as core dimensions that co-determine safety commitment.

The third concerns multicultural workforces, the defining human condition of Gulf industries. National and organizational culture shape risk perception and rule compliance (Mearn & Yule, 2009), while communication problems with ethnic minority workers, language and literacy barriers and culturally grounded silence have been documented as persistent safety risks in construction (Loosemore & Lee, 2002; Alsamadani et al., 2013). Lyu et al., (2018) found that for migrant construction workers, management commitment, safety resources and safety communication matter more than rule-based factors and that participation, not compliance is the behavior most sensitive to climate. Complementary evidence from oil and gas settings shows perceived safety culture dominates workers' assessments of workplace safety (Guzman et al., 2022), and that mindful safety practices can erode over time even where formal climates scores remain stable (Dahl & Kongsvik, 2018). Research on developing-country construction further shows systematic divergence between how workers and managers perceive safety climate, with workers weighting attitudes, training, and peer relations, while managers weight rules and practices (Chan et al., 2021). Choudhry et al., (2009) showed that safety climate can be reliably measured and managed in such contexts; measurement is not the binding constraint, implementation is.

Across these streams, a consistent behavioral architecture emerges. Organizational conditions, including leadership commitment, communication quality, training adequacy, and reporting-system trustworthiness, shape proximal psychological states, namely safety climate perceptions, knowledge, and motivation, which then drive compliance and participation, which determine finally incident exposure (Griffin & Neal, 2000; Vinodkumar & Bhasi, 2010; Christian et al., 2009). This architecture has been validated largely outside of the gulf and the Gulf evidence that does exist warns that migrant status, language, and cultural difference alter the weighting of its components (Lyu et al., 2018; Mearn & Yule, 2009). The present study reads the Omani public record through this architecture.

Together these streams establish that (a) safety behavior is the proximal determinant of injuries; (b) safety climate, knowledge, motivation leadership, and communication are its principal organizational antecedents; and (c) multicultural workforce conditions condition how those antecedents operate. What is not established in the literature is how these mechanisms configure in Oman specifically, where imported systems, migrant labor markets, and a young but strengthening regulatory state intersect.

4. THEORETICAL/CONCEPTUAL FRAMEWORK

The study integrates four theoretical lenses. First, safety climate theory (Zohar, 1980; Neal et al., 2000) supplies the central explanatory construct: employees continuously scan organizational cues, especially leaders' resource allocation and responses to hazards, to infer how much safety is genuinely valued, and they adjust their behavior accordingly. Second, social exchange theory (Hofmann & Morgeson, 1999) explains the reciprocity logic underneath this adjustment: where employees perceive organizational support for safety, they reciprocate with discretionary safety effort; where they perceive production primacy, compliance becomes transactional and participation withers. Third, organizational accident theory (Reason, 1997) situates frontline errors within latent organizational conditions, arguing that barriers to effective safety management accumulate as latent failures, defenses are degraded, and unsafe acts become probable rather than aberrant. Fourth, high-reliability organization theory (Weick & Sutcliffe, 2007) supplies the counterfactual standard: organizations that sustain mindfulness, deference to expertise, sensitivity to operations, and reluctance to simplify outperform peers precisely because they convert weak signals into learning rather than blame.

Synthesizing these lenses, the conceptual framework positions barriers to safety management as the independent phenomenon, employee safety behavior as the dependent phenomenon, and four mechanisms as the transmission belt: safety climate perceptions, safety knowledge, safety motivation, and trust in the safety system. Barriers that signal production primacy or indifference are expected to depress climate, knowledge, motivation, and trust, thereby weakening compliance and, more strongly, participation, consistent with the asymmetry observed in migrant workforces (Lyu et al., 2018).

The framework yields four working propositions. P1: barriers signaling production primacy weaken safety climate and motivation, degrading participation more than compliance. P2: communication barriers operate primarily by degrading safety knowledge and trust, converting into procedural violations and silence. P3: reporting and voice mechanisms produce safety value only under reciprocity; absent visible corrective response, they generate disengagement. P4: formal regulatory compliance, uncoupled from behavioral verification, leaves latent conditions intact and therefore does not reduce accident probability (Reason, 1997). These propositions guided coding and structured interpretation of the corpus.

Figure 1 summarizes the public-data analysis workflow; Figure 2 presents the conceptual framework; Figure 3 models the multi-level structure of the barriers identified; and Figure 4 integrates the barrier-mechanism-behavior pathway that emerged from the analysis.

5. RESEARCH GAP AND NOVELTY

Table 2 summarizes the three gaps that define the study's contribution. First, empirical gap: safety climate and behavior research is abundant in Western, East Asian, and some Gulf contexts, but peer-reviewed evidence specific to Oman is scarce; the principal Omani study is instrument-development work (Santos et al., 2022), not an analysis of implementation barriers. Second, methodological gap: existing Gulf evidence is dominated by cross-sectional surveys that establish associations but cannot explain how barriers convert into behavior; qualitative, interpretive accounts grounded in systematically analyzed public evidence are absent. Third, integrative gap: legal analyses, corporate disclosures, and academic studies of Omani safety are rarely read together, so the compliance-implementation gap remains invisible to each literature separately.

The novelty of this study lies in addressing these gaps simultaneously. The study provides a qualitative account of safety management barriers in Oman's high-risk industries that is triangulated across legal, corporate, statistical, and academic public sources; it traces each barrier to its behavioral consequences through an explicit mechanism model; and it integrates social exchange, safety climate, organizational accident, and high-reliability perspectives in a single contextually grounded framework. The study extends safety climate theory to a neglected national context and shifts Oman's safety debate from legal design to behavioral implementation.

They matter beyond academia. Oman is investing heavily in industrial capacity under Vision 2040, and each of the barriers identified in the wider literature is plausibly present in Omani workplaces; yet Omani policy discussion has concentrated on legal reform and inspection capacity, with little public analysis of the organizational behaviors that law should produce. A publicly grounded account of those barriers supplies an evidence base that regulators, employers, and worker representatives can jointly act upon.

6. RESEARCH QUESTIONS

RQ1. What barriers to effective safety management are evidenced in publicly available materials concerning Oman's high-risk industries?

RQ2. Through what mechanisms do these barriers influence employee safety behavior, particularly safety compliance, safety participation, and risk-taking?

RQ3. What contextually appropriate measures do the findings support for organizations and regulators in Oman?

7. METHODOLOGY

Research approach and design. The study adopts an interpretivist qualitative paradigm and a secondary qualitative research design comprising document analysis and reflexive thematic analysis (Braun & Clarke, 2006). Such designs are appropriate where the problem concerns institutional practice, where primary access to frontline workers is constrained, and where multiple public record types can be triangulated. No human participants were recruited and no interviews, surveys, or observations were conducted; all claims derive from documents that were already public.

Public data sources. Five source families were analyzed: (a) Omani legal and regulatory instruments, namely Royal Decree 53/2023 and Ministerial Decision 286/98; (b) official statistical and strategic publications, including International Labour Organization safety and health statistics for Oman and Oman Vision 2040 programmatic documents; (c) corporate sustainability and HSE reports published between 2019 and 2024 by Oman's two largest energy companies, detailing safety policies, indicator systems, and reported incidents; (d) thirty-one peer-reviewed articles reporting empirical research on Oman, other Gulf states, or comparable high-risk industry contexts; and (e) two institutional reports on global occupational accident burden. Table 1 specifies the corpus and selection criteria.

Table 1. Public Data Sources and Selection Criteria

Source family	Examples	Inclusion criteria	n
Legal/regulatory instruments	Labour Law (Royal Decree 53/2023); Ministerial Decision 286/98	OSH legislation/regulation in force; publicly accessible; Arabic or English	2
Official statistical & strategic publications	ILOSTAT safety and health statistics for Oman; Oman Vision 2040 programmatic documents; NCSI statistical yearbook data	Authoritative national or international statistics/strategy relevant to high-risk industries	3
Corporate sustainability/HSE reports	OQ and Petroleum Development Oman sustainability reports, 2019–2024	Publicly issued by Oman's largest energy firms; substantive HSE content	4
Peer-reviewed empirical articles	Oman/Gulf/comparable high-risk industry studies (e.g., Santos et al., 2022; Ta et al., 2022; Lyu et al., 2018)	English or Arabic; empirical; 2019–2025 weighted; OSH management or behavior focus	31
Institutional/global reports	ILO safety and health at work statistics; global occupational accident burden estimates (Hämäläinen et al., 2017)	Authoritative global burden data	2
Total corpus			42

Selection and inclusion criteria. Purposive criterion sampling was applied. Documents were included if they were publicly accessible; published in English or Arabic between 1998 and 2025, with empirical studies weighted to 2019–2025; addressed OSH management, safety climate, or safety behavior in oil and gas, construction, petrochemical, or heavy industry; and offered substantive content on implementation rather than purely technical hazard analysis. Exclusion criteria were non-English or non-Arabic sources, opinion pieces without empirical or documentary basis, and studies of sectors outside the high-risk definition. The final corpus comprised 42 documents.

Procedure. Sources were retrieved between January and June 2025 from the Ministry of Labour portal, the Official Gazette, ILOSTAT, publisher repositories (MDPI, Frontiers, Taylor & Francis, Elsevier, IGI Global), and corporate investor-relations sites. Each document was logged with source, date, URL, and access date in an audit

trail, then read in full. Arabic-language passages were translated by the research team and verified against English editions where available.

Coding and theme development. Analysis followed Braun and Clarke's (2006) six phases. Familiarization proceeded through repeated reading and annotation. Initial coding identified 214 meaning units concerning barriers, organizational practices, workforce conditions, and behavioral outcomes. Focused coding collapsed these into 17 categories (for example, production-pressure signaling, multilingual communication, training adequacy, reporting-system trust), yielding five themes (Table 3). Candidate themes were generated, reviewed against the coded extracts and across source families, defined, and named. To strengthen dependability, two researchers independently coded a 20% subsample, disagreements were resolved through discussion, and the codebook was revised accordingly. Negative case analysis actively sought documents in which Omani practice appeared effective, such as corporate zero-harm programs, to test theme saturation.

Table 2. Qualitative Coding and Thematic Framework

Example initial codes (of 214)	Focused categories (of 17, selected)	Themes (5)	Example public evidence
"production schedule prioritized"; "stop-work authority ambiguous"	Production-pressure signaling	T1. Leadership commitment diluted by production pressure	Corporate HSE reports juxtaposing zero-harm language with delivery metrics; Ta et al. (2022)
"briefings not understood"; "supervisor conversations superficial"	Multilingual communication	T2. Communication and language barriers	Loosemore & Lee (2002); Alsamadani et al. (2013); Newnam & Goode (2019)
"training hours logged"; "competence unverified"	Training adequacy and verification	T3. Training, competence, and knowledge deficits	Vinodkumar & Bhasi (2010); Chan et al. (2021); Guzman et al. (2022)
"reports not acted on"; "fear of blame"	Reporting-system trust; safety silence	T4. Constrained worker voice and participation	Wachter & Yorio (2014); Ansori & Widyanti (2021)
"documentation versus practice"; "limited inspection reach"	Compliance–implementation gap	T5. Regulation–practice gap	Sultanate of Oman (1998, 2023); ILO (2024); Reason (1997)

Analysis and organization. Documents were managed in a structured matrix recording bibliographic details, source family, industry focus, and analytic memos. Coding proceeded in two passes: a descriptive pass capturing explicit statements about safety management and behavior, and an interpretive pass capturing assumptions, contradictions, and omissions, including what corporate reports did not disclose, such as unreported worker voice data. Selection followed a transparent funnel: 96 records identified, 61 screened, 42 included (Table 1).

Reflexivity and positionality. The researchers approached the corpus neither as Omani industry insiders nor as detached outsiders: one researcher has GCC project experience and familiarity with Gulf labor-market structure, while the analytic team included members without industry ties. Divergent readings were treated as data, and contested interpretive decisions were recorded in the reflexive journal within the audit trail.

Trustworthiness. Credibility was pursued through triangulation across independent source families, member-checking of interpretations against the original documents, and peer debriefing. Dependability and confirmability were supported by the audit trail, the documented coding protocol, and reflexive journaling of analytic decisions. Transferability is supported by thick description of context and by explicit comparison with Gulf and international evidence (Lincoln & Guba, 1985).

Ethical considerations. The study used only public documents, involved no human participants, and required no institutional review. Ethical rigor instead concerned accurate representation of sources, avoidance of attribution beyond what documents support, and transparent separation of observed evidence, interpretation, and conclusion, which the Findings observe throughout.

8. RESULTS

Five Themes. For each theme, we specify (A) what the evidence shows in the publicly available data (indications and reports), (B) what researchers infer, and (C) the implications for behavior.

Theme 1. Dilation of leadership commitment by production demands. (A) corporate reports on HSE performance are filled with zero-harm rhetoric but are also replete with specific production and delivery statistics and achievement narratives; the collective evidence, as synthesized in the leadership literature reviewed, indicates that leaders' visible prioritization of production over safety has been a common barrier in high-risk industries (Ta et al., 2022; Zara et al., 2023); peer-reviewed empirical studies of comparable high-risk settings in construction in particular repeatedly document managerial weighting of rules and procedures, worker production pressure, and inadequate supervisory support in handling hazardous situations (Chan et al., 2021). (B) Our interpretation is that this comprises a signaling problem, a situation in which frontline workers devalue the importance of formal safety policy because their daily experience of cues, such as the pressure to adhere to schedule and the nebulous nature of stop-work authority, suggests that production can and must be prioritized. (C) In line with the social exchange argument (Hofmann & Morgeson, 1999), diluted commitment leads to erosion of safety climate and motivation; front-line compliance is forced by external conformity, but discretionary participation, on which perceived sincerity is most important, is suppressed.

Theme 2. Language and communication barriers among multicultural workers. (A) the frontline industrial workforce in Oman is largely expatriate, and in developing the Omani instruments for the study, work had to be done to adapt imported instruments to this reality (Santos et al., 2022); language, literacy, and comprehension have repeatedly been identified as barriers to effective hazard communication, safety briefings, and safety instructions in Gulf countries and beyond (Loosemore & Lee, 2002; Alsamadani et al., 2013), migrant workers are more receptive to safety communication and peer influence than formal safety rules and procedures (Lyu et al., 2018), and national culture has been identified as affecting risk perception and rule compliance (Mearns & Yule, 2009); the communication research literature also documents that the nature of the exchanges of supervisors with workers regarding safety is discriminative of the effectiveness of workplace safety (Newnam & Goode, 2019). (B) Our interpretation is that the communication barriers reported in the Oman data should not be seen as translation barriers but as trust barriers: where instructions cannot be verified (due to language or comprehension), and where a worker does not know how to raise a concern, habit and imitation of peers and silence become the default mechanisms for safe performance. (C) The behavioral outcome is a systematic erosion of knowledge of safety as well as participation in it, and an increase in exposure to the risk of injury through partial rather than reckless understanding.

Theme 3. Deficit in training, competence, and safety knowledge. (A) Oman's legal framework requires training and employer-provided protective measures (Sultanate of Oman, 1998, 2023), and corporate reports detail extensive training hours and competency frameworks; peer-reviewed studies of comparable working settings, particularly across high-risk and labor-intensive construction contexts, repeatedly confirm that safety training is generic and poorly retained and is inadequately linked to job hazards (Chan et al., 2021), and that safety knowledge and motivation are the critical mediators through which management practice relates to behavior (Vinodkumar & Bhasi, 2010), and that despite training and rules, safety knowledge remains deficient among contract and shift workers in oil and gas industries (Guzman et al., 2022); Santos et al. (2022) identified knowledge and training as among the seven factors considered to underpin safety climate in Oman. (B) Our interpretation is that the evidence points to quantity-over-compliance in training (hours provided and achieved) without certification of competence in learning that is especially compromised among workers trained in a language they did not previously have access to. (C) The consequence of knowledge deficits is a conversion of knowledge deficits directly into compliance failures, particularly procedural violations and incorrect use or failure to use protective equipment, with which the broader literature associates elevated risk of injury (Christian et al., 2009).

Theme 4. Constrained worker voice, participation, and near-miss reporting. (A) corporate reports document near-miss and hazard-reporting systems as well as behavioral safety programs, but peer-reviewed research shows that reporting systems provide value only where workers know, or are made to know, that reports lead to corrective action rather than blame (Wachter & Yorio, 2014), and safety silence, deliberate withholding of safety concerns, has been identified as a documented behavior in comparable workforce settings (Ansori & Widyanti, 2021); Hofmann and Morganson's (1999) analysis of social exchange and the observation by Dahl and Kongsvik (2018) that safety behaviors involving mindful engagement decay in the absence of reinforcement both suggest that voice is an exchangeable resource that requires reciprocal organizational response. (B) Our interpretation is that under-reporting in Omani high-risk industries is substantially rational: where workers perceive weak organizational responsiveness, job insecurity, or a blame culture, staying silent is adaptive. (C) The consequence of this is a narrowing of safety behavior and an organization that is starved of the weak signals on which learning and high-reliability operation depend (Weick & Sutcliffe, 2007).

Theme 5. The compliance-implementing gap between regulation and practice. (A) Oman's law provides clear duties (Sultanate of Oman, 1998, 2023), and international statistic records continue work-related injury in the country (International Labour Organization, 2024); the broader literature shows that safety rules are necessary but fail alone, that safety culture is resilient to direct regulation (Antonsen, 2017), and that rule-heavy with no investment in climate are ceremonies of compliance (Choudhry et al., 2009; Parker et al., 2006); Reason's (1997) model of unsafe practice attributes recurrent accidents to latent organizational conditions rather than to isolated operator error. (B) Our interpretation is that the Oman pattern is a last-mile problem in which enforcement capacity and contract layers and documentation-oriented compliance make for a diversion of attention to the behavior of the front line. (C) The consequence is that the behavior most protective in high-hazard work, speaking up, intervening, and double checking, remain discretionary and are under-supported.

Synthesis. The five themes, read together, do not constitute five independent defects, but a reinforcing system. Production pressure (Theme 1) compresses the time available for communication and training (Themes 2 and 3); weak knowledge and trust then render reporting channels under-used (Theme 4); and the resulting scant behavioral record allows documentation compliance to be confused for safety performance (Theme 5). Each barrier is amplifying its successor, and each recovery pathway, leadership credibility, comprehensible communication, verified competence, and trusted voice, addresses more than its own theme.

Table 3. Major Themes, Supporting Public Evidence, Impact on Safety Behavior, and Analytical Contribution

Theme	Supporting public evidence	Impact on employee safety behavior	Analytical contribution
T1. Leadership commitment diluted by production pressure	Corporate zero-harm/production juxtaposition; Ta et al. (2022); Zara et al. (2023); Chan et al. (2021)	Erosion of safety climate and motivation; participation suppressed before compliance	Production-pressure signaling as a climate toxin distinct from low commitment
T2. Communication and language barriers	Santos et al. (2022); Loosemore & Lee (2002); Alsamadani et al. (2013); Lyu et al. (2018); Mearns & Yule (2009)	Safety knowledge gaps; silence; peer imitation; risk-taking through misunderstanding	Trust-based (not merely translation-based) communication model
T3. Training, competence, and knowledge deficits	Vinodkumar & Bhasi (2010); Guzman et al. (2022); Chan et al. (2021); Santos et al. (2022)	Procedural violations; improper PPE use	Distinction between training quantity-compliance and verified competence
T4. Constrained worker voice and participation	Wachter & Yorllo (2014); Ansori & Widyanti (2021); Hofmann & Morgeson (1999); Dahl & Kongsvik (2018)	Under-reporting; collapse of discretionary participation; loss of weak signals	Rational silence under weak organizational reciprocity
T5. Compliance-implementation gap	Sultanate of Oman (1998, 2023); ILO (2024); Antonsen (2017); Parker et al. (2006); Reason (1997); Choudhry et al. (2009)	Ceremonial compliance; latent organizational failures persist	Last-mile framing of the Omani regulatory problem

Table 3 summarizes the five themes, their public-evidence base, behavioral consequences, and analytical contribution. Figure 2 displays the multi-level structure of the barriers, and Figure 3 the integrated barrier-mechanism-behavior pathway.

9. DISCUSSION

The overall findings hang together in a single explanatory model. The safety management problem in Oman is not a lack of systems, but systematic conversion of systems into production primacy signals. Frontline workers experience leadership commitment through schedule pressure (Theme 1); they experience communication filtered through language and hierarchy (Theme 2); training certifies hours, not competence (Theme 3); reporting channels exist but they do not command trust (Theme 4), and regulations are satisfied on paper rather than in practice (Theme 5). Each barrier degrades the same four mechanisms, climate, knowledge, motivation, and trust, and the behavioral cost is concentrated in participation, not compliance, which speaks to the same asymmetry Lyu et al. (2018) documented among migrant workers, and to the general finding that discretionary safety behavior is the most fragile component of any safety system.

Three contrasts with the wider literature are worth highlighting. First, while meta-analyses typically treat safety climate as an outcome stable enough to predict from (Clarke, 2006; Christian et al. 2009), the configuration in Oman suggests that climate is actively contended for daily in competition between formal messaging and operational reality; thus, not only the level but also the strength of climate should be the managerial focus. Second, while high-income contexts struggle with complacency (Dahl & Kongsvik, 2018), Oman's configuration is dominated by workforce transition and language, making a case for putting communication competence, as opposed to communication volume, at the center. Third, compliance-implementation gap observed here matches the worker-manager perception divergence documented in Iran (Chan et al., 2021), suggesting a Gulf-wide pattern where managers see rules and workers see relationships.

Another consequence is an implication for climate strength. Because workers in the studied configuration receive conflicting signals, aggregated climate scores may hide polarization between workgroups that trust the system and those that do not. Managers relying on averaged survey results would miss precisely the pockets in which behavior is most at risk, suggesting that distribution-aware monitoring is more suited to multicultural, multi-contractor settings than mean-level tracking.

Finally, the findings caution us about importation of improvement programs wholesale. Behavior-based safety and zero-harm campaigns, frequently present across the reviewed corporate reports, presuppose a workforce that is able and willing to speak, understand and intervene. Where those capabilities are conditioned by language, contract insecurity, and silence, program fidelity becomes the first casualty; adaptation, as opposed to adoption, is the defensible strategy (Santos et al., 2022).

10. THEORETICAL AND PRACTICAL IMPLICATIONS

Theoretically, there are three extensions of safety climate and social exchange theory that the study supports: production-pressure signaling as a toxic factor for climate that is distinct from low commitment; language-mediated trust as a boundary condition on climate-behavioral relations in migrant working environments; and participation as the behaviorally decisive but organizationally overlooked outcome of safety management. The barrier-mechanism-behavioral pathway (Figure 4) suggests a transferable analytic frame for Gulf states other than Oman.

Practically, the findings support five priorities for Omani organizations: (1) leaders should audit and visibly align production-safety trade-offs, including genuine, consequence-free stop-work authority; (2) safety communication should be redesigned for multilingual comprehension, using bilingual supervision, pictorial and demonstration-based instruction, and verification of understanding; (3) training should shift from hours-logged to competence-assessed, with hazard-specific refreshers for contract and shift workers; (4) near-miss systems should be coupled to visible corrective-action feedback loops, converting voice into learning; and (5), regulators should supplement document inspection with behavioral verification, such as worker interviews and observation, as is consistent with high-reliability practice (Weick & Sutcliffe, 2007). For those policymakers charged with implementing Vision 2040, the findings argue for the treatment of occupational safety capability as human-capital infrastructure, not compliance overhead.

For measurement practice, the findings argue for the use of leading indicators that capture mechanisms, not activities: comprehension verified after training, corrective-action closure rates on worker reports, and stop-work invocation statistics, interpreted as signs of trust rather than disorder. For contracting practice, principal employers should treat contractor safety behavior as a deliverable with contractual seriousness equal to schedule and cost.

For education and workforce development, the findings support investment of bilingual safety supervision as a recognized occupational specialty, a measure consistent with Oman's human-capital objectives and that directly attacks the mechanism, failed comprehension, through which several of its barriers operate.

11. LIMITATIONS

There are five limitations to the findings. First, the study is secondary, so what is being analyzed are representations of practice, not practice; corporate reports in particular are subject to self-presentational bias. Second, the document corpus, while triangulated, is limited by what is available; internal incident investigations and regulator files were unavailable, and the documentation is sparse in a few cases, particularly enforcement practice. Third, the public record under-represents workers' own voices; the interpretation of worker experiences relies upon peer-reviewed proxies from comparable working settings, a limitation partially mitigated by the Omani instrument-development evidence (Santos et al., 2022). Fourth, the study is a snapshot; safety programs evolve, and corporate reports from 2019–2024 may already be out of step with current practice. Fifth, as a single-country interpretive study, the study cannot claim empirical transferability, only theoretical transferability. Qualitative primary research with Omani frontline workers, supervisors, and inspectors is the obvious next step. The study also could not exploit Arabic-language sources to their full potential; while key instruments are covered, Arabic-only regulatory guidance and news and media coverage were sampled rather than exhaustively analyzed, and future studies incorporating systematic Arabic-language corpus analysis would enhance contextual validity.

12. CONCLUSION

This study aimed to explain why comprehensive safety management systems in Oman's high-risk industries so often fail to engender safe behavior among workers. Through reflexive thematic analysis of 42 publicly available documents, the study identified five barriers: diluted leadership commitment, communication and language barriers, training and knowledge deficits, constrained worker voice, and compliance-implementation gap. These barriers operate by eroding safety climate, knowledge, motivation, and trust, and through them, behavior, for which the cost falls heaviest on safety participation, the discretionary behaviors through which hazards are detected and intercepted before they become injuries. The contribution of the study is twofold: a contextually grounded account of safety management failure in Oman and an integrated mechanism model that links the barriers to behavior through testable pathways. For a country whose future is invested in industrial expansion, the practical takeaway of the study is direct: laws and systems create the possibility of safety; leadership credibility, comprehensible communication, genuine competence, and trusted voice can convert that possibility into a behavior of safety.

More widely, the study demonstrates the value of disciplined analysis of public evidence in support of a legitimate qualitative strategy of occupational safety research, particularly in contexts where primary field access is constrained. The barriers identified are amenable to organizational action without legislative change, which makes the agenda practical as well as scientific.

FIGURES

Figure 1. Public-data analysis workflow, from corpus identification to triangulated interpretation. (Rendered file: /mnt/agents/output/fig1_workflow.png — six-stage pipeline: 96 records identified → 61 screened → 42 included → 214 initial codes → 17 categories → 5 themes.)

Figure 1. Public-data analysis workflow

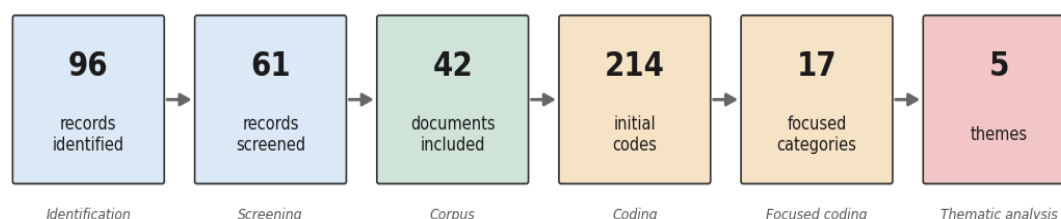
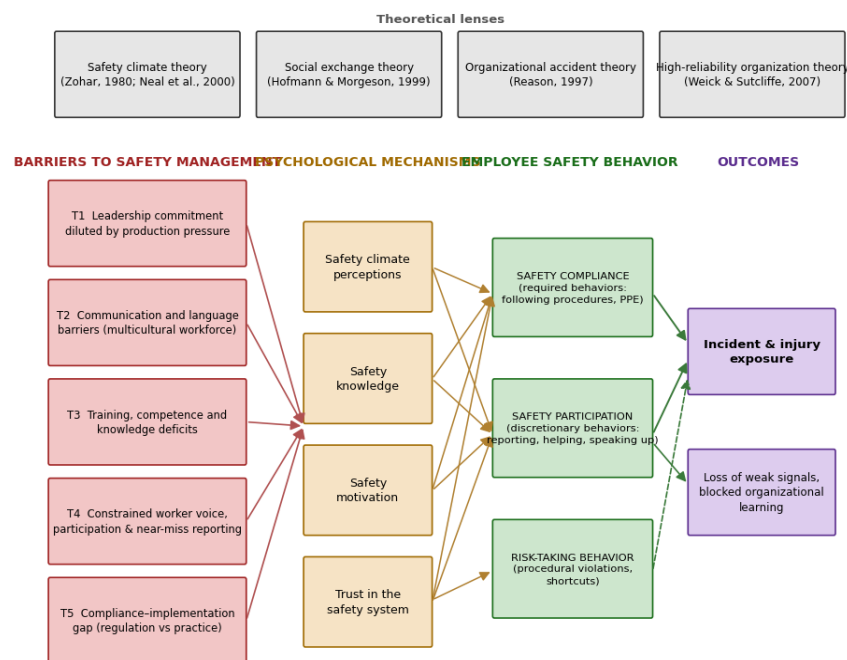


Figure 2. Conceptual framework linking barriers to safety management (red), psychological mechanisms (amber), safety behavior and outcomes (green/violet), and the four theoretical lenses (grey). (Rendered file: /mnt/agents/output/fig2_framework.png.)



Propositions: P1 production primacy degrades participation more than compliance · P2 communication barriers erode knowledge and trust → violations and silence · P3 voice requires reciprocity · P4 paper compliance leaves latent conditions intact

Figure 3. Multi-level structure of barriers: macro/contextual, organizational/meso, and frontline/micro levels cascading into employee safety behavior. (Rendered file: /mnt/agents/output/fig3_multilevel.png.)

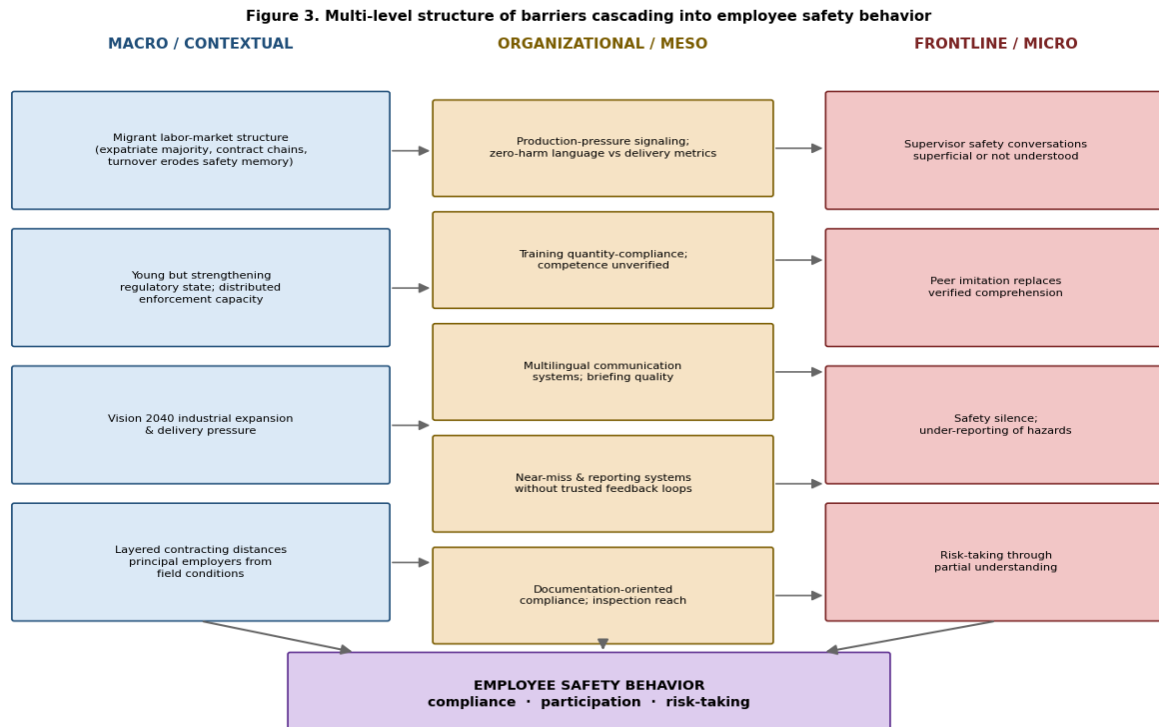
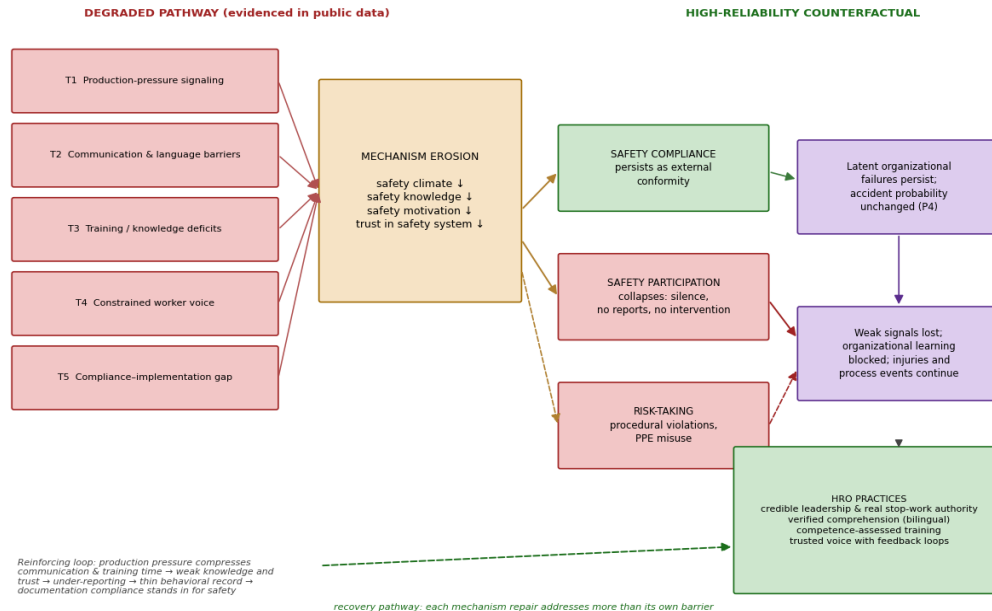


Figure 4. Integrated barrier-mechanism-behavior pathway, showing mechanism erosion, the compliance/participation split, outcomes, and the high-reliability counterfactual. (Rendered file: /mnt/agents/output/fig4_pathway.png.)

Figure 4. Integrated barrier-mechanism-behavior pathway



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