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Integrating Behaviour-Based Safety and Organisational Culture through the Balanced Scorecard: A Conceptual Framework for Enhancing Safety Performance in Ghanaian Construction SMEs

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Abstract: Ghanaian construction SMEs continue to experience high occupational health and safety (OHS) risks due to weak enforcement, fragmented safety practices, and limited organisational learning. This conceptual paper aims to develop an integrated safety management framework that addresses these systemic challenges. Specifically, the paper conceptually examines how behavioural reinforcement, organisational culture, and strategic performance measurement can be aligned to improve safety outcomes in resource-constrained construction SMEs. Drawing on Behaviour-Based Safety, Workplace Culture Change, and Balanced Scorecard theory, the paper proposes the Behaviour–Culture–Balanced Scorecard Safety Framework (BC–BSC–SF). The framework demonstrates how leading behavioural and cultural indicators can be embedded within strategic management systems to enable proactive safety governance. The paper recommends strengthening internal controls through strategic scorecards and behavioural monitoring, complemented by enhanced external regulatory oversight. Conceptually, the BC–BSC–SF provides a scalable and policy-relevant model for improving construction safety in Ghana and comparable developing economies.

Keywords: *Behaviour-Based Safety, Organisational Culture, Balanced Scorecard, Construction SMEs, Ghana, Safety Performance.*

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I. INTRODUCTION

This section outlines the safety management challenges faced by Ghanaian construction SMEs, critiques the limitations of existing approaches, and previews the article's conceptual contribution to both national and international safety management discourse.

Ghana's construction industry, mainly composed of SMEs, continues to experience persistently high accident rates despite regulatory reforms (Boadu et al., 2021; Osei-Asibey et al., 2021; GSS, 2024). National data reveals weak safety inspections, low compliance, inconsistent records, and limited behavioural reporting (Adzivor, Emuze, & Das, 2023; Simpson & Kheni, 2025). These issues highlight structural problems in current OHS systems(Grill et al., 2023; Sarvari et al., 2024) . Limited resources and fragmented safety practices are common in developing economies, hindering regulatory success(ILO, 2023; Sarvari et al., 2024) . For Ghanaian SMEs, underreporting, low behavioural participation, and weak learning highlight a research gap: a lack of a unified, context-sensitive safety framework that connects behavioural, cultural, and strategic factors (Adzivor, Emuze, & Das, 2023; Adzivor et al., 2024; Kumar et al., 2024).

This paper directly addresses the lack of integrated safety frameworks for Ghanaian construction SMEs. It develops the Behaviour–Culture–Balanced Scorecard Safety Framework (BC–BSC–SF), which brings together Behaviour-Based Safety, Workplace Culture Change, and Balanced Scorecard principles. The framework illustrates how behavioural, cultural, and strategic factors interact to influence OHS performance. The introduction discusses the significance of these OHS challenges, summarises gaps in the literature, and explains how the framework can address them.

II. LITERATURE REVIEW

- *Behaviour-Based Safety (BBS)*

Behaviour-Based Safety (BBS) focuses on identifying, observing, and reinforcing safe behaviours to prevent

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incidents. Rooted in behaviourist and operant conditioning theory, it assumes that consistent reinforcement and feedback produce enduring behavioural change (Carra et al., 2024). Empirical evidence confirms that observation-driven feedback systems significantly reduce unsafe acts and near-miss incidents (Xu et al., 2023; Wang et al., 2024).

However, the conceptual limitation of BBS lies in its behavioural singularity, its success depends on contextual and organisational reinforcement. When applied in isolation, BBS often fails to influence systemic safety culture because it does not address managerial priorities, peer norms, or strategic performance accountability (Pilbeam, 2024; Adzivor et al., 2024). The BC–BSC–SF resolves this gap conceptually by embedding behavioural reinforcement within organisational culture and strategic management mechanisms, ensuring that shared norms and institutional accountability support behaviour change. Thus, within the framework, BBS functions as the **micro-level driver** of observable safety performance, which feeds into higher cultural and strategic dimensions.

- *Workplace Culture Change (WCC)*

Workplace Culture Change (WCC) theory situates safety improvement within the collective values, beliefs, and assumptions that shape organisational behaviour. A strong safety culture fosters trust, communication, and mutual accountability, conditions essential for sustained performance (Zhao et al., 2022). Within Ghanaian SMEs, leadership examples, peer reminders, and participative hazard reporting are among the strongest predictors of OHS outcomes (Adzivor, Emuze, & Das, 2023).

Conceptually, however, cultural change programmes often remain intangible and unmeasured. Without linking cultural shifts to quantifiable indicators, such initiatives risk superficial adoption (Naji et al., 2022). Integrating WCC with BBS transforms culture from a normative construct into a measurable, behaviourally grounded system. Within the BC–BSC–SF, WCC operates as the meso-level mediator, translating individual behaviour into shared organisational practices, reinforcing leadership credibility, and sustaining peer accountability across time.

- *Balanced Scorecard (BSC)*

The Balanced Scorecard (BSC), developed by Kaplan and Norton (1996), provides a structured management tool that links financial and non-financial indicators to strategic objectives. It evaluates performance across four perspectives, financial, customer, internal process, and learning and growth, thereby connecting operational data to strategic outcomes. The incorporation of safety metrics within these perspectives transforms OHS from a compliance activity into a strategic performance domain (Marafon et al., 2022; Kumar, 2024). For example, near-miss frequency can serve as an internal process indicator, while safety training participation may represent learning and growth.

Despite its advantages, many SMEs lack the managerial or analytical capacity to operationalise complex BSC systems (Yin-Nyeya & Boateng, 2023). The BC–BSC–SF adapts the BSC to the SME context by simplifying metrics and focusing on leading indicators, behavioural participation rates, peer observation frequency, and corrective-action closure times. Within the conceptual framework, the BSC serves as the macro-level enabler that translates behavioural and cultural information into strategic insights, thereby completing the alignment of human factors with organisational performance.

Within the Balanced Scorecard architecture, occupational safety exerts its most direct influence on the internal process and learning and growth perspectives. Behavioural compliance, near-miss reporting, and hazard control enhance process reliability, while safety training and cultural reinforcement strengthen organisational learning capacity. Figure A1 provides an indicative positioning of occupational safety within the Balanced Scorecard perspectives to orient the reader before the introduction of the integrated conceptual framework.

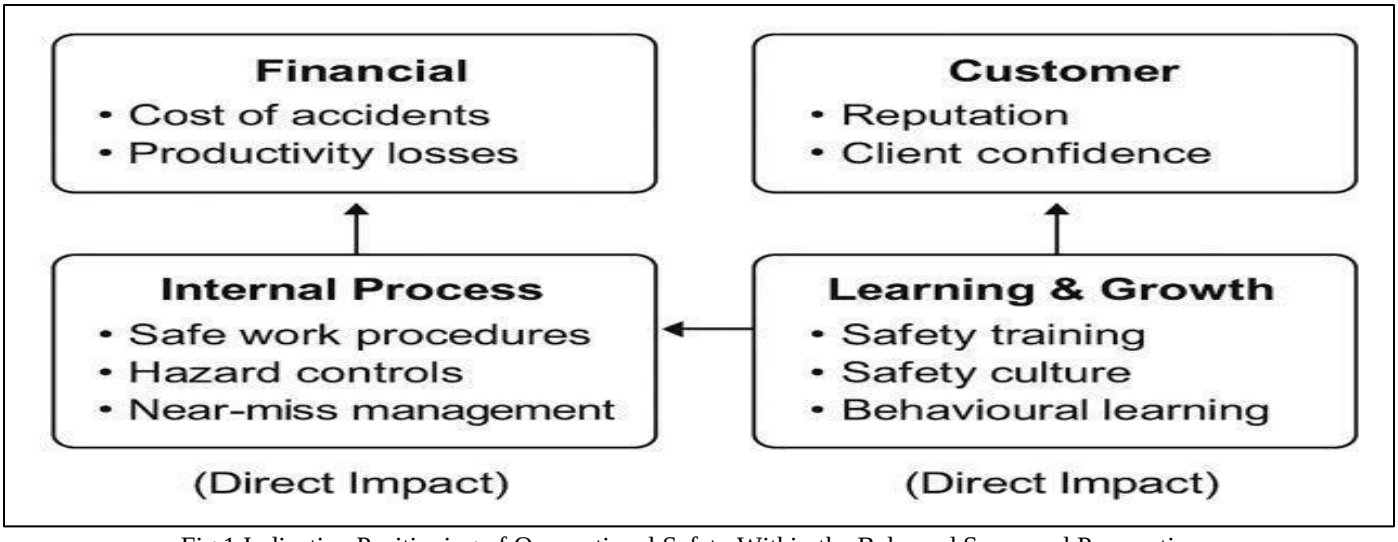

Fig 1 Indicative Positioning of Occupational Safety Within the Balanced Scorecard Perspectives.

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Figure 1 is provided as an orientation aid and does not represent the proposed BC–BSC–SF, which is introduced in Section 3.

➢ *Ghana's OHS Regulatory Context*

Ghana's OHS governance is established under the Factories, Offices and Shops Act, 1970 (Act 328) and the Labour Act, 2003 (Act 651), which collectively mandate employer responsibility and empower the Labour Department to enforce compliance. However, in practice, enforcement remains inconsistent, particularly among SMEs operating within informal subcontracting chains (Simpson & Kheni, 2025).

Existing evidence reveals that safety management practices within Ghanaian construction SMEs remain predominantly procedural and reactive. Many firms implement safety documentation merely to satisfy client or audit requirements, rather than embedding safety into everyday operations (Boadu et al., 2021; Adzivor et al., 2024). Most lack behavioural observation systems, feedback mechanisms, and structured leadership reviews, leading to weak hazard reporting and limited learning from near misses (Grill et al., 2023).

National data reinforces this diagnosis: only about 40% of registered construction SMEs maintain formal OHS systems, and fewer than 25% undergo annual inspections, patterns consistent with studies in the *Built Environment Project and Asset Management* and *Safety Science* that link weak enforcement to institutional capacity deficits (Boadu, Kheni, & Fugar, 2021; Adzivor, Emuze, & Das, 2023; GSS, 2024). Ghana's inspectorate ratio, one officer for every 1,200 active sites, further constrains oversight. Comparative evidence from South Africa and Nigeria shows measurable safety gains where legislation integrates behavioural and cultural indicators into compliance frameworks (ILO, 2023; Othman et al., 2022).

These findings situate the conceptual relevance of the BC–BSC–SF: it bridges the enforcement gap by operationalising regulatory intent through integrated behavioural, cultural, and strategic dimensions, offering a model that aligns statutory compliance with organisational learning and global best practices.

These national OHS deficiencies mirror broader patterns in developing economies, where weak inspection coverage, informal labour arrangements, and fragmented behavioural systems constrain regulatory effectiveness (Giri, 2023; Sarvari et al., 2024). International Labour Organisation evidence further confirms that regulatory intent often fails to translate into operational practice without integrated behavioural and cultural mechanisms (ILO, 2023). The BC–BSC–SF directly targets this regulatory–practice gap by linking statutory expectations to measurable behaviours, shared norms, and strategic indicators that SMEs can internalise across projects.

Available national statistics indicate that construction accounts for one of the highest proportions of workplace injuries in Ghana, with incident rates exceeding those reported in manufacturing and services sectors (GSS, 2024). International benchmarks from the ILO show that countries with integrated behavioural and culture-based enforcement mechanisms record significantly lower accident frequencies. The absence of such integration in Ghanaian SMEs partly explains the persistent safety performance gap.

Ghana's OHS regime is anchored in statutory employer duties under the Labour Act, 2003 (Act 651) and inspection mandates under Act 328. However, enforcement relies heavily on external inspections with limited internal organisational control mechanisms. This imbalance highlights the dual problem of weak external enforcement capacity and insufficient internal safety governance—conditions the BC–BSC–SF is designed to address conceptually.

➢ *Theoretical Integration*

Integrated approaches to safety management are widely shown to outperform isolated interventions (Grill et al., 2023). These findings substantiate the need for a holistic conceptual framework that unites the behavioural, cultural, and strategic dimensions of OHS management.

The BC–BSC–SF rests on three interrelated theoretical pillars: behaviourist theory, organisational culture theory, and strategic management theory. Behaviourist theory explains how reinforcement mechanisms drive observable change at the individual level. Organisational culture theory captures the social processes through which individual actions become institutional norms. Strategic management theory provides the structural lens that links these human dynamics to measurable organisational outcomes. The interaction among these theories explains how micro-level behaviours evolve into macro-level performance trends (Grill et al., 2023; Adzivor et al., 2024; Kumar, 2024).

Conceptually, the framework demonstrates that sustainable OHS performance in SMEs depends on the alignment of these three theoretical dimensions. Behaviourist principles foster safe acts; cultural mechanisms sustain those acts through shared values; and strategic management ensures accountability by embedding them into measurable key performance indicators. This theoretical synthesis forms the foundation for the BC–BSC–SF, which proposes that safety performance can be improved when behavioural, cultural, and strategic factors co-function as integrated performance drivers in SME environments.

From a Maslowian perspective, occupational safety corresponds to foundational physiological and safety needs, implying that unmet safety conditions undermine higher-level organisational goals such as engagement, learning, and performance, reinforcing the necessity of embedding safety at the base of strategic management systems.

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III. METHODOLOGY

➢ *Research Design*

Developed through theoretical synthesis rather than empirical testing, the framework integrates principles from Behaviour-Based Safety (BBS), Workplace Culture Change (WCC), and the Balanced Scorecard (BSC), establishing a unified logic for proactive, data-driven, and context-sensitive safety management.

The conceptual innovation of the BC–BSC–SF lies in its portrayal of safety management as an interdependent system rather than a collection of discrete initiatives. Behavioural inputs influence culture, culture provides reinforcement and social legitimacy for behavioural change, and both are captured through strategic measurement that feeds continuous improvement cycles. This alignment ensures that micro-behavioural change is sustained by cultural commitment and institutionalised through strategic accountability (Grill et al., 2023; Kumar, 2024; Adzivor et al., 2024).

Accordingly, the study does not involve data collection or statistical analysis; instead, it advances a theoretically integrated conceptual framework intended for subsequent empirical validation.

➢ *Conceptual Framework Developments*

Building on the general Balanced Scorecard positioning illustrated earlier, this section introduces the Behaviour–Culture–Balanced Scorecard Safety Framework (BC–BSC–SF) as a fully integrated conceptual model. The Behaviour–Culture–Balanced Scorecard Safety Framework (BC–BSC–SF) is a conceptual model that explains how sustainable safety performance emerges from the dynamic interaction of behavioural, cultural, and strategic mechanisms within construction SMEs.

At the micro-level, BBS serves as the model's behavioural engine. It emphasises observable actions, peer feedback, and positive reinforcement as mechanisms for shaping individual safety behaviour. At the meso-level, WCC transforms these individual actions into shared organisational norms through leadership engagement, communication, and participative learning. At the macro-level, the BSC integrates both behaviour and culture into strategic planning, linking safety indicators, such as near-miss closure rates, toolbox participation, and corrective-action follow-up, to organisational performance dashboards.

Two moderating constructs, usability and cost-effectiveness, determine the framework's practical feasibility in resource-limited SME contexts. Usability refers to the simplicity, clarity, and adaptability of safety processes, while cost-effectiveness captures the extent to which interventions deliver measurable outcomes relative to the resources invested. These moderators ensure that the BC–BSC–SF remains scalable across firms with differing capacities.

It is acknowledged that the SME category in Ghana spans a heterogeneous range of enterprises, from micro-contractors to relatively large firms. The BC–BSC–SF does not assume structural uniformity across SMEs; instead, it is designed as a modular and scalable framework adaptable to varying organisational capacities. Its emphasis on usability and cost-effectiveness allows internal calibration across diverse SME contexts without requiring direct inter-firm comparability.

IV. RESULTS AND DISCUSSION

➢ *The BC–BSC–SF Conceptual Framework*

Figure 2 illustrates the conceptual configuration: BBS and WCC operate as primary inputs, the BSC functions as the integrating mechanism, and usability and cost-effectiveness moderate the relationships leading to enhanced safety performance. Derived from the doctoral study's theoretical model, the BC–BSC–SF provides a structured lens for future empirical validation, enabling researchers to examine how behavioural reinforcement, cultural alignment, and strategic measurement jointly predict safety outcomes in construction SMEs.

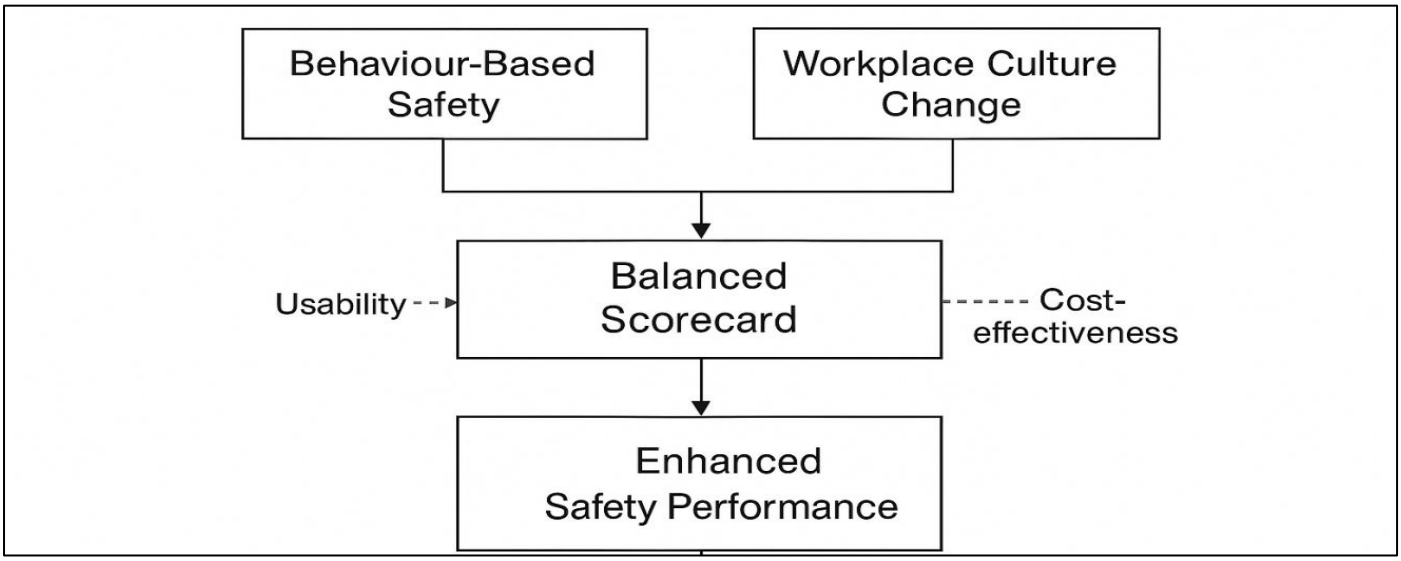

Fig 2 Behaviour-Culture-Balanced Scorecard Safety Framework

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The Behaviour–Culture–Balanced Scorecard Safety Framework (BC–BSC–SF) synthesises three complementary dimensions, behavioural, cultural, and strategic, into a unified performance logic. Behaviour-Based Safety (BBS) functions at the micro-level, shaping individual actions through observation, feedback, and positive reinforcement. Workplace Culture Change (WCC) operates at the meso-level, embedding collective norms of shared accountability, trust, and learning that sustain behavioural improvements. The Balanced Scorecard (BSC) represents the macro-level integrative mechanism, aligning behavioural and cultural indicators with organisational objectives and strategic performance targets.

Conceptually, the synthesis explains how BBS and WCC interact through the BSC's strategic pathways to produce measurable improvements in safety performance. BBS provides behavioural data and learning cues; WCC transforms these into cultural routines; and the BSC institutionalises them as performance indicators that inform management decisions. The moderators of usability and cost-effectiveness ensure that this integration remains feasible within the operational and financial constraints typical of SMEs.

Within this configuration, the BC–BSC–SF reconceptualises safety as a strategic management function rather than a compliance task, creating a continuous feedback system in which behaviour, culture, and strategy reinforce one another (see Figure 2). Behavioural reinforcement mechanisms generate immediate corrective actions that shape the shared norms and peer expectations forming the basis of cultural alignment. These cultural dynamics, in turn, influence managerial attention, prioritisation, and resource allocation through the BSC's measurement processes, embedding safety objectives in operational planning.

The synthesis, therefore, portrays safety performance as an emergent property of system interaction rather than the outcome of isolated interventions. Empirical evidence supports this conceptual logic: when feedback frequency, participative culture, and management accountability operate synergistically, organisations develop self-sustaining safety systems that continuously adapt to emerging risks (Adzivor et al., 2024; Grill et al., 2023; Kumar, 2024).

The preceding synthesis reflects the current state of safety science, which increasingly emphasises integrated behavioural, cultural, and strategic approaches rather than isolated compliance tools. However, Ghanaian construction SMEs largely remain at an early maturity stage, characterised by reactive controls and limited behavioural measurement. This gap between scientific advancement and practical implementation provides the basis for the comparative analysis that follows.

- *Comparative Analysis*

Conventional safety management approaches in Ghanaian construction SMEs are primarily reactive and compliance-oriented, relying on lagging indicators such as injury frequency and lost-time rates. In contrast, the BC–BSC–SF represents a paradigm shift toward proactive, strategically aligned safety management. By embedding safety within organisational planning and decision-making structures, the framework transforms OHS from a regulatory obligation into an anticipatory, value-creating process that links behavioural reinforcement and cultural maturity with measurable strategic outcomes (Grill et al., 2023; Kumar, 2024; Adzivor et al., 2024).

This conceptual repositioning introduces leading indicators, behavioural observation frequency, culture-maturity levels, and toolbox-talk participation, as predictive measures of system resilience. Integrating these indicators within the BSC perspective enhances managerial foresight and enables evidence-based decision-making. Compared with traditional models that evaluate safety retrospectively, the BC–BSC–SF establishes an analytical framework that can predict risk trends and guide continuous improvement.

While simplified leading indicators enhance usability, they also risk obscuring more profound systemic weaknesses if managers over-rely on easily quantifiable metrics. Scholars caution that oversimplification may create "indicator blindness," in which counts of observations and tool kit participation overshadow interpretive learning and root-cause analysis (Zhao et al., 2022). To prevent this, simplified scorecards must be complemented with periodic qualitative reflection sessions to discuss why patterns occur, not only what patterns emerge, to ensure behavioural and cultural insights translate into meaningful strategic action.

Ultimately, the comparative analysis underscores that the BC–BSC–SF advances OHS theory and practice by linking micro-behavioural mechanisms, meso-cultural reinforcement, and macro-strategic accountability within a single conceptual architecture. It offers researchers and policymakers a coherent lens through which to understand. and later empirically examine, how integrated human and organisational factors generate sustainable safety performance in resource-limited construction environments.

- *Justification and Expected Impact of the Framework*

The justification for the Behaviour–Culture–Balanced Scorecard Safety Framework (BC–BSC–SF) lies in its capacity to address systemic weaknesses within Ghanaian construction SMEs, namely, fragmented safety systems, reactive compliance practices, and limited institutional oversight. By integrating behavioural, cultural, and strategic dimensions, the framework is designed to generate tangible improvements across three performance domains.

First, at the behavioural level, the framework is expected to increase safety compliance and hazard-reporting rates through continuous peer observation and feedback loops. These mechanisms cultivate ownership and self-regulation, reducing unsafe acts and near-miss occurrences by reinforcing positive safety norms (Grill et al., 2023; Adzivor et al., 2024).

Second, at the cultural level, the BC–BSC–SF promotes participative leadership and open communication, two

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critical deficiencies in Ghanaian SMEs where hierarchical structures often suppress worker engagement. The adoption of workplace safety circles, regular toolbox meetings, and visual reporting systems can build trust and shared accountability, gradually transforming reactive safety cultures into proactive learning environments.

Third, at the strategic level, integrating Balanced Scorecard principles ensures that safety is not treated as a cost centre but as a measurable component of business performance. By linking safety KPIs (e.g., near-miss closure rates, training participation, audit compliance) to project outcomes, firms can quantify safety's contribution to productivity, schedule adherence, and reputation.

In the Ghanaian context—where enforcement capacity is low, and resources are scarce—the BC–BSC–SF offers a cost-effective, scalable model for embedding safety into daily operations. Its emphasis on behavioural and cultural mechanisms reduces dependency on external enforcement, while its scorecard dimension enables internal monitoring and accountability. The expected outcome is a measurable reduction in incident frequency, greater regulatory compliance, and a stronger safety climate across SME projects, positioning the framework as both context-relevant and impact-oriented within Ghana's construction industry.

➢ *Application Scenarios in Ghanaian Construction SMEs*

Note that the following scenarios are conceptual illustrations intended to demonstrate the framework's application logic rather than empirically tested results.

Although the Behaviour–Culture–Balanced Scorecard Safety Framework (BC–BSC–SF) is conceptual, its value lies in its potential for real-world adaptation. The following illustrative scenarios demonstrate how the framework's behavioural, cultural, and strategic dimensions can be applied within Ghanaian construction SMEs to strengthen safety performance and organisational learning.

- *Scenario 1: Enhancing Behavioural Compliance through Peer Observation*

Within a small Class 3 construction enterprise, the BC–BSC–SF can guide the introduction of peer-led Behaviour-Based Safety (BBS) observation sessions. Rather than relying solely on supervisory audits, workers periodically observe each other's safety practices and provide immediate, constructive feedback. This approach transforms behavioural reinforcement into a participatory learning process that builds ownership and trust. When captured under the Balanced Scorecard's *learning and growth* perspective, these observations generate data for managerial reflection and continuous improvement. The conceptual logic illustrates how feedback frequency and positive reinforcement foster sustained behavioural compliance even within informal labour structures common to SMEs.

- *Scenario 2: Building a Safety Culture Under Cost Pressure*

A Class 4 subcontractor operating under financial constraints can apply the BC–BSC–SF by creating an informal "Safety Circle." Guided by Workplace Culture Change (WCC) principles, the team holds brief weekly meetings to share near-misses, post visual reminders, and recognise safe behaviour. Over time, this low-cost intervention cultivates open communication and non-punitive reporting, core elements of organisational culture theory. Conceptually, it demonstrates how behavioural feedback mechanisms evolve into shared cultural norms that strengthen peer accountability. This transition from compliance-driven silence to proactive learning exemplifies the framework's linkage between behaviourist reinforcement and cultural transformation (Adzivor et al., 2024; Grill et al., 2023).

- *Scenario 3: Aligning Safety and Productivity Goals*

In a medium-sized firm, the BC–BSC–SF can integrate safety and productivity metrics through project dashboards that combine safety KPIs with schedule and cost indicators. Embedding leading indicators, such as toolbox-talk participation and hazard-closure rates, within the *internal process* and *learning* perspectives of the BSC reframes safety as a value-adding management function. Conceptually, this scenario shows how strategic alignment transforms safety from an operational obligation into a driver of efficiency, reinforcing the framework's central thesis that behaviour, culture, and strategy must co-evolve to sustain performance improvement.

Collectively, these scenarios illustrate how the BC–BSC–SF offers a flexible, context-responsive pathway for Ghanaian SMEs to operationalise theoretical integration. They show that even under conditions of limited resources, behavioural observation, cultural reinforcement, and strategic measurement can interact dynamically to produce sustainable and measurable safety outcomes.

➢ *Strengths and Limitations*

- *Strengths of the Framework*

The Behaviour–Culture–Balanced Scorecard Safety Framework (BC–BSC–SF) offers several theoretical and practical strengths that distinguish it from existing safety management models. First, it provides a holistic integration of three interdependent dimensions, behaviour, culture, and strategy, into a unified conceptual system. This multidimensionality enables cross-level analysis, linking micro-behavioural mechanisms with meso-cultural dynamics and macro-strategic alignment to explain how sustainable safety performance emerges.

Second, the framework demonstrates contextual scalability. Its focus on usability and cost-effectiveness ensures relevance for small and medium-sized enterprises (SMEs) in developing economies where resources, training, and technology may be limited. By leveraging peer observation, participative culture, and simplified scorecard metrics, the BC–BSC–SF can be adapted without requiring extensive financial or technological investment.

Third, the model achieves strategic alignment by embedding safety metrics within the broader logic of organisational performance. This approach advances

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theoretical understanding by positioning safety as both a human and managerial system, one that links employee behaviour and cultural maturity to financial, process, and learning outcomes through the Balanced Scorecard perspective.

- *Limitations and Conceptual Boundaries*

Despite its strengths, the BC–BSC–SF remains conceptual and thus carries certain limitations. Conceptually, its boundaries include the need for empirical validation, potential difficulty in isolating the effects of behavioural, cultural, or strategic variables, and challenges in adapting the model across diverse contexts. In practice, it presupposes consistent data collection, managerial engagement, and organisational transparency, conditions that may not be uniformly present in high-power-distance or informally structured firms typical of Ghana's construction industry.

The framework also requires empirical validation to establish its predictive capacity and generalisability. Although conceptually robust, its causal pathways have yet to be tested across diverse SME types, industry segments, and national contexts. These boundaries delineate the model's status as a theoretical construct, pending further empirical refinement.

A persistent limitation across all scenarios remains human attitude, particularly managerial and supervisory indifference to worker safety, which continues to undermine formal systems unless deliberately addressed through leadership accountability and cultural reinforcement.

- *Counterarguments and Alternative Perspectives*

Despite its conceptual strengths, several scholars caution that integrated safety frameworks may introduce implementation complexity for SMEs with limited managerial capacity. Behaviour-Based Safety has been criticised for placing excessive responsibility on workers rather than addressing systemic hazards (Pilbeam, 2024). In addition, high power-distance structures typical of Ghanaian SMEs may weaken the feedback and communication loops central to the BC–BSC–SF, potentially limiting its behavioural and cultural pathways (Simpson & Kheni, 2025). Other critics argue that combining behavioural, artistic, and strategic constructs requires advanced analytical literacy, which may be lacking in informal or resource-constrained firms (Yin-Nyeya & Boateng, 2023). These counterarguments highlight that successful adoption of the BC–BSC–SF will depend on leadership engagement, capacity-building, and support mechanisms that reduce implementation complexity.

➢ *Evaluation of Effectiveness*

However, its effectiveness is conditional rather than absolute. The framework presupposes an enabling organisational climate that supports open communication and learning. In Ghana's construction SMEs, often characterised by hierarchical management and informal work structures, high power distance and limited managerial literacy can constrain participative feedback and weaken the behavioural–cultural feedback loop (Simpson & Kheni, 2025). Similarly, consistent data collection and performance tracking may be challenging in SMEs with low digital capability or unstable supervisory oversight. These contextual barriers can limit the operational feasibility of the framework despite its conceptual robustness.

Additionally, because the BC–BSC–SF integrates three theoretical domains, it risks complexity in implementation if managers lack training to interpret behavioural or cultural metrics in strategic terms. The potential dilution of focus, where attention to scorecard metrics overshadows behavioural reinforcement, could limit behavioural continuity and weaken safety culture over time.

Nonetheless, these weaknesses do not diminish the framework's conceptual value; instead, they highlight its dependence on leadership commitment, training, and institutional support. When these enabling factors are present, the BC–BSC–SF remains a powerful integrative model capable of aligning micro-level behaviour with macro-level performance outcomes, ultimately strengthening safety resilience and organisational learning within the construction sector.

High power-distance structures prevalent in Ghanaian construction SMEs pose a significant barrier to the effective functioning of the behavioural–cultural pathway. When workers feel unable to challenge supervisors or raise safety concerns, peer observation systems lose authenticity, hazard reporting declines, and the feedback loop weakens. To mitigate these effects, SMEs should adopt structured channels such as anonymous reporting systems, rotational peer-observation teams, and supervisor communication audits. These approaches reduce hierarchical rigidity, strengthen psychological safety, and enable the BC–BSC–SF mechanisms to function as intended.

In the long term, the principles underlying the BC–BSC–SF, particularly behavioural monitoring, cultural maturity assessment, and strategic safety indicators, could be formally recognised within Ghana's Labour Act as part of employer safety duties, thereby institutionalising integrated safety governance beyond voluntary adoption.

V. CONCLUSION

This section reinforces the article's main contributions, summarises the theoretical and practical implications, and points to the framework's potential impact on future research and policy.

The Behaviour–Culture–Balanced Scorecard Safety Framework (BC–BSC–SF) is a conceptually grounded and context-sensitive model that advances occupational health and safety (OHS) performance in Ghanaian construction SMEs. Its main contribution is integrating Behaviour-Based Safety (BBS), Workplace Culture Change (WCC), and Balanced Scorecard (BSC) principles into a coherent framework, enabling behavioural reinforcement, cultural learning, and strategic measurement to interact and strengthen safety performance in resource-limited environments.

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Conceptually, the framework demonstrates how safety management can evolve from a reactive, compliance-based function into a strategically aligned performance system. It operates through three interacting mechanisms:

- Behavioural reinforcement generates observable safety actions that influence peer norms and individual accountability.
- Cultural maturity institutionalises these actions through shared values, open communication, and participative leadership.
- Strategic alignment embeds them within measurable scorecard indicators such as near-miss closure rates, toolbox participation, and training frequency.

Together, these mechanisms provide a systematic pathway for transforming safety practices into performance-driven processes that enhance learning and sustainability across construction SMEs. The BC–BSC–SF thereby reframes safety as both a behavioural and organisational capability — one that supports resilience, productivity, and long-term competitiveness.

Rather than presenting empirical results, this paper establishes the theoretical foundation for subsequent research. The BC–BSC–SF functions as a conceptual bridge linking behaviourist, cultural, and strategic management theories into an integrated framework suitable for future validation. Its adoption as a diagnostic and planning tool can guide the design of context-appropriate safety systems, support regulatory harmonisation, and inform comparative studies across industries and developing economies.

In sum, the BC–BSC–SF establishes a theoretically coherent, context-sensitive, and policy-relevant foundation for transforming safety management within Ghanaian construction SMEs. By bridging behavioural reinforcement, cultural learning, and strategic measurement, the model addresses long-standing empirical gaps and provides a testable pathway for sustainable OHS improvement. Future empirical work, especially cross-national and digital applications, will be essential to validate, refine, and scale the framework. The conceptual architecture presented here offers a robust platform for advancing safety-science scholarship, regulatory innovation, and global policy harmonisation.

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