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Evaluating Safety Culture to Identify Performance Drivers in the Industrial Sector of a Moroccan SME

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Abstract:- This study delves into the safety culture of Moroccan SMEs, highlighting a significant gap between their performance in occupational health and safety and the challenges related to sustainable development, despite the efforts of government organizations and large companies. Two major challenges are identified: the influence of the specific Moroccan culture and the implications of outsourcing. Based on the work of Cooper (2000), the study aims to determine the factors defining safety culture, particularly psychological, behavioral, and organizational aspects, and to understand their interrelation and impact on company performance. The research takes a strategic perspective, exploring key elements of organizational culture, transformational leadership, and safety management. The psychological and behavioral dimensions of safety culture are particularly emphasized because of their link with company performance. Faced with the high number of work accidents and annual deaths in Morocco, the study underscores the imperative to improve occupational health and safety, particularly in SMEs. Our research adopts a pragmatic constructivist approach and a mixed methodology for data collection, which includes nine exploratory interviews enriched by participant observations and document reviews, safety behavior evaluations were also conducted through nine semi-structured interviews. A safety climate survey was conducted among sixty employees belonging to different categories of the SME. In sum, the research aims to enrich the understanding of the safety culture in Moroccan SMEs and to identify levers to improve their performance in health and safety.

Keywords:- *Safety Culture, Moroccan Context, Moroccan Smes, Outsourcing, Safe Behaviors, Safety Climate, Safety Management, Transformational Leadership, Work Accidents, Deaths, Performance, CSR, Sustainable Development.*

I. INTRODUCTION: THE CHRONOLOGICAL JOURNEY FROM CULTURE TO SAFETY CULTURE

This paragraph guides us through the evolution of the concept of culture, starting with its general meaning and progressively focusing on safety culture.

A. From Culture to Safety Culture:

Culture, with etymological origins linked to "cult" and "cultivate," encompasses both spiritual and material dimensions. While culture is universally recognized, it varies based on local contexts. Many thinkers have explored culture, with Morocco standing out for its unique cultural dynamics, blending the preservation of identities with aspirations for national integration. The concept of culture has also led to the emergence of the notion of "national culture," defined as a set of shared values, attitudes, and behaviors. It is considered a mental programming that influences organizational cultures and requires intercultural management. Moroccan culture, characterized by diversity and complexity, intertwines various subcultures. Despite its richness, it is often reduced to a mere tourist attraction by some governments, underestimating its true value. This research aims to adopt a pragmatic approach to culture, focusing on its concrete value and relevance in different domains.

In a globalized world, organizational culture and national culture constantly interact, influencing behaviors and attitudes within companies. National culture, described as a "collective mental programming," shapes how organizations operate, while organizational culture can also evolve independently, reflecting the specificities of each organization. These cultural interactions, crucial for business success, present challenges requiring effective intercultural management. It is essential to examine the links between organizational culture, leadership (especially transformational leadership), resilience in crises, and overall organizational performance. Organizational culture thus influences productivity, efficiency, and employee satisfaction, key elements of organizational performance.

Organizational culture, influenced by various traditions and experiences, plays a crucial role in a company's success. It closely intertwines with national culture and is influenced by elements such as history, values, and experiences specific to an organization. A central element in organizational culture is leadership, especially transformational leadership, which emphasizes inspiration and change. When solidly integrated into a robust organizational culture, this type of leadership can catalyze organizational performance. Furthermore, organizational resilience, defined as the ability to anticipate and adapt to disruptions, is closely linked to safety culture within organizations. Organizations valuing both safety and resilience can anticipate, respond, and adapt more effectively to challenges. In summary, organizational culture, transformational leadership, and resilience are interdependent and crucial for the performance and sustainability of an organization.

B. The Concept of "Safety":

The term "safety" originates from Latin, meaning "absence of concerns." It is often confused with anglicisms such as "security" and "safety," the latter being specifically related to reliability in fields such as industry. For this study, "safety" is used in the sense of "safety." Traditionally, safety is seen as an absence of incidents (Safety-I). However, a new approach, Safety-II, suggests focusing on what works well. This study is based on the Safety-II paradigm, advocating for an analysis of successful situations and recognizing the importance of performance variability. Regarding occupational health and safety (OHS), it encompasses accident prevention, hygiene, health, and ergonomics. In Morocco, OHS is considered crucial for performance and aligns with international standards, constituting the framework for this research.

The Chernobyl accident in 1986 introduced this concept, although safety has been a concern since the 18th and 19th centuries in Europe, as illustrated by the works of Emile Zola. Following the Chernobyl accident, the International Nuclear Safety Advisory Group (INSAG) in 1991 identified failures in safety culture as a major cause. This group defined safety culture as the priority given to safety based on its importance. Since then, numerous studies have been conducted on this subject, leading to various interpretations of the concept.

Safety culture, although generally described implicitly (Guldenmund, 2000), encompasses attitudes, behaviors, and procedures associated with safety. It is intrinsic to an organization (Guldenmund, 2018) and is a component of organizational culture with a direct impact on safety performance (Cooper, 2000; Guldenmund, 2000). It plays a crucial role in managing employees' beliefs and behaviors (Beatriz, 2007) and in assessing and preventing risks (Cooper, 2000; Guldenmund, 2000). Chevreau (2008) presents it as an essential tool for safety studies, while Sari Tappura et al (2022) highlight its importance for performance. Finally, Marcel Simard (2009) proposes a classification into four types of safety cultures based on organizational maturity. Cooper identifies three fundamental components of safety culture: psychological, behavioral, and situational aspects. These elements serve as a foundation for assessing safety culture at various organizational levels, relying on criteria such as attitudes and behaviors related to safety.

II. RESEARCH CONTEXT

The context is best understood within an approach that transitions from the general to the specific. Indeed, the general context draws inspiration, in the perspective of this research, from concerns regarding the subject on an international scale, while the specific context endeavors to assess the state of affairs concerning the issue on a national scale (case in point: Morocco).

On an international scale, the major concern revolves around Occupational Safety and Health (OSH), marked by alarming statistics. The International Labour Organization (ILO) has underscored the necessity of safeguarding workers, as millions of work-related deaths occur annually, imposing a significant economic toll. The ILO has established conventions and guidelines to enhance OSH, recognizing its importance for overall business performance.

Furthermore, business performance is also influenced by Corporate Social Responsibility (CSR) and workplace safety, which can reduce costs and enhance financial performance. Workplace accidents impact the quality and reputation of businesses, underscoring the importance of integrating responsible human resource management practices.

At the Moroccan level, statistics concerning workplace accidents are troubling, with a high rate of accidents and fatalities.

- On average, 40,000 workplace accidents are recorded annually (Finances News, Economy, 2020).
- 2,000 fatalities per year(ILO, 2019).

These figures might be underestimated due to the informal sector and underreporting of accidents by certain companies. Moroccan SMEs are pivotal to the economy, yet Morocco faces significant challenges in OSH due to factors such as lack of awareness among leaders, low level of worker education, and precarious conditions.

Despite investments and training efforts to improve OSH, the goal of "Zero Accidents at Work" remains elusive. This issue is particularly pronounced for subcontracting SMEs working with large corporations. Hence, it is crucial to delve deeper into this issue, focusing on the specific context of SMEs in Morocco and subcontracting relationships between small and large enterprises.

A. The Specificity of Moroccan Culture

Moroccan culture, rich and composite, is the result of a confluence of multiple ethnic and historical influences. Berbers, Arabs, Jews, Hassani, Africans, and Europeans have all contributed to this cultural mosaic that renders Morocco unique. Several authors such as Benabdejllil, Benjelloun, Pascon, and Allali have addressed this Moroccan cultural diversity, with some highlighting its heterogeneous nature, while others emphasize its capacity to coalesce despite these diversities.

Unfortunately, the paragraph notes that the cultural richness of Morocco is not always fully recognized or valued by certain governments, especially concerning budgets allocated to culture. Some policymakers often perceive cultural heritage and local traditions primarily as tools for tourist promotion, neglecting their intrinsic value.

However, in the context of this research, the objective is to reconsider culture beyond its simple abstract definition. Rather than solely questioning "What is culture?" the focus is on its role and relevance in various fields such as sociology, business, sustainable development, and safety. It is emphasized that culture has a concrete and direct impact on society and the economy, surpassing its traditional

significance to become an influential factor in many domains.

B. Contributions and Challenges of Subcontracting for Moroccan SMEs:

Moroccan SMEs are vital to the country's economy, massively contributing to employment, investments, and exports. Moroccan law primarily defines SMEs by the nature of their ownership, workforce, and financial performance. However, these businesses face organizational challenges, with various management styles such as familial, authoritarian, and modern models. The leader is at the core of the company's success, with entrepreneurial vision being a crucial strategic tool, as suggested by Hejaji and Fahssis (2018). Initiatives such as Law 53-00 and the National Agency for SME Promotion have been established to support these enterprises. Moreover, large enterprises, by redirecting their strategies, can benefit from the flexibility of SMEs by adopting subcontracting models. However, challenges persist for SMEs, particularly in terms of health and safety at work. In conclusion, collaboration between SMEs and large enterprises in Morocco proves beneficial for both parties, leveraging their complementary strengths.

III. RESEARCH OBJECTIVES

Research on industrial disasters frequently attributes incidents to failures in safety culture (Cooper, 2000; Cox & Cheyne, 2000). Despite its importance for health and safety at work, this culture exhibits limitations, particularly in high-risk enterprises experiencing stagnation in their outcomes.

International studies on SMEs have underscored the relevance of safety culture. Smith et al. (2022) respectively highlighted its role in reducing accidents in Australia and commitment to safety in Ireland. Mendoza et al. (2023) also demonstrated its positive transnational impact.

However, safety culture within Moroccan SMEs remains inadequately explored. Boukhari et al. (2015) and El Ouardi et al. (2019) addressed the subject, but their questionnaire-based survey methods may lack depth. El Bouhaddouti et al. (2020) provided firsthand insights through interviews, while AitAlla et al. (2019) focused on the role of leaders. Benamor et al. (2020) asserted the positive influence of safety culture on performance but also utilized questionnaires.

A more in-depth exploration of Moroccan SMEs is warranted, with diversification of research methods. Our study aims to deepen this culture by analyzing its key elements, considering interactions with political, normative, and motivational contexts. The ambition is to assess the current culture, identify areas for improvement, and integrate a socio-cultural perspective. In conclusion, this research aspires to provide reliable indicators to evaluate safety culture and suggest improvement solutions for Moroccan SMEs.

These objectives align with the strategic perspective aimed at:

- Addressing our main research question formulated as follows: "How can we act on the levers of safety culture to contribute to the improvement of SMEs' performance?"

IV. THEORETICAL FRAMEWORK

Drawing inspiration from Cooper's model (2000), we perceive safety culture as a subset of organizational culture. This culture manifests through three dimensions: psychological factors (safety climate), safety behaviors, and situational aspects (Safety Management System - SMS).

Our understanding of this model is enriched by our practical experiences and academic and industrial references.

- Safety Climate: Based on notable studies including those by Clarke et al. (2013) and Griffin and Neal (2000), along with our experience and best industrial practices, our investigation relies on the following 8 dimensions of safety climate: Values and commitments, Resource management, Operational processes, Work planning, Subjective risk assessment, Supervisory oversight, Issue reporting, and Rule enforcement.
- Safety Management System (SMS): Given the plurality of approaches regarding SMS in literature and standards, we integrated our expertise with that of eminent specialists to distinguish 8 crucial dimensions of an efficient SMS. These dimensions include: leadership and management commitment, goal setting and planning, operational and support processes, performance evaluation, management review, training, and document management. These dimensions, supported by researchers such as Borys, Cambon, Guldenmund, Kogi, and Cooper, form the foundation of our mixed evaluation audit approach.
- Safety Behavior: Our study primarily relies on the perspective of Nini Xia et al. (2020), who argue that safety behavior is the result of a complex system influenced by various antecedents such as individual, professional, familial, and societal factors. We have enriched this approach by integrating insights from Neal and Griffin (2006) on individual differences and the influence of media on safety perception, as emphasized by Hopkins (2006) and Gephart (1993). Antecedents influencing safety behavior are organized into five categories: individual characteristics, interactions within workgroups, job and workplace design, management and organization, and influences from family, industry, and society.

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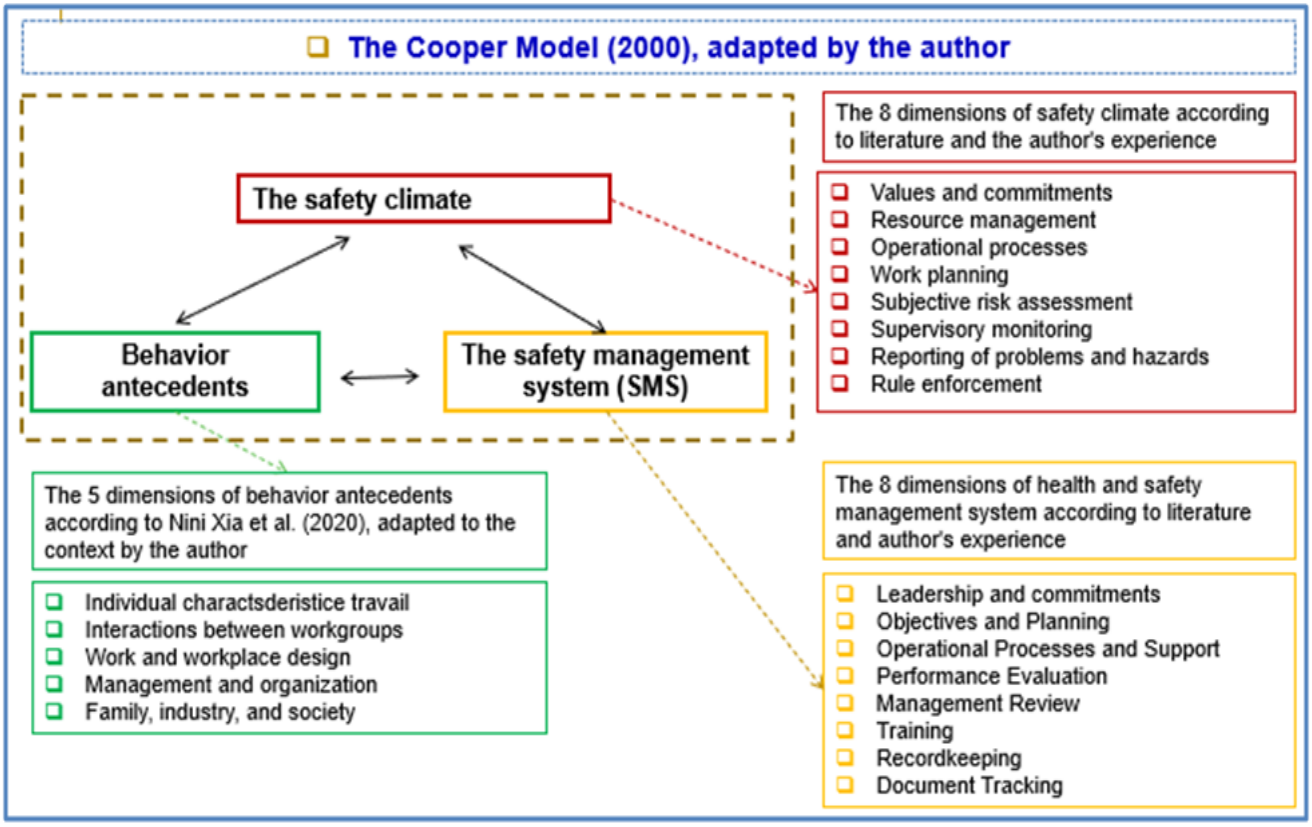


Fig. 1: The Adopted Theoretical Model and Methodologies
Source: Author

V. METHODOLOGY

The evaluation of safety culture entails assessing its three components. This suggests adopting a mixed-method approach, combining qualitative and quantitative methods, followed by triangulation.

Our approach is inspired by Gavard (2012), who challenges the fixed linkage between data collection methods and epistemological paradigms, emphasizing the transparency of the information collection process. Jean Moscarola BSI Lab recommends sequential mixed approaches, where qualitative methods may precede or follow quantitative ones. It is essential to adapt these guidelines according to the research context.

A. Qualitative Approach: Exploratory Study, SMS Evaluation, and Behavior

Inspired by Cooper (2000) and Nini Xia et al. (2020), our qualitative approach aims for an in-depth analysis of individual behaviors within SMEs and refining audit results of the management system. According to Dumez, H. (2011), qualitative research does not seek universal laws but aims to understand actors in their specific contexts. According to De Rose (1992), a proposition or practice can change its meaning depending on the context. The objectivity of this research relies on the use of multiple sources of evidence, such as observations, interviews, or physical artifacts, as suggested by Yin (2012).

B. Quantitative Approach:Safety Climate and Safety Management System (SMS) Evaluation

The evaluation of safety climate mainly relies on questionnaire surveys, a recognized tool for measuring safety-related beliefs, values, and perceptions (Zohar, 1980; Guldenmund, 1998; Cox, 2000; Cooper, 2000; Clarke, 2006). Jean Moscarola (BSI Lab) and Gavard emphasize the relevance of quantitative methods, focused on statistical analysis of collected data. In particular, Gavard (2012) recommends the use of structured questionnaires with interval scales for simplified and precise analysis, employing techniques such as correlation, linear regression, and descriptive analysis.

Furthermore, the SMS audit is based on Cooper's research model (2000). The objective is to evaluate the conformity and performance of the SMS in the enterprise. For this purpose, a specific questionnaire has been designed, integrating both qualitative and quantitative elements. Each SMS dimension is assessed by the auditor using a rating system: Compliant (1), Partially Compliant (0.5), and Non-Compliant (0).

C. Triangulation Our safety culture research model adopts a mixed-methodological approach, combining qualitative and quantitative elements.

This combination, called triangulation, leverages the strengths of each method to provide a more comprehensive analysis (Thietart et al., 2014). It aims to address a problem from two complementary angles, thereby enriching the results. This technique enhances the accuracy of

measurements and descriptions while minimizing the limitations of each approach (Jick, 1979).

D. Field Project

The SME, established in 2002 near Casablanca, operates in metal construction, boiler making, and various equipment manufacturing. It has several departments, employing diverse professionals. A collaboration was established with its management for a research project on safety culture. This initiative addressed current challenges facing Moroccan SMEs and aligned with the management's ambitions. Production and HSE managers were designated to accompany us and oversee this project.

E. Research Design

Our methodological approach, based on the use of multiple sources of information, aims to enhance the relevance and objectivity of our research as much as possible. To this end, we explored the field by conducting open interviews, participant observations, and examining company documents. To assess employee safety climate, we conducted a survey via a bilingual questionnaire (French adapted into Arabic) distributed to all employees, totaling 60 individuals. During our SMS evaluation phase, we conducted an audit with the person designated by management based on a questionnaire allowing for quantitative and qualitative evaluation of SMS compliance. Finally, we conducted semi-structured interviews for behavior evaluation. Following this operationalization, we identified 28 deficiencies through observations, collected 33 client recommendations through document review, and conducted 9 open interviews generating 120 testimonies. From our survey, 37 out of 60 employees responded. The audit produced 40 responses, and Our semi-structured interviews revealed an additional 270 testimonies.

VI. RESULTS

A. Exploratory Study:

➢ *Participant Observations*

Data analysis from our observation journal, based on scientific research, reveals several issues concerning health and safety within the SME. There is a lack of awareness and communication on these subjects, which can increase the risk of accidents. Facilities do not adhere to safety standards, exposing employees to additional risks. Non-compliance with safety rules and a lack of leadership are also observed. Organizational instability and employee diversity pose challenges in terms of human resource management and safety culture. Despite the development of a health and safety management file, procedures and policies are not properly implemented. In summary, it is crucial for the SME to improve these aspects by focusing on training, awareness, communication, and enhancing infrastructure and safety procedures.

➢ *Document Reviews*

Several themes, categories, and sub-themes emerge from the analysis of document reviews concerning client requirements and recommendations to the SME (Annex 3: Document Review). Indeed, the examination of documents related to client requirements and recommendations revealed several gaps to be addressed by the SME to meet expectations. These gaps, corroborated by various research studies (Burke et al., 2011; Cooper, 2000; Zohar, 2000; Choudhry et al., 2007; Reason, 1997; Mearns & Yule, 2009), include contractor and subcontractor management, staff training, health risk control, performance audit and monitoring, communication, change management, and documentation. Clients are particularly concerned about contractor and subcontractor management, staff training and skills, health and safety risk management, and health and safety communication. It is essential for the SME to comply with client requirements, adopt effective management systems, and respond to inspection and audit recommendations.

➢ *Exploratory Interviews*

The content analysis of the various testimonies from our exploratory interviews highlights several crucial aspects. The content analysis of the testimonies from the nine exploratory interviews shed light on several crucial aspects, in line with the cited scientific references, which have helped identify several key elements for understanding and improving safety culture within an SME. These key elements can be grouped into several central themes:

- The importance of an effective health and safety management system to meet client requirements and ensure safety on construction sites.
- Investments in time, money, and resources are necessary to improve performance.
- Adhering to rules to avoid construction site shutdowns is crucial.
- The role of subcontractors, whose training needs improvement.
- Strengthening safety culture, the importance of supervisor presence, and reporting dangerous situations are key points for accident prevention.
- Ensuring a safe working environment relies on the quality of communication and collaboration among all stakeholders, whether subcontractors, clients, employees, or management.
- Finally, health and safety must be a priority for the company, requiring investments, appropriate training, and proactive leadership.

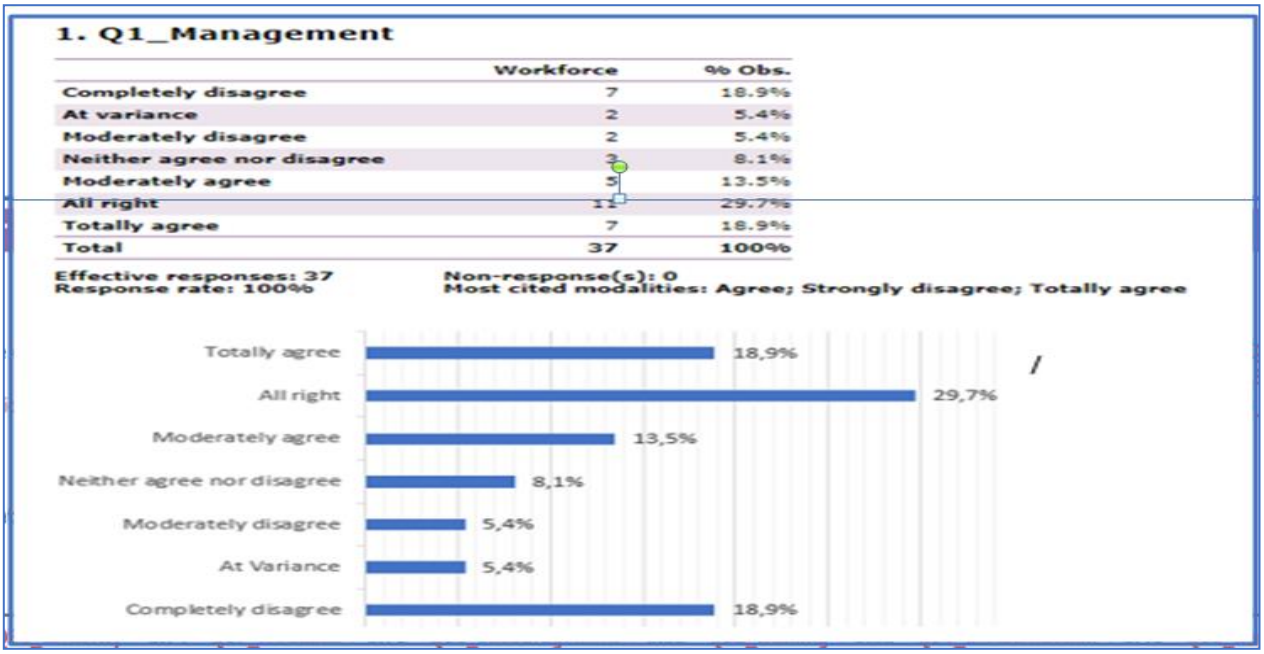
➢ *Conclusion of the Exploratory Phase*

Following exploratory interviews, participant observations, and document review, we have identified the major health and safety challenges facing our SME. These challenges, corroborated by scientific studies, encompass: effective management systems, regulatory compliance, training, safety culture, subcontractor management, inter-party communication, and infrastructure improvement. These challenges provide a solid foundation for the subsequent evaluation of the SME's safety culture, which relies on safety climate assessment, SMS evaluation, and behavioral assessment based on our experience and references such as Guldenmund (2000), Cooper (2000), Neal and Griffin (2006), Zohar (2010), and Clarke (2006).

B. Investigation of Safety Climate

➢ *Descriptive Analysis*

The descriptive analysis of the survey highlights the need to improve certain dimensions to consolidate the culture of health and safety within the company. The importance of strong commitment to safety for employee satisfaction is emphasized, particularly in the "Values and Commitment" dimension. Balanced workload distribution is essential for "Work Planning." Swift problem resolution is crucial in the "Issue and Hazard Reporting" dimension. Likewise, clear procedures for "Operational Processes" are essential. Investment and leading by example are crucial for "Resource Management" and "Rule Application." Perception, training, and employee identification play a major role in "Subjective Risk Assessment," "Supervision of Monitoring," and "Identification." Lastly, encouraging issue reporting is paramount for reinforcing safety.



Graph 1: The descriptive analysis of variables characterizing dimensions of safety climate"Variable Q1 for example"
Source: Sphinx déclic

➢ *Linear Regression Analysis:*

The Importance of Promoting a Positive Safety Climate in the Workplace Regression analysis has shed light on significant links between various safety climate variables. Specifically, stringent adherence to safety rules promotes a balanced workload distribution. Moreover, recruiting top-tier profiles is associated with better safety training for employees. Employee tenure within the company is influenced by safety encouragement, with risk perception impacting satisfaction and retention. Additionally, tenure in a position enriches safety experience, reinforcing a safe environment. It is important to note that regression analysis identifies correlations, not necessarily causations, and other unanalyzed factors could influence these relationships. Nevertheless, these findings underscore the importance of a robust safety climate in the company.

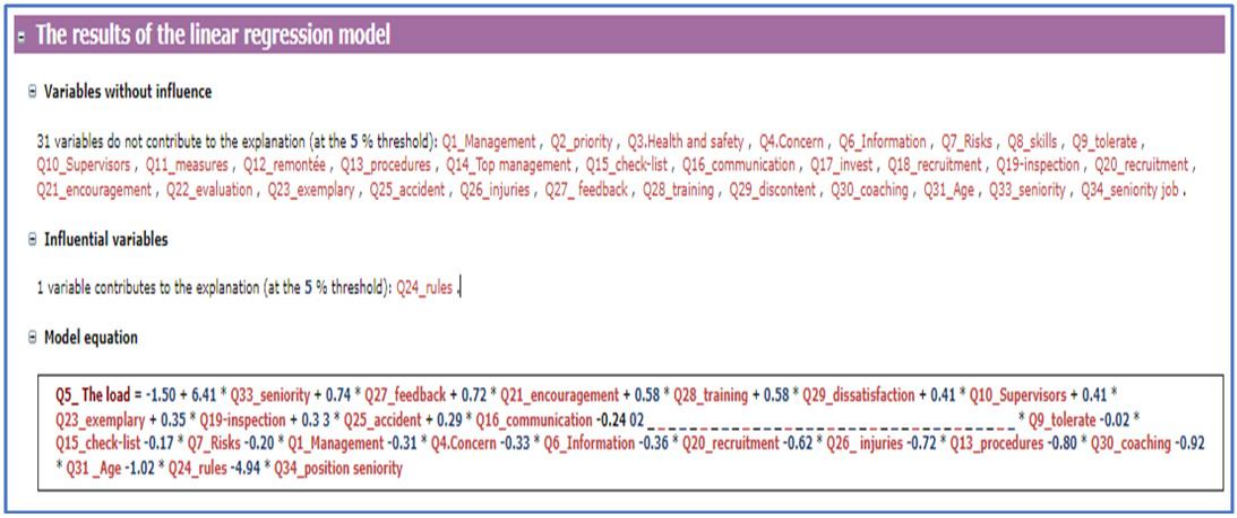


Fig. 2: Linear Regression analysis "Variables influencing variable Q5 __ Workload for example"
Source: Sphinx déclic

➢ *Conclusion of the Safety Climate Survey*

The descriptive analysis of the safety climate survey results has revealed several key factors corroborated by scientific evidence from authors such as Clarke, Probst and Brubaker, Zohar and Luria, Neal and Griffin, Mearns et al., Veltri et al., and Choudhry and Fang. These factors include work planning, issue and hazard reporting, rule application, identification, effective communication, investment in health and safety, adequate training, corporate engagement, employee accountability, managerial and supervisory exemplarity, as well as employees' positive perception of workplace safety. The linear regression analysis has underscored the importance of the interaction between these variables in enhancing workplace safety.

C. SGS Audit

The comprehensive evaluation of the company's Safety Management System (SGS), based on quantitative data, audit feedback, and scientific research, highlights significant structural and operational shortcomings. Figure 2 below, illustrating the gaps between achieved scores for each dimension and targeted compliance scores, emphasizes these deficiencies. Insufficient leadership commitment, marked by the lack of specific annual goals and safety-focused meetings, affects communication and strategic alignment. This results in a disconnect in operational implementation compared to the company's ambitions. Areas such as safety policy, operational processes, performance evaluation, managerial review, training, and document management require major improvements. Emergency preparedness is inadequate, with the company lacking both a comprehensive emergency plan and adequate resources to manage crises. Fragmented document management, coupled with a lack of post-incident reporting, hinders the company's ability to learn from its experiences. Furthermore, non-compliance with legal standards exposes the organization to legal and regulatory risks.

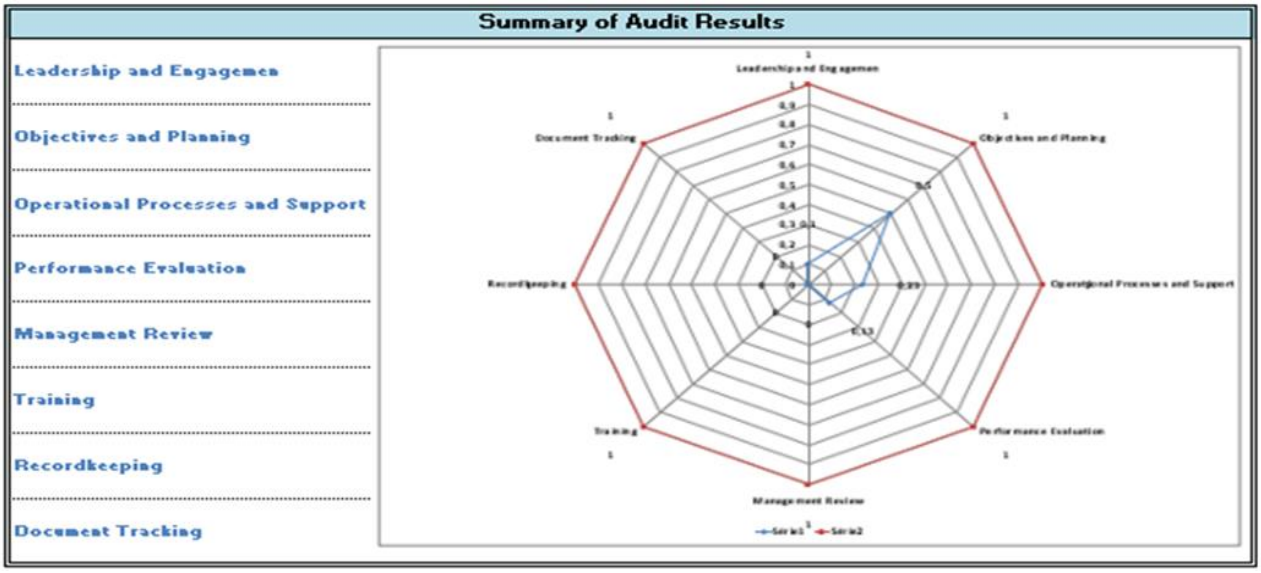


Fig. 3: Audit of the Health and Safety Management System of SMEs

D. Evaluation of Behaviors

Worker safety behaviors within SMEs are influenced by a multitude of factors, as demonstrated by our research based on semi-structured interviews and review of scientific literature. Demographic characteristics such as age, gender, level of education, and experience significantly impact safety. Specifically, young inexperienced workers and women are more vulnerable, exacerbated by physical factors such as fatigue. Additionally, psychological and emotional states, including elements such as religious beliefs and stress levels, modulate this behavior. The importance of skills, knowledge, experience, and interactions within workgroups is also paramount to ensuring a secure environment. Special attention must be paid to the physical work environment, its ergonomics, and the significance of employee motivation, recognition, and security.

Organizational policies, training, and management commitment are essential pillars for optimal safety. Effective training must be reinforced by adequate resources, such as Personal Protective Equipment (PPE). Balancing production and safety is crucial, requiring committed leadership. Creating a positive safety climate is paramount, influenced notably by the leadership of managers and clients' safety requirements. Regarding subcontractors, their health and safety competencies are central, necessitating appropriate training and supervision.

Family and socio-cultural pressure can influence workers' behavior. Companies must recognize and address these factors while promoting a climate of safety and social responsibility. Leadership, especially of entrepreneurs, is central to this process, requiring strong safety commitment.

Finally, the relationship between workers, whether unionized or not, and the role of unions is important for safety. A collectivist culture, government standards, media coverage of workplace accidents, and support from professional organizations are essential for a robust safety culture. However, economic and socio-economic constraints can present challenges, particularly for SMEs.

E. Triangulation of Methodological Approaches

Combining the results of these three key concepts of safety culture - safety climate, employee behaviors, and the Safety Management System (SMS) - reveals the importance of an integrated approach to ensure a safe working environment. The company's commitment to health and safety, along with management leadership, are crucial factors in creating a positive safety culture. It is essential that company safety policies are clearly defined, communicated to all employees, and accompanied by well-defined roles and responsibilities for each employee. Specific annual objectives should also be established to continually improve employee safety and health.

Effective communication and safety awareness are also crucial for creating a positive safety climate. They enable employees to report hazards and risks without fear of reprisal, thus fostering active worker participation in safety programs. Adequate training and mentoring for new employees are essential, as is the continuous maintenance and updating of personnel skills to ensure increased workplace safety. Clearly established procedures and processes are necessary to prevent health and safety risks. These measures should include rigorous subcontractor management, systematic risk identification and management, and mechanisms for incident and accident analysis. Change management, effective supervision, employee accountability, and continual improvement of working conditions are other important factors to consider.

In summary, the triangulation of these three concepts demonstrates that effective organization and supervision, employee accountability, and the implementation of rigorous safety procedures are key factors in ensuring workplace safety. Studies have shown that when integrated into employers' safety policies and practices, these factors are effective in reducing workplace accidents and promoting a positive safety culture. This positive safety culture, in turn, often translates into better financial performance for companies.

VII. DISCUSSION OF RESULTS

A. Evaluation of Safety Culture in SMEs: A Critical Examination of Current Practices and Improvement Paths.

Following our exploratory study on SMEs, it is evident that health and safety are major concerns within these organizations. The methods employed, including observations, document reviews, and interviews, have identified notable deficits. Among these, we note a lack of awareness, non-compliant infrastructures, risky behaviors, and communication gaps regarding safety. Despite having a health and safety management plan, its implementation proves insufficient. Furthermore, a documentary review reveals the need for better compliance with client requirements concerning training, contractor management, and communication. Interviews reinforce the importance of training, compliance with procedures, and continuous improvement. In summary, this SME faces significant health and safety challenges, including lack of awareness, non-compliance with safety standards, a deficit in safety culture, organizational instability, and inadequate implementation of health and safety procedures. To address these issues, it is essential to enhance awareness, communication, training, improve infrastructures, actively involve management, effectively manage contractors, ensure compliance with procedures, incident management, risk assessment, and continually improve health and safety performance. These conclusions align with the works of renowned researchers such as Guldenmund, Cooper, Neal and Griffin, Zohar, and Clarke, who have also emphasized the importance of these key elements. This initial exploratory approach provides a solid framework for evaluating safety culture within SMEs.

B. Exploration of Safety Climate Mechanisms: From Statistical Analyses to Key Factors

In-depth analysis of safety climate within the SME reveals significant deficits across several key dimensions. Descriptive analysis of safety climate characteristics and trends provides an overview of respondents and highlights response trends to various survey questions. These findings indicate varied results for the nine dimensions studied, emphasizing the need to improve safety climate within the company.

Key factors influencing these deficits include employee empowerment, actions of managers and supervisors to prevent hazardous behaviors, active support for health and safety training, rule compliance, deterrent measures against hazardous behaviors, employee awareness of risks, recruitment of the best profiles, adequate training, encouragement of safe behaviors by managers and supervisors, employees' perception of injury risk, and employee age. Linear regression analysis highlights complex interactions among these safety climate dimensions. For instance, supervisor engagement in safety training influences employee concern for their health and safety. Similarly, enforcement of safety rules correlates with fair workload management. These results underscore the need for a holistic approach to strengthen safety culture within the organization.

Ultimately, this survey identifies key factors influencing safety climate, consistent with previous research. These factors encompass planning, risk reporting, rule enforcement, communication, training, organizational commitment, employee autonomy, and safety perception. To minimize accident risks, it is crucial to adopt a comprehensive strategy integrating communication, training, and a balance between safety and productivity.

C. From Evaluation to Optimization: Essential Factors of Safety Management Systems (SMS) in SMEs

Our evaluation of the Safety Management System (SMS) within the SME highlights several essential factors. Based on our experience and that of health and safety experts, this SMS relies on leadership commitment, goal setting, planning, operational and support processes, performance evaluation, management review, training, as well as document management and monitoring.

However, our detailed audit of the SMS has revealed significant structural and operational dysfunctions. Leadership lacks commitment in the absence of clearly defined annual goals, impacting communication and strategic alignment. Operational processes, from training to risk management, exhibit numerous gaps, as do emergency preparedness measures. Safety-related document management is fragmented, and the company is not fully compliant with legal requirements.

The audit also highlights key factors influencing the SME's SMS, including leadership and commitment, communication, training, risk assessment, compliance management, emergency preparedness, continuous improvement, monitoring and documentation, resource management, and fairness and accountability.

In conclusion, the audit underscores the importance of a holistic approach considering safety climate, behavior, performance, sustainability, corporate social responsibility (CSR), and stakeholder management. Recommendations to improve the SMS include fostering a positive safety climate, aligning safety objectives with business goals, enhancing operational processes, document management system, training, and document monitoring. Furthermore, it is emphasized that each company should customize its approach based on its specific needs and context.

D. Exploring the Complexity of Determinants of Safety Behavior in SMEs: From Individual to Society.

Our research draws on Nini Xia et al.'s (2020) model, which views safety behavior as a reflection of a complex system influenced by various aspects of the "Self-Work - Home - Industry/Society" systems. It underscores the importance of better understanding risks and safety procedures to reduce incidents, consistent with Clarke's (2006) study. Various factors influencing safety behaviors have been identified, including individual characteristics, physical conditions, group interactions, work and workplace design, project management, as well as family, industry, and social factors. However, our research acknowledges the need to further explore the impact of individual differences on safety behavior, as well as the importance of behavioral antecedents. The conclusions are based on a single study, limiting their generalizability to other contexts or industries, but we believe our context is similar to Nini Xia et al.'s (2020) study.

Our semi-structured interviews and review of scientific literature highlight dysfunctions and factors influencing workers' safety behaviors within the SME. Demographic characteristics, such as age, gender, education level, and experience, have a significant impact. Psychological and emotional factors, such as stress and religious beliefs, also play a role. Skills, knowledge, experience, and interactions within workgroups are essential for ensuring a safe environment. The physical work environment, ergonomics, motivation, recognition, and employee security are also key factors.

At the organizational level, leadership must be fully committed, and adequate training must be reinforced by appropriate resources, including Personal Protective Equipment (PPE). Balancing production and safety requires strong leadership. Creating a positive safety climate is essential, influenced by supervisors' leadership and client requirements. Managing subcontractors requires adequate training and supervision. Family and socio-cultural pressure can also influence workers' behavior, which must be recognized and addressed while promoting a safety climate and social responsibility.

Finally, the analysis of interviews and scientific studies highlights key factors characterizing safety behaviors of SME workers, including corporate vision, leadership commitment, policies and procedures, standards, communication, training, working conditions, supervision, incident analysis, reporting systems, anomaly management, employee participation, and consequence management. A holistic management approach integrating these elements is necessary to optimize safety in the workplace. The observed similarities among the studied SMEs demonstrate that an integrated approach, focusing on training, safety culture, and broad collaboration, is essential while considering the nuances specific to each context.

E. Triangulation of methodological approaches to the three concepts: safety climate, SMS, and behaviors

Triangulating the concepts of safety climate, Safety Management System (SMS), and behavior helps understand the importance of government regulations and industry standards for safety. Research indicates that worker communication and participation are essential to promote a strong safety culture and that supervision and monitoring must be improved. Establishing an effective SMS, training employees, and considering workers' behaviors are also crucial. Research identifies twelve key factors for a proactive safety culture, such as company engagement, leadership, safety policies and procedures, communication, training, performance evaluation, incident and accident analysis.

VIII. CONCLUSION, LIMITATIONS AND PERSPECTIVES

Our research stems directly from our professional experience in the cement industry, where we encountered major challenges regarding health and safety within subcontracting SMEs in Morocco. Preventable accidents, stemming from a glaring lack of safety culture, marked our journey, highlighting systemic shortcomings such as lack of management commitment, inadequate understanding of risks and safety procedures, and precarious working conditions.

These findings served as the catalyst for our current research, which explores the link between safety culture and SME performance in Morocco. In this context, the prevalent neglect of occupational health and safety, exacerbated by lack of awareness, education, and challenging working conditions, directly impacts business performance. Project delays, accident-related costs, and reputation issues are among the detrimental consequences. Our research is also

motivated by the impact of these issues on large international companies, clients of Moroccan SMEs, which attach great importance to corporate social responsibility (CSR) and sustainability. Thus, a strong safety culture within SMEs could not only reduce accident risks but also enhance productivity and bolster brand image.

Scientific literature confirms the importance of safety culture; however, there is a lack of research specifically focused on Moroccan SMEs, reinforcing the relevance of our thesis. Our research objective is to evaluate and promote safety culture in Moroccan SMEs to enhance their overall performance, drawing on our industrial experience and preliminary investigations.

In the theoretical framework of our research, we adapted Cooper's (2000) model, combining experience, best practices, expertise, and contemporary literature to analyze the interactions of specific elements of safety culture within Moroccan SMEs. Our analysis focused on psychological factors, safety behaviors, and situational elements, with an emphasis on the Safety Management System (SMS). By revisiting this system and integrating elements such as leadership, we brought about significant innovations. Evaluation of safety climate identified essential key factors, while linear regression analysis highlighted the importance of interaction between these variables to improve workplace safety. Assessment of the SMS identified key factors such as leadership, communication, training, risk assessment, compliance management, emergency preparedness, continuous improvement, monitoring and documentation, resource management, fairness, and accountability. Lastly, evaluation of safety behaviors revealed the influence of individual characteristics, safety culture, team dynamics, and media on safety behavior.

The triangulation of these three concepts underscores the importance of government regulations and industry standards to ensure workplace safety. Interactions between safety climate, SMS, and safety behaviors are crucial for promoting a robust safety culture and enhancing overall business performance. The SMS plays a central role as a structuring framework for these interactions. Ultimately, our research aims to contribute to a proactive safety culture within Moroccan SMEs, fostering sustainability, productivity, and corporate social responsibility.

A. Limitations of Our Research

The research presented in this study has enabled the development of an in-depth research model based on a single SME. However, it is essential to consider several limitations. Firstly, the study sample, although representative of the SME population, remains limited in terms of size and diversity. Consequently, the results obtained may not be generalizable to other SMEs or organizational contexts. Moreover, data collection was primarily based on qualitative methods such as semi-structured interviews and audits of the security management system, along with quantitative data from a security climate survey. These methods, while useful, are subject to potential biases related to the subjectivity of responses and issues of memory or perception. Another limitation lies in the temporal scope of the study, as the data were collected at a specific point in time. Consequently, the developed model may not reflect subsequent developments or changes in the SME or its environment. It is crucial to consider these specific contexts when applying and interpreting the model in other situations.

B. Outlook and Perspectives

The research conducted highlights the importance of scientific consulting for businesses, particularly concerning health and safety at work. It suggests two main avenues for future research perspectives. The first axis aims to revise existing learning models, notably the PDCA model, by adopting a socio-economic perspective to better address the specific needs of subcontracting SMEs. It recommends the use of interactive methods such as qualimetric intervention research to highlight the link between safety and performance and encourage a holistic and integrated approach. The second axis focuses on integrating technological advancements, especially digitization and artificial intelligence, to strengthen the safety culture and enhance performance. It proposes exploring how these technologies can be harmoniously integrated into safety management systems while examining their impact on workers' safety behavior. It also emphasizes the importance of considering ethical issues related to data usage and equitable accessibility of technological tools.

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