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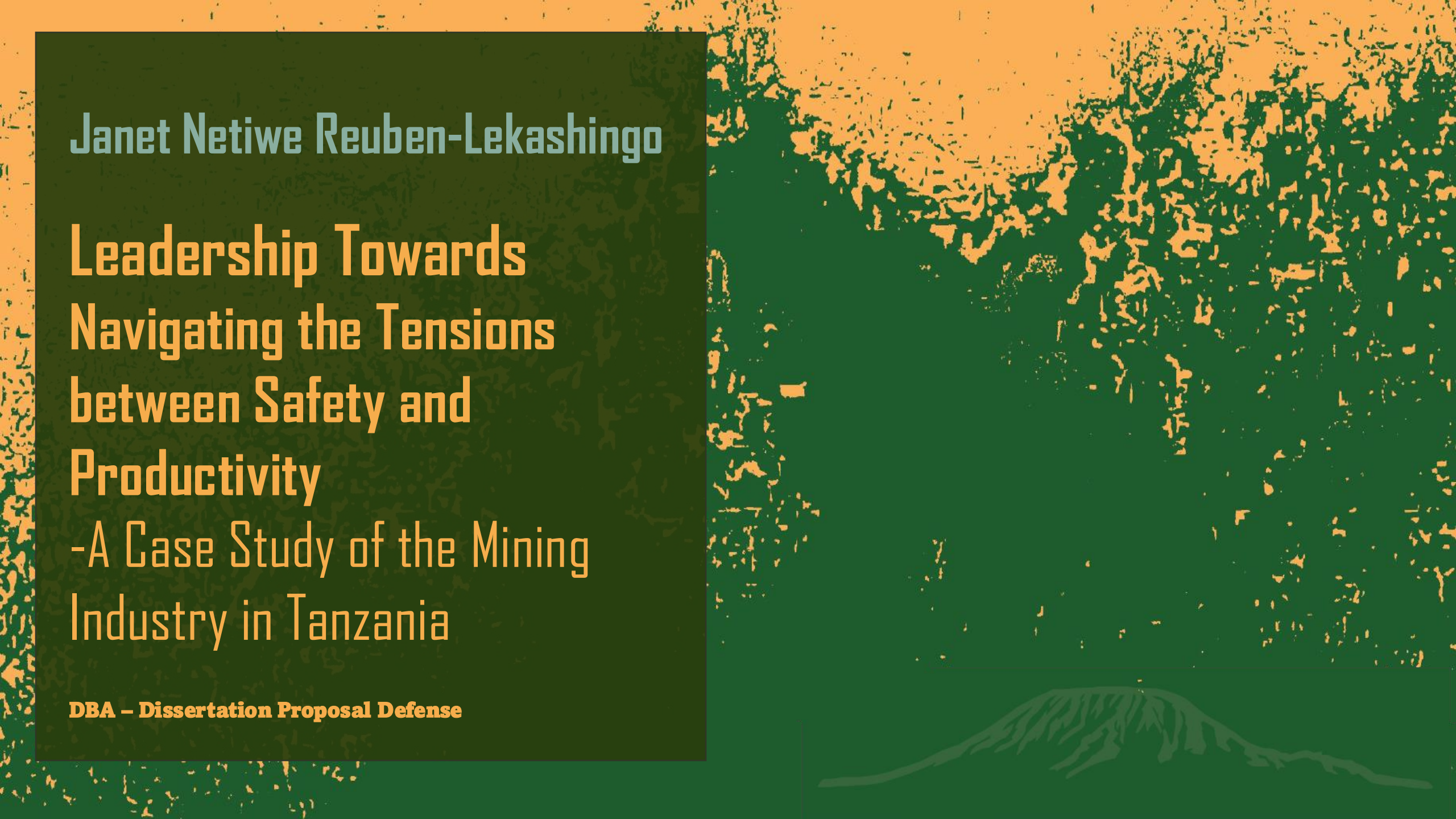
Leadership Towards Navigating the Tensions between Safety and Productivity

-A Case Study of the Mining Industry in Tanzania

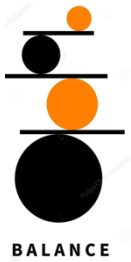
DBA – Dissertation Proposal Defense

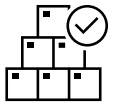


Introduction

In our increasingly complex and competitive world, organizations with **high-risk work environments** face the challenge of **balancing safety with productivity goals.**

Compliance with Safety





Achievement of Productivity Goals

My research seeks to investigate how **leadership** can effectively navigate these tensions, ensuring both **safety** and **productivity** without compromising one for the other.

Leadership

Compliance with Safety Protocols

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Achievement of Productivity Goals

Problem Statement

1. High risk work environments are inherently **hazardous settings where safety protocols are paramount**, yet productivity targets must also be met to ensure operational efficiency and profitability.

2. Finding **the right balance between safety and productivity is crucial** to safeguarding the well-being of workers while sustaining the viability of the business.

Problem Statement
that drives this research

How can leadership effectively navigate the tensions between safety and productivity in high risk work environments to simultaneously achieve safety and productivity goals?

Key Findings of Literature Review

Four Themes

1

Safety (Workplace Safety)

Neal and Griffin (2006) distinguish safety compliance from safety participation, emphasizing the necessity of both adherence to safety standards and active employee involvement to foster a holistic approach to workplace safety.

Beus et. al.,(2016) safety-related work behaviors are more accurate workplace safety indicators because they can be used to infer both the absence and presence of safety.

2

Productivity

Productivity gains are often at the expense of workers' health and safety (Lamm and Perry, 2006).

Research by Hofmann et al. (1995) underscores the importance of high-reliability operational practices in ensuring safety performance in hazardous industries.

A study by Bevilacqua et al., (2012) indicates that while JIT can enhance operational performance, it can also lead to a "trade-off" where safety is compromised to maintain production flow.

Four Themes

3 Managing Organizational Tensions

Prioritizing productivity goals might result in shortcuts or increased risk-taking behaviors that compromise safety standards (Zohar and Luria, 2004).

Conversely, overemphasizing safety measures could lead to decreased productivity due to increased bureaucracy or time-consuming safety protocols (Barling et al., 2002).

4 Role of Leadership (Leaders) in Trade-off navigation

Effective leadership is integral to navigating tension trade-offs and fostering a culture that prioritizes both safety and productivity (Avolio et al., 2009).

When leaders prioritize productivity over safety, employees may perceive safety as a secondary concern, leading to increased risk-taking behaviors and decreased compliance with safety protocols (Griffin and Neal, 2000).

Leadership Credibility

Shannon et al. (1997) emphasize that credible leadership in trade-offs is reflected in a leader's behavior by prioritizing safety, responding to subordinates' safe or unsafe actions with appropriate feedback, and actively addressing safety issues.

When leaders are perceived as credible, their directives and recommendations carry greater weight among followers (Mishra, 1996).

Literature Summary

① Managing Workplace Safety

Author	Title	Key Findings	Method	Themes
THEME No.1: Safety				
Hofmann and Morgeson, 1999	Safety-related behavior as a social exchange: The role of perceived organizational support and leader–member exchange	**Higher levels** of perceived **organizational suppor**t are associated with **more positive safety-related behaviors** among employees. **Positive relationships** between leaders and members, as indicated by **leader-member exchange**, contribute to safer work practices and behaviors among employees	Quantitative	Perceived Organizational Support (POS) and Safety Behaviors and Leader-Member Exchange (LMX) and Safety Practices.
Hofmann et. al., 2017	100 years of occupational safety research: From basic protections and work analysis to a multilevel view of workplace safety and risk.	The study outlines the **historical development of occupational safety research** over the past century, highlighting its progression from basic protections and work analysis to a more comprehensive, multilevel perspective of workplace safety and risk. The **significance of adopting a multilevel perspective** in understanding workplace safety, emphasizing the interconnectedness of factors at individual, group, organizational, and societal levels, and their collective impact on safety outcomes	Qualitative	Historical Evolution of Occupational Safety Research and Multilevel Perspective on Workplace Safety
Zohar & Luria, 2005	A multilevel model of safety climate: cross-level relationships between organization and group-level climates.	The study found significant **cross-level relationships** between organization-level safety climate and group-level safety climate, indicating that perceptions of safety climate at one level influence those at the other level. **Positive safety climate** at the **organizational level** tends to **lead to more positive perceptions of safety climat**e within workgroups.	Quantitative	Cross-Level Relationships in Safety Climate and Impact of Organization-Level Climate on Group-Level Perceptions
Fernández-Muñiz et. al., 2017	The role of safety leadership and working conditions in safety performance in process industries.	The significant role of **safety leadership in influencing safety performance** within process industries. Effective safety leadership practices, such as setting clear safety goals and promoting a safety culture, are associated with improved safety outcomes. It underscores the relationship between **working conditions and safety performance**. Factors such as job demands and organizational support for safety influence employees' ability to work safely, highlighting the importance of addressing working conditions to enhance safety performance in process industries.	Quantitative	Safety Leadership and Organizational Culture and Working Conditions and Safety Performance

Literature Summary

② Managing Productivity

Author	Title	Key Findings	Method	Themes
THEME No.2: Productivity				
Fullerton et al., 2014	Lean manufacturing and firm performance: The incremental contribution of lean management accounting practices.	The study finds that **lean manufacturing significantly improves firm performance**, and this impact is further enhanced when lean management accounting practices are integrated, creating a synergistic effect. Lean management accounting practices are crucial for **sustaining the performance gains** from lean manufacturing, as they provide essential information for **continuous improvement and decision-making**.	Quantitative	Synergistic Impact on Firm Performance Support for Continuous Improvement
Humphrey, 2020	Mining productivity and the fourth industrial revolution	**Technological Advancements Driving Productivity**: The study emphasizes how the adoption of **technologies associated with the fourth industrial revolution**, such as automation and data analytics, is enhancing mining productivity by streamlining operations, improving efficiency, and reducing downtime. **Challenges of Technological Integration**: The study discusses the challenges posed by integrating these **advanced technologies into mining operations,** including concerns about **workforce displacement, the need for upskilling or reskilling workers**, and the investment required for infrastructure and technology implementation.	Qualitative	Impact of Fourth Industrial Revolution on Mining and Challenges and Opportunities in Technological Integration
Lamm et. al., 2006	Is there a link between workplace health and safety and firm performance and productivity?	Positive Association between Workplace Health and Safety and Firm Performance/Productivity: The study suggests that companies with **effective workplace health and safety programs** tend to experience **better overall performance and productivity outcomes.** **Financial Implications of Workplace Health and Safety**: highlighting the financial benefits associated with investing in workplace health and safety initiatives. This includes cost savings from reduced workplace accidents and injuries, lower insurance premiums, and decreased healthcare costs.	Mixed-Methods (Qualitative and Quantitative)	Impact of Workplace Health and Safety Initiatives and Linkages to Firm Performance and Productivity
Pande et al., 2000	The Six Sigma Way: How GE, Motorola, and Other Top companies are Honing Their performance.	**Implementation and Cultural Shift:** The book provides a detailed roadmap for implementing Six Sigma in organizations, emphasizing the need for a cultural shift towards continuous improvement and data-driven decision-making. **Impact and Sustainability:** Through case studies, the authors illustrate the significant impact of Six Sigma on companies like GE and Motorola, highlighting the importance of long-term commitment and integration into strategic planning for sustained success.	Qualitative	Process Optimization and Data-Driven Improvement Cultural Transformation and Leadership Commitment
Powell, 1995	Total quality management as competitive advantage: a review and empirical study.	**Strategic Implementation**: TQM can provide a competitive advantage if implemented effectively and aligned with the firm's strategy. Successful TQM requires top management commitment and integration into organizational culture. **Long-Term Impact:** The benefits of TQM, such as improved quality and productivity, are more likely to translate into a competitive advantage over the long term rather than immediately.	Quantitative	Strategic Integration and Implementation Long-Term Performance Impact
Pande et al., 2000	The Six Sigma Way: How GE, Motorola, and Other Top companies are Honing Their performance.	**Implementation and Cultural Shift:** The book provides a detailed roadmap for implementing Six Sigma in organizations, emphasizing the need for a cultural shift towards continuous improvement and data-driven decision-making. **Impact and Sustainability:** Through case studies, the authors illustrate the significant impact of Six Sigma on companies like GE and Motorola, highlighting the importance of long-term commitment and integration into strategic planning for sustained success.	Qualitative	Process Optimization and Data-Driven Improvement Cultural Transformation and Leadership Commitment

Literature Summary

3 Managing Organizational Tensions

Author	Title	Key Findings	Method	Themes
THEME No.3: Managing Organizational Tensions				
Gavetti et al. (2012).	The behavioral theory of the firm: Assessment and prospects.	**The behavioral theory of the firm**, emphasizing bounded rationality, satisficing, organizational routines, and problemistic search, remains a robust framework for understanding organizational behavior, integrating well with other theories and influencing research on decision-making, organizational change, and adaptation. **Future research directions** include examining the interplay between cognitive and social processes, the impact of digital technologies, the role of emotions in decision-making, and the dynamics of aspiration levels and performance feedback, demonstrating the theory's ongoing relevance and adaptability.	Qualitative	Core Concepts and Contributions of the Behavioral Theory of the Firm Integration, Critiques, and Future Directions
Hu et. al., 2020	You can have your cake and eat it too: Embracing paradox of safety as source of progress in safety science.	Paradoxical Thinking for Progress: Embracing **paradoxical thinking** in safety management can lead to progress by **enabling organizations to navigate complex tensions and contradictions** inherent in safety practices, fostering innovation and resilience.	Qualitative	Paradox in Safety Science and Progress through Paradox Embrace
Jones, B. D. (1999).	Bounded rationality. Annual review of political science,	**Cognitive Limitations and Decision-Making:** Jones' study highlights that individuals and organizations rely on simplified models and heuristics to make decisions due to limited cognitive resources, which can lead to systematic biases in decision-making. **Institutional Adaptations and Policy Implications:** The study explores how institutions and organizations adapt to human cognitive limitations, emphasizing the impact of bounded rationality on policy-making and the importance of designing institutions that can better accommodate these limitations.	Qualitative	Cognitive Limitations and Decision-Making Institutional Adaptation and Policy-Making Theoretical Evolution and Future Research
Loock & Hinnen (2015)	Heuristics in organizations: A review and a research agenda. Journal of Business Research,	**Utility and Types of Heuristics:** The study finds that heuristics are widely used in organizations to simplify complex decision-making processes, identifying various types such as rule-of-thumb strategies, pattern recognition, and experience-based shortcuts, each serving different functions depending on the context. **Effectiveness, Limitations, and Contextual Factors**: While heuristics can enable efficient decisions, they also have limitations and can lead to biases. The study emphasizes that the effectiveness of heuristics is influenced by contextual factors such as organizational culture, environment, and task complexity, and proposes a research agenda to further explore these	Qualitative	Ubiquitous Use and Benefits of Heuristics Variety and Functionality of Heuristics Effectiveness, Contextual Influence, and Research Agenda
Pagell et. al., 2015	Are safety and operational effectiveness contradictory requirements: The roles of routines and relational coordination.	**Routines and Safety**: The study suggests that safety and operational effectiveness are not necessarily contradictory requirements. Instead, effective routines play a crucial role in integrating safety practices into operational processes. **Relational Coordination**: Strong coordination among individuals and teams fosters communication, cooperation, and shared understanding, leading to improved safety outcomes without compromising operational effectiveness.	Qualitative	Integration of Safety and Operations and Management Implications and Organizational Performance
Zohar, 2010	Thirty years of safety climate research: Reflections and future directions.	**Impact of Leadership on Safety Climate**: Zohar emphasizes the crucial role of leadership in shaping a positive safety climate, which is directly linked to improved safety behaviors and reduced accident rates within organizations. **Future Research Directions**: The study calls for further exploration of the multilevel nature of safety climate, the influence of contextual factors, and the need for longitudinal studies to better understand safety climate dynamics over time.	Qualitative	Evolution of Safety Climate Research Leadership's Influence on Safety Climate Future Research Directions

Literature Summary

③ Tension Management Approaches

Author	Title	Key Findings	Method	Themes
Sub-Section: Approaches for Tension Management				
Hargrave et al. (2016).	Integrating dialectical and paradox perspectives on managing contradictions in organizations.	**Dynamic Management of Contradictions:** Hargrave and Van de Ven (2016) propose a dynamic and process-oriented approach to managing contradictions in organizations by integrating dialectical and paradox perspectives. They highlight that contradictions evolve over time and identify several mechanisms—such as spatial and temporal separation, role specialization, synthesis, and transcendence—that organizations can use to navigate and manage these conflicting demands effectively. **Practical and Theoretical Contributions:** The study provides significant practical implications for organizational leaders, offering strategies to enhance resilience and adaptability by effectively managing contradictions. It also contributes to theoretical knowledge by merging dialectical and paradox perspectives, offering a richer understanding of organizational contradictions. The authors support their insights with illustrative case studies, demonstrating the successful application of their proposed mechanisms in real-world settings.	Qualitative	Integration of Dialectical and Paradox Perspectives Dynamic Nature of Contradictions
Grote, 2012	Safety management in different high-risk domains–all the same?	**Common Safety Management Principles**: Despite differences in high-risk domains, core safety management principles such as a strong safety culture, effective communication, and robust risk management are universally applicable. **Need for Context-Specific Adaptations**: While foundational principles are similar, safety management practices must be adapted to address the unique challenges and characteristics of each high-risk domain.	Qualitative	Universal Safety Management Principles Context-Specific Adaptations Cross-Domain Learning and Integration
Hollnagel, 2018	Safety-I and safety-II: the past and future of safety management	**Shift from Safety-I to Safety-II**: Hollnagel advocates moving from a reactive safety management approach (Safety-I) focused on preventing failures to a proactive approach (Safety-II) aimed at enhancing system adaptability and resilience. **Integration of Resilience Engineering**: The book emphasizes incorporating resilience engineering principles into safety management, promoting a balance between preventing errors and ensuring systems can effectively handle unexpected conditions and disruptions.	Qualitative	Distinction Between Safety-I and Safety-II Paradigm Shift in Safety Management Integration of Resilience Engineering
Parasuraman et al., 2000	A model for types and levels of human interaction with automation.	**Types and Levels of Automation**: The study introduces a model categorizing human interaction with automation into types such as monitoring, control, and decision-making, and describes various levels of automation from full manual control to full automation, detailing their impact on human roles. **Impact on Human Performance and Design Guidelines:** It highlights how different levels of automation affect human performance, emphasizing the need to design automation systems that support human interaction and decision-making while maintaining operator skills and situational awareness.	Qualitative	Types of Human-Automation Interaction Levels of Automation Automation impact on Performance and Design
Pagell et al., 2014	Is safe production an oxymoron?	**Safety and Productivity Integration**: The study demonstrates that safety and productivity can be integrated successfully, with organizations achieving high performance in both areas by managing them as complementary goals rather than conflicting ones. **Role of Culture and Leadership:** Effective organizational culture and leadership play a crucial role in aligning safety and productivity, enabling companies to improve safety outcomes without compromising productivity.	Quantitative	Safety and Productivity Paradox Safety and Productivity Integration Impact of Organizational Culture and Leadership Empirical Evidence of Integration
Reason, 2016	Managing the risks of organizational accidents.	**Human Error and Latent Conditions**: Reason highlights that human error, while a significant factor in accidents, is often a symptom of deeper latent conditions within organizational systems. Addressing both active failures and underlying systemic issues is crucial for effective risk management. **Swiss Cheese Model and Safety Culture**: The book elaborates on the Swiss Cheese Model, emphasizing the need to address gaps in multiple layers of defense to prevent accidents. It also underscores the importance of a strong safety culture that supports reporting, learning, and proactive risk	Qualitative	Human Error and Latent Conditions Swiss Cheese Model Safety Culture and Proactive Risk Management
Shevchenko et. al., 2018	Joint management systems for operations and safety: A routine-based perspective.	Joint management systems (JMS) integrating operations and safety routines lead to **improved safety performance** by embedding safety considerations into daily operational practices. **A holistic approach to management system**s, combining operational and safety aspects, fosters organizational learning and dynamic interaction, facilitating sustainable safety performance improvement.	Qualitative	Integration of Operations and Safety Routines and Organizational Learning and Dynamic Interaction and Sustainable Safety Performance
Smith & Lewis, (2011).	Toward a theory of paradox: A dynamic equilibrium model of organizing	The study proposes a **Dynamic Equilibrium Model of Organizing**, which suggests that **organizations manage paradoxes** by continuously seeking equilibrium between opposing forces, rather than trying to resolve them outright. This model provides a theoretical framework for understanding how organizations navigate and leverage paradoxical tensions.	Qualitative	Paradoxical Tensions in Organizations and Dynamic Equilibrium Model of Organizing

Literature Summary

④ Role of Leadership (Leaders) in Trade-off Navigation

Author	Title	Key Findings	Method	Themes
THEME No. 4: Role of Leadership				
Bass & Avolio. 1994	Improving organizational effectiveness through transformational leadership	The book highlights evidence indicating that **transformational leadership behaviors contribute to improved organizational performance**, fostering higher levels of employee engagement, motivation, and productivity. It underscores the role of transformational leaders in promoting a culture of innovation, **facilitating organizational adaptability, and enabling agile** responses to environmental challenges, thus enhancing overall organizational effectiveness.	Qualitative	Transformational Leadership Behaviors and Impact and Leadership Development and Organizational Culture
Clarke, 2013	Safety leadership: A meta-analytic review of transformational and transactional leadership styles as antecedents of safety behaviours	Transformational leadership styles are **positively associated with safety behaviors among employees**. This includes active participation in safety initiatives, adherence to safety protocols, and proactive identification and mitigation of safety hazards. Transactional leadership styles also significantly **impact safety behaviors in the workplace**, including compliance with safety rules and regulations, monitoring safety performance, and providing rewards and feedback for safe behaviors.	Qualitative	Leadership Styles and Safety Behaviors and Antecedents of Safety Behaviors
Judge et. al., 2002	Personality and leadership: a qualitative and quantitative review.	Personality traits such as extraversion, conscientiousness, emotional stability, openness to experience, and agreeableness are consistently associated with **effective leadership**. The relationship between **personality and leadership** is influenced by contextual variables such as organizational culture, team dynamics, and situational demands.	Qualitative and Quantitative	Personality Traits and Leadership Effectiveness and Contextual Factors and the Personality-Leadership Relationship
Sub-Section: Leadership Credibility				
Dirks, K. T., & Ferrin, D. L. 2002	Trust in leadership: meta-analytic findings and implications for research and practice	The study underscores the pivotal **role of trust in leadership,** highlighting its substantial impact on organizational performance, follower outcomes, and overall leadership effectiveness. It suggests that high levels of trust lead to enhanced employee engagement, commitment, job satisfaction, and organizational citizenship behaviors. The findings emphasize the importance of **trust-building strategies for leaders.** The study may suggest practical recommendations for leaders and organizations to cultivate and maintain trust with followers, ultimately contributing to organizational success and employee well-being.	Quantitative	Importance and Impact of Trust in Leadership and Factors Influencing Trust and Practical Implications
Williams et. al., 2023	A systematic review of leader credibility: its murky framework needs clarity	**Lack of Consensus in Conceptualization**: The systematic review highlights the absence of a clear and unified definition or conceptual framework for leader credibility within the existing literature. Different studies may use disparate definitions or approaches to assess credibility, leading to ambiguity and inconsistency in the field.	Qualitative	Conceptualization of Leader Credibility and Determinants and Implications of Leader Credibility
Williams et. al., 2023	Building leader credibility: guidance drawn from literature.	The study identified various factors, characteristics, and behaviors that contribute to **building leader credibility**, drawing from a synthesis of literature across different fields such as leadership, organizational behavior, and psychology.	Qualitative	Leadership Theory and Social Exchange and Trust Literature

Gaps

Extensive research exists on safety and productivity individually,

However, there is a **gap in understanding how leadership, particularly leadership credibility, affects the management of tensions between these dimensions.**

Existing literature often focuses on either safety or productivity in isolation,

neglecting the complex dynamics that arise when these objectives intersect within organizational contexts.

Research Motivation & Research Questions

Navigating the tensions between safety and productivity is a critical challenge for high-risk work environment organizations across various industries.

While extensive research exists on the individual concepts of safety and productivity, there is a notable gap in understanding how leadership, particularly leadership credibility, influences the management of these tensions.

In this study I address a crucial gap in the literature by examining how leadership credibility can facilitate the navigation of tensions between safety and productivity.

Research Questions:

1. What factors contribute to the paradoxical trade-off between safety and productivity in mining operations in Tanzania?
2. How can leadership effectively balance safety and productivity? Specifically, how does leadership credibility effectively mediate the tensions between safety and productivity?

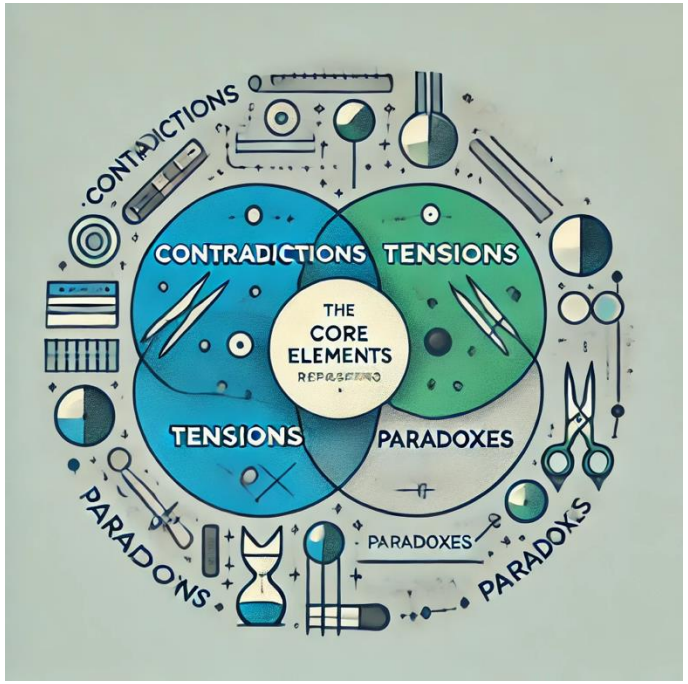
Theoretical Framework

Paradox Theory

Paradox Theory (Smith & Lewis, 2011):

- Paradox Theory addresses persistent, interdependent contradictions in organizational life that require simultaneous attention to opposing demands.
- Managing Paradoxes:
  - **Dynamic Equilibrium:** Balancing opposing demands over time to sustain organizational success.
  - **Acceptance**: Embracing tensions as opportunities for creativity and innovation rather than problems to be solved.
- Implications for Leadership
  - **Leadership Role:** Encouraging a mindset that leverages tensions as a source of learning and growth.
  - **Strategic Ambidexterity:** Leaders must manage paradoxes by being adaptable and fostering an environment that supports both/and thinking.

Paradox Theory offers a framework for understanding and navigating complex organizational challenges.



Emphasizes the need for holistic approaches to managing tensions.

Key Concepts:

- Core Elements:
  - ***Contradictions:*** Coexistence of conflicting yet interrelated elements (e.g., exploration vs. exploitation).
  - ***Tensions:*** Emotional responses arising from contradictions.
  - ***Paradoxes:*** Persistent contradictions that are interdependent and mutually reinforcing.
- Types of Paradoxes:
  - ***Organizing Paradoxes:*** Tensions within structures and processes (e.g., flexibility vs. control).
  - ***Performing Paradoxes:*** Competing goals or outcomes (e.g., safety vs. productivity).
  - ***Belonging Paradoxes:*** Identity-related tensions (e.g., individual vs. collective identity).
  - ***Learning Paradoxes:*** Tensions between old and new knowledge (e.g., stability vs. change).

Theoretical Framework

Theory of Planned Behavior

Theory of Planned Behavior by Ajzen (1985; 1991):

- Offers a framework for predicting compliance with specific human behavior. It posits that intentions are precursors to behavior and are influenced by attitudes, subjective norms, and perceived behavioral control.
- **Behavioral Intentions:** The primary predictor of behavior, influenced by:
  - ***Attitude Toward the Behavior:*** An individual's positive or negative evaluation of performing the behavior.
  - ***Subjective Norms:*** The perceived social pressure to engage or not engage in the behavior.
  - ***Perceived Behavioral Control:*** The perceived ease or difficulty of performing the behavior, reflecting past experiences and anticipated obstacles.
- Greenbaum et al. (2012) argue that subordinates compare supervisor **non-compliance** to **communicated leadership behaviors** to **interpersonal justice expectations**, drawing conclusions regarding leader hypocrisy and **lack of credibility**.

Compliance with Safety-Specific Leadership Behaviors:

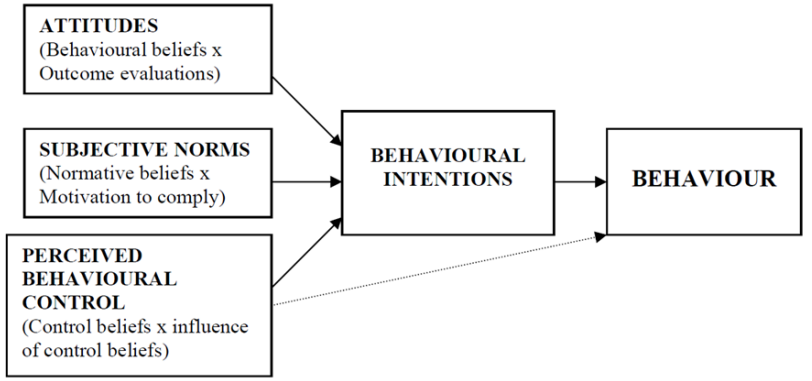


Figure 1. The Theory of Planned Behaviour (Ajzen, 1991)

- **Predictive Power:** TPB suggests that behavioral intentions, shaped by attitudes, norms, and control perceptions, are the most accurate predictors of behavior.
- **Behavioral Control:** Perceived control can directly influence behavior, especially when intentions are weak or ambiguous.
- **Application:** Used in various fields to design interventions and understand factors influencing behaviors such as health, safety, and organizational actions.

Theoretical Framework

Leadership Credibility

Leadership credibility is the degree to which employees perceive their leaders as trustworthy, reliable, and consistent in aligning their words and actions with organizational values.

Impact on Employee Behavior:

- ***Organizational Citizenship Behaviors (OCBs):*** Employees voluntarily engage in behaviors that exceed their job requirements, enhancing organizational effectiveness.
- ***Motivation and Engagement:*** Credible leadership fosters an environment where employees are more motivated and willing to contribute to organizational goals.
- ***Enhanced*** **Performance:** Employees are more productive, show higher commitment, and align better with organizational objectives.

Empirical Evidence

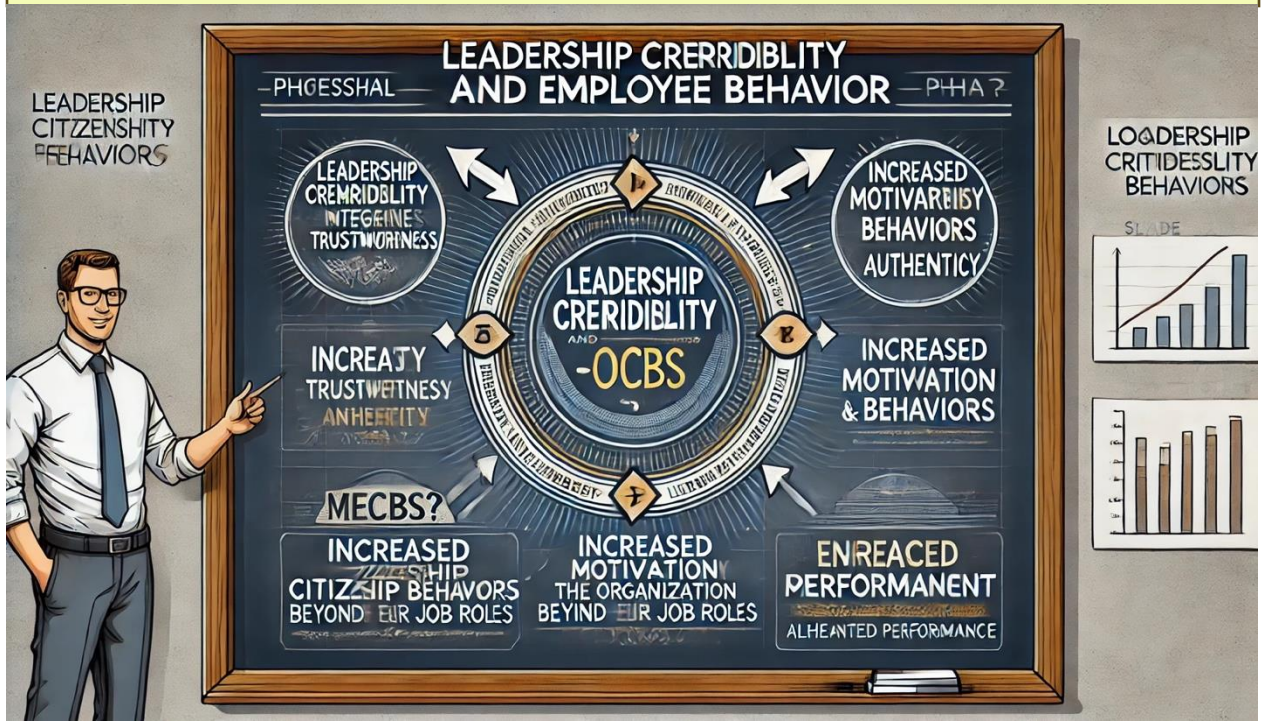
Research demonstrates a significant positive correlation between leadership credibility and employee behaviors, including job satisfaction, engagement, and performance.

Unexplored Area: Tension Management:

While the literature has confirmed the link between leadership credibility and employee behavior, how **leadership credibility** can manage the **tension** between **organizational competing priorities** such as safety and productivity remains under-explored.

Key Concepts:

- Core Elements:
  - ***Integrity:*** Consistency between a leader's words and actions.
  - ***Trustworthiness:*** Leaders are perceived as dependable and ethical.
  - ***Authenticity***: Genuine communication and behavior.



Data Collection & Data Analysis

Data Collection:

Qualitative research methodology will be conducted using multiple case studies in six mining sites involving the following steps:

- **Sampling: Purposive non-random**
  - six sites are differentiated by size of mining operations : large (2); medium (3), and small (1)
  - 5 participants per site:
    - senior leadership (1),
    - members of management (2)
    - safety officers (1), and operations personnel (1)
- **Data Collection:**
  - In-depth semi-structured interviews
  - Companies' annual reports, KPIs, and regulatory filings to the Government of Tanzania
- **Triangulation:**
- **Data Trustworthiness:.**
- **Ethical Considerations:**

Data Analysis:

Thematic analysis will be used to analyse the data collected from the interviews and focus group discussions. The analysis process will involve several steps, including:

- transcribing interviews,
- organizing field notes,
- categorizing data,
- code generation,
- theme development, and
- interpretation.

The analysis will focus on identifying recurring themes, patterns, and relationships in the data. The analysis will be conducted using NVivo software program.

Anticipated Knowledge and Practice Contributions

- **Integration of Theory**: This study integrates **paradox theory** and **the theory of planned behavior** to advance **theoretical understanding** of how **leaders manage tensions** between **competing organizational priorities** such as safety and productivity. The practical perspective ensures that **theoretical insights** are translated into **practical implications, bridging the gap** between **theory** and **practice** in organizational leadership.

- **Provide practical insights and recommendations** that can help **high-risk work environments**, e.g., mining industry stakeholders **balance competing priorities** such as safety and productivity goals and strategies effectively, ultimately leading to **improved outcomes** for workers and the industries as a whole.

- Offer **actionable suggestions** for companies operating in **high-risk environments** that seek to **enhance sustainability within their operations**. While the research primarily focuses on safety and productivity, its findings will provide actionable insights that can enhance **leaders' effectiveness**, improve organizational dynamics, and assist **leaders in managing tensions** related to **competing organizational priorities**.

Literature Summary

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Questions & Answers

Summary of Mines and Distribution of Participants

Pseudo Name	Size (Employees)	Revenue Range	Geographic Location	Mineral Mined
Mine 1	Above 1500	Above $100M	Geita Tanzania	Gold
Mine 2	Above1500	Above $100M	Shinyanga Tanzania	Diamonds
Mine 3	800 - 1500	Less than $100M	Singida, Tanzania	Gold
Mine 4	800 - 1500	Less than $100M	Kagera Tanzania	Gold
Mine 5	800 - 1500	Less than $100M	Katavi, Tanzania	Gold
Mine 6	Below 800	Less than $5M	Chunya, Tanzania	Gold

Size (Employees)	No. of Mines	Distribution of Participants		
		Senior Management	Middle Management	Employees
Large - Above 1500	2	2	2	6
Medium - 800 - 1500	3	3	3	9
Small - Less than 800	1	1	1	3
Total	6	6	6	18

Engaged Scholarship Framework: Mathiassen 2017 Framework (Table 2 of Mathiassen 2017)

Component	Definition	Specification
Title	The title expresses the essence of your research design with emphasis on C	Leadership Towards Navigating the Tensions between Safety and Productivity: A Case Study of Mines in Tanzania
P	The problem setting represents people's concerns in a real-world problematic situation	Simultaneously achieve safety and productivity goals in mining operations
A	The area of concern represents some body of knowledge within the literature that relates to P	The knowledge gap in how leadership guides operations to be both safe and productive, leveraging organizational structure, culture, technology, and resource management
F	The conceptual framing helps structure collection and analyses of data from P to answer RQ; F_A draws on concepts from A, whereas F_I draws on concepts independent of A	F_A: Paradox Theory (Smith and Lewis (2011)) F_I: The Theory of Planned Behavior. Organizational behavior and human decision processes (Ajzen, 1985; 1991).
M	The adopted method of empirical inquiry	A qualitative research method, with multiple case study design using a mine site as the unit of analysis. Data collection through semi-structured interviews, field observations, and document analysis from 30 participants in 6 mines in Tanzania.
RQ	The research question relates to P, it opens for research into A, and it helps ensure the research design is coherent and consistent	What factors contribute to the paradoxical trade-off between safety and productivity in mining operations in Tanzania? How can leadership effectively balance safety and productivity? Specifically, how does leadership credibility effectively mediate the tensions between safety and productivity?
C	The contributions to P and A and possibly to F and M	C_A: Contribute to the limited research on the complex relationship between safety and productivity in industries with high-risk environments. C_P: Contribute to practice by mining industry leaders, policymakers, regulators, and other stakeholders to improve the safety and productivity of industries with high-risk environments.