BEHAVIOR-BASED IN GROUND HANDLING RISK MANAGEMENT

by

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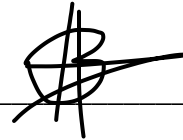
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Dedication

I dedicate this dissertation to my beloved ones, whose unwavering support and encouragement have made this journey possible.

To my cherished family, whose sacrifices and boundless motivation have lifted me through every challenge.

With all my love and gratitude,

Le Thi Hoang Oanh

Acknowledgements

ABSTRACT

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2024

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Ground handling operations are vital to the aviation industry, ensuring safe and efficient aircraft turnaround. Despite technological advancements and the adoption of Safety Management Systems (SMS), ground handling remains a complex and challenging area, significantly influenced by human factors. This research explores persistent safety issues within ground handling, focusing on the behavioral risks that contribute to accidents and operational inefficiencies.

Drawing from my extensive experience in the aviation sector, I have witnessed the difficulties of managing human behavior in high-pressure environments. This firsthand experience, combined with a professional commitment to advancing aviation safety, inspired the development of an Integrated Behavior-Based Risk Management Framework tailored to Vietnam's rapidly growing aviation industry. The study systematically examines behavioral risks in ground handling, utilizing data from employee surveys, interviews, and direct observations at multiple international airports across Vietnam.

The findings highlight that both organizational and individual factors affect employee performance and safety outcomes. Key organizational challenges include resource limitations, communication gaps, and external factors like extreme weather. At the

individual level, motivational deficiencies, skill deficits, and negative attitudes are major contributors to unsafe practices.

In response, the proposed framework integrates behavior-based safety principles with traditional risk management practices, advocating for a holistic approach that combines technical controls with human behavior considerations. The framework includes interventions such as continuous employee training, improved communication channels, workload management, and cultivating a strong safety culture. It also emphasizes leadership's crucial role in shaping employee attitudes and ensuring compliance with safety protocols. While designed for Vietnam's aviation sector, the framework is adaptable to other industries where human behavior critically impacts safety performance.

This research advances the understanding of human factors in risk management within ground handling operations and offers practical recommendations. By addressing the interplay between organizational dynamics and individual behaviors, the framework provides a valuable tool for reducing accidents, improving operational efficiency, and enhancing safety performance. Its broader applicability positions it as a significant resource for global aviation safety practices. I am confident that this framework will play a pivotal role in shaping the future of aviation safety management, not only in Vietnam but also globally.

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LIST OF ABBREVIATIONS

Abbreviation	Full Term
ACV	Airports Corporation of Vietnam
ANOVA	Analysis of Variance
BBRM	Behavioral-Based Risk Management
BBS	Behavior-Based Safety
CAA	Civil Aeronautics Authority
CRM	Crew Resource Management
EASA	European Union Aviation Safety Agency
GRA	Group Risk Assessments
HAZOP	Hazard and Operability
HSEQ	Health, Safety, Environment, and Quality
IATA	International Air Transport Association
IBM SPSS	IBM Statistical Package for the Social Sciences
ICAO	International Civil Aviation Organization
IRCA	International Register of Certificated Auditors
ISO	International Organization for Standardization
PPE	Personal Protective Equipment
SAGS	Saigon Ground Services Join Stock Company
SMS	Safety Management System

CHAPTER I:

INTRODUCTION

1.1   Background of the Study

The aviation industry has a long and impressive history of prioritizing safety, driven by a continuous evolution in safety management practices. This journey has been shaped by technological advancements, robust regulatory frameworks, and a growing understanding of human factors.

Early aviation safety efforts primarily focused on addressing technological limitations and ensuring basic aircraft airworthiness. The establishment of regulatory bodies, like the Civil Aeronautics Authority (CAA) in 1938, marked a shift towards formal oversight and standardization of safety practices. This laid the foundation for the comprehensive Safety Management System we see today.

The mid-20th century saw a significant shift in understanding. The recognition of human error's substantial role in accidents led to groundbreaking advancements in human factors engineering and the development of Crew Resource Management (CRM) training. This era emphasized the critical importance of human behavior in aviation safety and spurred the development of more proactive risk management strategies.

By the late 20th century, the aviation industry embraced the concept of system safety, recognizing that accidents often result from complex interactions within a system rather than isolated failures. This understanding underscored the need to consider the interconnectedness of various components within an aviation system, including human,

technological, and organizational factors. This led to the promotion of Safety Management System (SMS) by the International Civil Aviation Organization (ICAO), advocating for a systematic approach to identifying, assessing, and mitigating safety risks.

In the 21st century, SMS has become a global standard, fostering a culture of proactive hazard identification, risk assessment, and mitigation. This evolution has been accompanied by the integration of data analysis and safety performance indicators, providing valuable insights to monitor safety trends and identify areas for improvement. Safety management has evolved into a continuous cycle of planning, implementation, evaluation, and improvement, supported by technological advancements and a deeper understanding of human factors.

Despite these significant advancements, ground handling operations continue to face unique challenges that often fall outside the traditional focus of safety management. Ground handling, encompassing a wide range of services essential for aircraft turnaround, including passenger handling, ramp services, cargo handling, and aircraft maintenance, is vital for maintaining the overall integrity of air travel, ensuring seamless passenger experiences, and upholding the highest standards of safety.

However, the demanding nature of ground handling operations, coupled with high turnover rates, language barriers, and the prevalence of fatigue and stress among personnel, creates a complex environment where human error can easily occur. This underscores the need for a more nuanced dynamic understanding of human error within this critical domain. Furthermore, the unique context of the Vietnamese aviation sector, with its rapid growth and cultural nuances, presents specific challenges that require targeted solutions.

1.2   Research Problem

Despite significant advancements in aviation technology and safety protocols, ground handling accidents and incidents remain a persistent and costly challenge for the global aviation industry. The alarming rate of ground handling events, with an estimated 27,000 incidents occurring annually, resulting in injuries and billions of dollars in damages (IATA), underscores the urgent need for a more comprehensive and effective approach to safety management. While traditional safety measures, such as technological advancements and procedural regulations, have played a vital role in enhancing safety, they often fall short in addressing the complex interplay of human factors that contribute significantly to these incidents.

Research consistently highlights the significant role of human factors in aviation accidents, with studies indicating that human error is responsible for over 90% of accidents involving damage to aircraft and infrastructure (Doc 10121, ICAO). Further studies emphasize the specific challenges within ground handling, where human factors, including communication breakdowns, fatigue, stress, and decision-making biases, contribute to over 70% of incidents (EASA). This alarming statistic underscores the critical need for a shift in focus from purely technical and procedural approaches to a more comprehensive behavior-based approach to risk management.

Vietnam's rapidly growing aviation sector faces unique challenges. The influx of international airlines, increased passenger traffic, and the unique cultural and operational contexts present a complex safety landscape. Traditional safety management frameworks,

while valuable, may not adequately address the specific behavioral risks present in the Vietnamese ground handling environment.

Therefore, this research directly addresses this pressing need by focusing on the development of a behavior-based risk management framework tailored to the unique operational context of the Vietnamese ground handling industry. This framework has the potential to significantly enhance safety performance, reduce operational disruptions, and bolster the resilience of Vietnam's rapidly growing aviation sector.

1.3   Research Purpose

This research endeavors to contribute to a safer and more resilient global aviation industry by investigating the specific behavioral risks present in ground handling operations within Vietnam and developing a comprehensive behavior-based risk management framework tailored to the unique context of the Vietnamese aviation sector.

This research will systematically investigate the unique behavioral factors that contribute to ground handling accidents and incidents in Vietnam, considering factors such as skill and knowledge deficits, personal attitude, personal motivation, fatigue, stress, non-compliance with procedures, and environmental working. The analysis will involve examining the prevalence of these factors, exploring their root causes, and understanding their impact on safety performance. This crucial step serves as a foundation for the development of an effective and targeted framework to manage behavioral risks within the Vietnamese ground handling industry.

Building upon the insights gleaned from the analysis of behavioral risks, this research will develop a structured framework tailored for Vietnamese ground handling

operations. This framework will incorporate established principles of behavior-based safety and incorporate a nuanced understanding of the unique cultural and operational context of Vietnam's aviation sector. The framework will not only include a standardized tool for assessing behavioral risks in ground handling tasks but also provide guidelines for integrating behavioral risk assessment into existing Safety Management System (SMS). This comprehensive framework will serve as a valuable tool for organizations seeking to proactively manage behavioral risks and enhance safety performance within the Vietnamese ground handling industry.

1.4   Significance of the Study

This research holds significant implications for advancing safety and operational resilience within Vietnam's rapidly expanding aviation sector while simultaneously contributing to the broader field of behavior-based safety research. By systematically investigating the pivotal role of employee behavior in ground handling, this study aims to provide a comprehensive understanding of the intricate relationship between individual actions, attitudes, decision-making processes, and safety outcomes. The findings will illuminate how these factors can either enhance or erode safety performance within the unique context of Vietnamese ground handling operations.

This research offers several key contributions. First, it will provide Vietnamese ground handling organizations with valuable insights into the unique behavioral risks present in their operations. This knowledge will enable them to develop targeted interventions and prioritize behavioral factors in their risk management strategies,

ultimately leading to tangible improvements such as reduced accident rates, decreased operational delays, and enhanced employee well-being.

Second, this research will contribute to the advancement of the field of behavior-based safety research. By examining the interplay between individual behavior and safety outcomes within Vietnam's unique cultural context, this study has the potential to inform the development of evidence-based best practices applicable to ground handling operations worldwide.

Third, this research bridges the chasm between theoretical understanding and practical application. By equipping Vietnamese ground handling organizations with the knowledge and tools necessary to prioritize behavioral factors in their risk management strategies, this study aims to catalyze a transformative shift towards a safer, more efficient, and more resilient aviation sector.

1.5 Research Questions

The central focus of this research is to examine the intricate relationship between human behavior and risk management within the ground handling industry. The study aims to uncover the underlying factors that contribute to Uncontrolled behavioral factors, their impact on safety outcomes, and the efficacy of various interventions to mitigate risks and foster a safety-conscious culture. To achieve this, the research will address the following research questions:

- What are the most prevalent types of Uncontrolled behavioral factors observed in ground handling operations across international airports in Vietnam? This question

explores the specific factors that contribute to incidents, going beyond general categories like "human error" to identify concrete actions and patterns.

- How do ground handling employees across international airports in Vietnam perceive the impact of mental health status (e.g. work load, time pressure, environment) on workplace behavior? This dives into employee perceptions of the link between mental health and safety, acknowledging the potential influence of individual and cultural factors. (Hofstede, 1980).

- Are there variations in these perceptions across demographic factors, such as age, gender, and job role, within Vietnamese ground handling personnel? This question explores whether different groups within the workforce have distinct understandings of the relationship between mental health and safety.

- What are the underlying causes of these identified behavioral risks? This question goes beyond simply identifying behaviors to understanding their root causes, which could include factors like training gaps, pressure from management.

By achieving these objectives, this research seeks to significantly enhance safety and efficiency in Vietnamese ground handling operations. The resulting framework will equip ground handling organizations with practical tools and guidance to proactively address behavioral risks, promote a positive risk management, and optimize operational efficiency within the unique cultural and regulatory context of Vietnam.

1.6   Scope and Limitations

By integrating behavior-based safety principles into existing Safety Management System, this research aims to develop a comprehensive behavior-based risk management

framework tailored for ground handling operations. The insights gained from this research have the potential to enhance the safety, efficiency, and resilience of the entire aviation ecosystem, thereby benefiting passengers, airlines, and the wider economy alike. This study empowers ground handling organizations to prioritize behavioral factors in their risk management strategies, ultimately leading to a safer and more resilient aviation sector.

A tailored behavior-based risk management framework will be developed to address the unique challenges of ground handling activities, incorporating targeted interventions such as training programs, communication protocols, and work process adjustments.

While focused on major ground handling operations, this study acknowledges certain limitations. The findings may not be directly generalizable to other aviation sectors, such as air traffic control, airlines operations or cargo handling operations, due to their distinct safety challenges. Additionally, the research primarily relies on data collected from Vietnamese ground handling agents, and cultural or regulatory variations in other countries may necessitate further investigation for broader applicability. This study does not centrally address specific safety technologies or engineering controls, and the proposed framework's effectiveness will require validation through real-world implementation and data collection.

CHAPTER II:

REVIEW OF LITERATURE

Ground handling operations in the aviation industry is a critical link in the air transportation chain, ensuring the safe and efficient movement of aircraft, passengers, and cargo on the ground. These operations are inherently complex, involving numerous hazards and a dynamic interplay of human and environmental factors. To address these challenges, effective risk management is not only essential but paramount. This chapter lays the groundwork for understanding behavior-based risk management in the ground handling context. It begins by examining how Safety Management System (SMS) and Behavior-Based Safety (BBS) can be integrated to create a comprehensive and proactive risk management approach. It then delve into the complexities of human behavior, exploring factors that influence actions and decisions in the workplace. This includes analyzing how employee perceptions and established behavioral theories intersect with safety practices.

Effective risk management in ground handling necessitates a multi-faceted approach that integrates various strategies to address both systemic and human factors that can contribute to accidents and incidents.

2.1. Safety Management System (SMS): The Foundation for Comprehensive Ground Handling Risk Management

2.1.1. Introduction to Safety Management System (SMS)

In the dynamic and high-risk environment of ground handling, implementing Safety Management System (SMS) has become essential. SMS provides a systematic framework

for managing safety risks and ensuring compliance with international safety standards. The International Civil Aviation Organization (ICAO) has been instrumental in establishing SMS as a critical component of aviation safety, emphasizing its role in fostering a proactive safety culture within organizations (ICAO, 2006).

SMS operates on the principle that safety is not just the absence of incidents but a continuous process of identifying, assessing, and mitigating risks. This approach is particularly relevant in ground handling operations, where the interaction of various factors—human, mechanical, and environmental—creates a complex risk landscape. Understanding the structure and principles of SMS is crucial for appreciating how it underpins effective risk management in ground handling.

2.1.2. The Role of SMS in Risk Management

SMS plays a pivotal role in risk management by shifting the focus from reactive responses to incidents towards a proactive and predictive approach. The core of SMS lies in its ability to integrate safety into all levels of an organization's operations, making safety a fundamental part of decision-making and daily activities. This integration is critical in ground handling, where the margin for error is minimal, and the consequences of safety lapses can be severe.

The SMS framework, as detailed in ISO 31000:2009, outlines a comprehensive approach to risk management, which includes identifying hazards, assessing risks, and implementing effective control measures (ISO, 2009). This systematic approach ensures that risks are not only identified and mitigated but also continuously monitored and

reviewed. This continuous improvement cycle is essential for adapting to the evolving risk environment in ground handling operations.

2.1.3. Key Components of SMS Relevant to Risk Management

The effectiveness of SMS in managing risks is rooted in its core components, each of which contributes to a holistic approach to safety management.

Safety Policy and Objectives: The foundation of any effective SMS is a clearly defined safety policy that reflects the organization's commitment to safety. This policy sets the tone for the entire safety management process, outlining the objectives, resources, and responsibilities required to achieve a high safety standard. In ground handling, where the risk factors are diverse and dynamic, a robust safety policy is crucial for guiding safety initiatives and ensuring safety remains a top priority.

Safety Risk Management: Central to SMS is the process of safety risk management, which involves systematically identifying hazards, assessing the associated risks, and implementing control measures. In ground handling, this process is particularly important due to the high level of interaction between various stakeholders, equipment, and environmental factors. By applying the principles of safety risk management, organizations can anticipate potential hazards and take preventive actions to mitigate risks.

Safety Assurance: Safety assurance is the mechanism by which an organization ensures that the controls and processes are effective in managing risks. This involves regular monitoring, audits, and performance evaluations to ensure safety objectives are met. In the context of ground handling, safety assurance provides a feedback loop that allows organizations to refine their safety practices and address any emerging risks promptly.

Safety Promotion: The final component of SMS is safety promotion, which involves training, communication, and other activities reinforcing the importance of safety within the organization. Safety promotion is particularly relevant in behavior-based risk management, focusing on influencing employee behavior to enhance safety outcomes. Through continuous education and clear communication, ground handling personnel are better equipped to recognize and respond to safety risks.

2.1.4. Integration of SMS in Ground Handling Operations

Ground handling operations are inherently complex, involving the coordination of multiple activities and stakeholders. Integrating SMS into these operations provides a structured approach to managing safety risks, ensuring that potential hazards are systematically identified and mitigated. By applying the principles of SMS, ground handling organizations can enhance their risk management practices, leading to safer and more efficient operations.

For example, SMS can help manage the risks associated with aircraft turnarounds, where timing, precision, and coordination are critical. By using the SMS framework to identify hazards—such as the risk of equipment collision with aircraft or human factors like fatigue—organizations can implement controls to prevent incidents. This systematic approach ensures that safety is not compromised, even in the fast-paced environment of ground handling.

2.1.5. The Relationship between SMS and Behavior-Based Risk Management

While SMS provides the overarching framework for safety and risk management, behavior-based risk management focuses on the individual and collective behaviors

contributing to safety outcomes. The integration of SMS and behavior-based risk management is essential because, while SMS sets the policies, procedures, and structures in place, it is the behaviors of individuals within the organization that ultimately determine the effectiveness of these safety measures.

Behavior-based risk management relies on SMS principles to create an environment where safe behaviors are encouraged and reinforced. For example, through safety promotion efforts within SMS, ground handling personnel are trained not only on the technical aspects of their jobs but also on the importance of behaviors that contribute to safety, such as communication, situational awareness, and adherence to safety protocols. The success of behavior-based risk management thus depends on the foundation provided by SMS, which supports the consistent application of safe behaviors across the organization.

The principles of SMS lay the groundwork for more specific risk management strategies. Risk management in ground handling involves not only identifying and mitigating risks but also continuously monitoring and improving safety practices.

By building on the foundation provided by SMS, organizations can develop a robust risk management framework that addresses both the technical and behavioral aspects of safety. This will ensure that ground handling operations are not only compliant with safety standards but also proactive in managing potential risks.

2.2. Risk Management in Ground Handling

2.2.1. Introduction to Risk Management

Risk management is a systematic and structured process that organizations use to identify, assess, and mitigate risks that may impact their ability to achieve key objectives.

It is a cornerstone of organizational governance, particularly in industries like aviation ground handling, where safety is paramount. The framework outlined by ISO 31000:2018 provides a comprehensive approach to risk management, emphasizing the importance of a structured, integrated, and proactive methodology (ISO, 2018).

In the context of ground handling, risk management goes beyond reacting to incidents—it requires the identification and mitigation of potential risks before they materialize into safety events. The dynamic and high-stakes ground handling environment involves constant interaction between personnel, machinery, and aircraft, making it essential to adopt a proactive risk management stance. The goal is to safeguard operations, ensuring the safety of passengers, crew, and ground staff while maintaining operational efficiency and continuity.

Effective risk management in ground handling encompasses various activities, including cargo handling, aircraft servicing, and baggage handling, all of which expose organizations to operational, safety, and financial risks. A robust risk management framework helps to identify, mitigate, and manage these risks while ensuring the resilience and safety of operations.

2.2.2. Core Elements of Risk Management in Ground Handling

Risk management in ground handling operations is built on several core components, each of which plays a critical role in maintaining safety and operational integrity.

Risk Identification and Assessment: The first and most critical step in the risk management process is identifying and assessing potential risks. In ground handling, risks

may arise from equipment malfunctions, human errors, environmental conditions, and operational inefficiencies. To systematically assess these risks, tools such as Group Risk Assessments (GRA) and Hazard and Operability (HAZOP) studies are employed. These tools help prioritize risks based on their severity and likelihood, enabling organizations to focus resources on the most significant threats to operations.

Risk Mitigation Strategies: Once risks are identified, mitigation strategies are designed to reduce the likelihood of their occurrence and limit their potential impact. These strategies include preventive measures such as employee training, regular equipment maintenance, and strict adherence to safety protocols. Advanced technologies, such as real-time monitoring systems, are also adopted to ensure that any deviations from operational standards are detected and addressed swiftly, further enhancing safety.

2.2.3. Loss Control Management: A Key Component of Risk Management

As an integral subset of risk management, Loss Control Management specifically focuses on minimizing the financial, operational, and safety losses that arise when risks materialize into incidents. While risk management efforts aim to prevent incidents from occurring, loss control ensures that the impact of those incidents is mitigated through a combination of preemptive, real-time, and post-incident measures. The integration of loss control into the risk management framework helps ensure that operational disruptions are minimized and that safety and efficiency are maintained.

Pre-Contact Controls: Pre-contact controls are preventive measures that reduce the likelihood of incidents before they occur. These controls include regular training programs for ground handling personnel, adherence to safety protocols, and routine inspections of

equipment and procedures. By fostering a safety-conscious culture, ground handling organizations can prevent incidents from occurring, thereby reducing their exposure to potential hazards. These preventive strategies form a critical part of the overall risk management process.

Contact Controls: Contact controls are activated during an incident, aiming to limit its severity and prevent further damage. In ground handling, contact controls include the use of personal protective equipment (PPE), automatic shutdown systems, and emergency response protocols. These measures ensure that when an unexpected event occurs, it is contained and does not escalate, aligning with the broader organizational goal of minimizing operational disruptions and safety risks.

Post-Contact Controls: Post-contact controls address the aftermath of an incident, focusing on minimizing long-term impacts and preventing recurrence. Ground handling organizations employ post-incident investigations, such as root cause analysis, to identify the underlying causes of incidents and implement corrective actions. This approach ensures continuous improvement in safety processes and helps refine both risk management and loss control practices, reducing the likelihood of future incidents.

Integration of Human Factors in Loss Control: Human factors play a pivotal role in both risk management and loss control strategies. In ground handling operations, human error is a prominent source of risk. Addressing this requires targeted interventions such as behavioral training, situational awareness programs, and reinforcement techniques, all of which are essential in mitigating the risk of accidents and incidents.

One practical approach to reducing human error is implementing Simple Risk Assessments. These are quick, on-the-spot evaluations conducted by employees before executing any task. These assessments foster personal accountability and encourage employees to pause and evaluate potential risks, thus minimizing the likelihood of errors. In turn, this promotes a safety-oriented culture within the organization. (Guldenmund, 2000).

By integrating human factors into loss control measures, ground handling operations can better anticipate and manage risks linked to human behavior. Practical programs that enhance situational awareness and continuous reinforcement of safe practices can significantly contribute to reducing losses and a more resilient organizational safety culture.

Continuous Monitoring and Improvement: Loss control management is not a static process. It is embedded within the broader risk management framework and requires continuous monitoring and improvement. Regular audits, safety drills, and feedback mechanisms ensure that both preventive and corrective measures remain effective and responsive to evolving risks. By continuously refining these controls, ground handling organizations can adapt to the dynamic nature of their operations and maintain high safety standards.

In conclusion, Loss Control Management is a vital sub-part of the broader risk management framework in ground handling operations. While the primary goal of risk management is to proactively identify and mitigate risks, loss control focuses on minimizing the impact of incidents when they occur. Together, these strategies provide a comprehensive

approach that not only enhances operational safety and efficiency but also ensures organizational resilience in a high-pressure and complex operational environment.

2.2.4. Core Elements of Risk Management in Ground Handling

The ISO 31000:2018 standard provides a robust framework for guiding the risk management process, ensuring that it is efficient, effective, and aligned with organizational objectives. These core elements serve as the foundation for a strong risk management system, particularly in high-risk environments like ground handling, where safety is paramount.

Integration: Risk management must be fully integrated into all organizational activities, from strategic planning to day-to-day operations. This integration ensures that risk considerations are embedded in every decision-making process, providing a consistent layer of protection across all organizational functions. In ground handling operations, understanding the operational and regulatory environments is crucial to establishing an effective context for risk management. Key considerations, such as traffic volume, aerodrome layout, and ground staff coordination, are vital to building a proactive approach to risk mitigation.

Structured and Comprehensive: A structured and comprehensive risk management approach ensures reliability and consistency in outcomes. This approach involves systematically identifying potential hazards, such as equipment failures or human errors, and addressing them with straightforward procedures. In complex ground handling activities like aircraft refueling, baggage handling, and servicing, a structured risk management process is essential to maintaining safety and adhering to regulatory standards.

The organized process of risk identification and assessment allows organizations to mitigate risks effectively while complying with aviation safety requirements.

Customization: Risk management must be customized to the specific operational context of each organization. Ground handling operations face unique risks, including those related to aircraft movements, security threats, and the use of specialized equipment. A tailored risk management process takes these specific challenges into account, allowing organizations to adapt their strategies to the distinct characteristics of their operational environment. This customization ensures that risk management practices are not only relevant but also aligned with the real-world demands of ground handling.

Inclusivity: An inclusive risk management culture is critical to the success of safety initiatives. Inclusivity involves engaging all stakeholders, from top management to frontline employees, ensuring everyone understands their role in managing and mitigating risks. In ground handling, where coordination among multiple teams is essential, fostering a culture of shared responsibility for safety is crucial. Effective communication at all organizational levels ensures that everyone is informed and aligned with the organization's risk management efforts.

Dynamism: The dynamic nature of aviation ground handling requires a flexible and adaptive risk management process. Risks evolve continuously, influenced by external factors such as changing weather conditions, fluctuating flight schedules, and new security threats. A dynamic risk management system monitors these changes and adjusts mitigation strategies in real-time. This adaptability is vital for maintaining operational resilience and ensuring safety in a rapidly changing environment.

Best Available Information: Risk management decisions must be grounded in the best available information, which includes historical data and current conditions. For ground handling operations, accurate data—such as past incident reports, equipment performance, and operational trends—are critical for making informed decisions. This data-driven approach ensures that risk assessments and mitigation strategies are based on reliable evidence, enhancing the overall effectiveness of the risk management process.

Human and Cultural Factors: Human behavior and organizational culture significantly influence the effectiveness of risk management systems. In high-pressure environments like ground handling, human factors can impact operational efficiency and safety outcomes. Recognizing the role that human behavior plays in managing risks is essential. By fostering a safety-oriented culture, promoting effective communication, and ensuring adequate training, organizations can mitigate human-related risks and enhance their safety performance.

Continual Improvement: Risk management is an ongoing process that requires continuous monitoring, feedback, and refinement. In ground handling, organizations must regularly reassess their risk management practices to address emerging challenges and refine existing strategies. By fostering a culture of continual improvement, organizations ensure that their risk management practices evolve alongside operational changes, maintaining a proactive stance against new and evolving risks.

2.2.5. The Risk Management Framework

ISO 31000:2018 emphasizes the need for a robust risk management framework that integrates risk management into the governance and decision-making structures of the

organization. This framework provides the foundation for implementing risk management processes and ensures alignment with the organization's overall objectives and culture.

Leadership and Commitment: Effective risk management begins with strong leadership and a commitment to safety from top management. In ground handling, this means fostering a safety culture where risk management is a priority, and allocating resources to support these activities. Leadership plays a critical role in establishing the tone for risk management, ensuring it is integrated into all operational and strategic decisions.

Integration: Risk management should be seamlessly integrated into the organization's governance, decision-making, and operational processes. For ground handling operations, this means that risk management must be part of the planning, execution, and evaluation of all activities. This integration ensures that safety is considered at every stage, rather than being an afterthought.

Design and Implementation: The design of the risk management framework must reflect the organization's specific context, including its internal structure, external environment, and stakeholder expectations. In ground handling, this involves designing processes and procedures that address the risks associated with various aspects of operations, such as aircraft movements, loading and unloading cargo, and ground support services.

Monitoring and Review: Continuous monitoring and review are essential to ensure that the risk management framework remains effective and responsive to changes in the operational environment. Ground handling organizations should implement mechanisms for

regularly assessing the effectiveness of risk controls and making adjustments to address new risks.

Continual Improvement: A key aspect of any risk management framework is its capacity for continual improvement. Ground handling organizations should foster a culture of learning and innovation, continuously refining safety practices based on lessons learned from past experiences and changes in the operational environment.

2.2.6. The Risk Management Process

The risk management process outlined in ISO 31000:2018 consists of several iterative steps that guide organizations in identifying, assessing, and mitigating risks. This process should be tailored to the specific needs of the organization.

Communication and Consultation: Effective communication and consultation with stakeholders are critical throughout the risk management process. In ground handling, all relevant parties, including employees, contractors, and regulatory authorities, must be informed about potential risks and the measures being implemented to manage them. This fosters a shared understanding and enhances collaboration.

Scope, Context, and Criteria: Establishing the scope, context, and criteria is the first step in the risk management process. For ground handling operations, this involves defining the boundaries of the risk management process and understanding the internal and external factors that could influence risks. Clear criteria for evaluating the significance of risks must be established.

Risk Assessment: Risk assessment is at the core of the risk management process and includes three main steps:

Risk Identification: Identifying risks that could impact the organization's objectives, such as those related to aircraft movements, equipment malfunctions, or human errors.

Risk Analysis: Analyzing identified risks to understand their nature, likelihood, and potential impact on operations.

Risk Evaluation: Evaluating risks by comparing the results of the analysis with the organization's risk criteria to determine if further treatment is required.

Risk Treatment: Risk treatment involves selecting and implementing options to mitigate risks. This could include avoiding the risk, reducing its likelihood or impact, transferring it (e.g., through insurance), or accepting it if within the organization's tolerance. Ground handling operations might implement technical or administrative controls to reduce risks.

Monitoring and Review: The risk management process must be continuously monitored and reviewed to ensure its effectiveness. Regular audits and inspections help verify that controls are functioning as intended.

Recording and Reporting: Transparent documentation and reporting are essential for accountability. Ground handling organizations should maintain records of all risk assessments, treatment plans, and monitoring activities, ensuring that stakeholders remain informed and involved.

2.2.7. Application of Risk Management in Ground Handling

Ground handling operations are complex, with interdependent activities that require a comprehensive approach to risk management. This complexity is exemplified by The

"1:600 Rule". It is a widely recognized concept in safety management, particularly within behavior-based safety and risk management systems. It stems from Heinrich's safety pyramid (also known as the accident triangle), which illustrates the connection between unsafe acts and workplace accidents. The rule emphasizes that minor incidents, if left unaddressed, can escalate into major accidents over time. By proactively managing and mitigating smaller incidents, organizations can prevent larger, catastrophic events and promote a proactive safety culture.

According to the 1:600 Rule, for every 1 major accident or serious incident that occurs, there are likely to have been approximately:

- 30 minor incidents or near misses,

- 300 unsafe acts or conditions, and

- 600 hazardous behaviors or unsafe actions.

By following the ISO 31000:2018 framework, ground handling organizations can systematically identify, assess, and mitigate risks, ensuring that safety is maintained even in high-pressure environments. Integrating risk management into daily operations, fostering inclusivity, and promoting continual improvement allow organizations to enhance their safety performance and achieve operational resilience.

2.3.   The Study of Human Behavior

Behavior is defined as how an individual conducts themselves, encompassing their demeanor, manners, and observable actions. It is a reflection of both intrinsic and extrinsic factors that drive how people act in various situations. In the context of ground handling,

understanding behavior is critical for predicting and managing risks, as human actions are often at the core of operational safety and efficiency.

Human behavior is a complex and multifaceted area of study, involving various disciplines such as psychology, occupational psychology, and cognitive psychology (Basu, 2023). Each of these fields contributes to our understanding of how individuals interact with their environment and make decisions, particularly in high-risk settings such as ground handling operations. The factors influencing human behavior are diverse and can be categorized into several key areas:

2.3.1 Attitude

Attitude is a learned predisposition to respond favorably or unfavorably towards specific persons, objects, or situations. It is shaped by a variety of elements, including beliefs, opinions, and superstitions:

Beliefs: These are convictions that an individual holds, which may be based on religious, social, or ethical grounds. In the workplace, beliefs about safety, for example, can significantly influence whether an individual adheres to safety protocols.

Opinions: Opinions are statements that reflect an individual's thoughts on a subject, which may change over time. In ground handling, workers' opinions on safety measures or management practices can impact their compliance and overall behavior.

Superstitions: Superstitions are irrational beliefs that can affect behavior, often passed down through generations. While seemingly trivial, superstitions can influence decision-making processes in critical moments.

Understanding these components of attitude is essential for developing interventions that promote positive behaviors and mitigate risks in ground handling operations.

Motivation: Motivation is the driving force behind human behavior. It can be understood through various theories, such as Maslow's Hierarchy of Needs and Herzberg's Two-Factor Theory: (Herzberg, 1959).

Maslow's Hierarchy of Needs: This theory posits that individuals are motivated by a hierarchy of needs, starting with basic physiological needs and progressing to safety, social belonging, esteem, and self-actualization. In ground handling, ensuring that workers' basic and safety needs are met is crucial for maintaining high levels of motivation and performance. (Maslow, 1943)

Herzberg's Two-Factor Theory: Herzberg identified two key factors affecting motivation: hygiene factors (e.g., working conditions, salary) and motivators (e.g., recognition, responsibility). For ground handling employees, addressing both hygiene factors and motivators is essential for fostering a motivated and safety-conscious workforce.

Motivation influences how employees engage with their tasks, respond to challenges, and adhere to safety protocols, making it a critical element in risk management.

Goal-setting theory posits that clear and challenging goals can enhance task performance (Locke and Latham, 1990).

2.3.2 Memory

Memory is the process by which information is encoded, stored, and retrieved. It plays a crucial role in how individuals learn from past experiences and apply this knowledge

to current situations, particularly in high-risk environments like ground handling, where the ability to recall safety procedures and past lessons can prevent accidents:

Short-term memory refers to the temporary storage of information for immediate use. In fast-paced environments, limitations in short-term memory can lead to errors, especially if instructions are not clearly communicated or repeated. In ground handling, where quick decision-making is essential, ensuring that critical information is retained and acted upon immediately is crucial.

Long-Term Memory involves the storage and retrieval of information over extended periods. Continuous training and refreshers help ensure that critical safety information is retained and readily accessible when needed.

Memory affects how well employees remember and follow safety protocols, making it a critical factor in preventing human error in ground handling.

Memory is directly connected to safety awareness; the ability to recall previous incidents or training can raise awareness of potential risks and influence current behavior. Thus, memory is not just a repository of past experiences but a vital element in ongoing risk management and safety practices.

2.3.3 Personality

Personality is the combination of characteristics or qualities that form an individual's unique character. It influences how individuals respond to situations, interact with others, and approach tasks:

Traits and Theories: Various theories, such as Freud's psychoanalytic theory and the Big Five personality traits, provide insights into how personality influences behavior. In

ground handling, traits like conscientiousness, reliability, and stress tolerance are particularly important, as they can impact how individuals handle the pressures of the job. (McCrae and Costa, 1992)

Assessment: Personality assessments can be useful in selecting the right individuals for specific roles within ground handling operations, ensuring that employees are well-suited to the demands of their positions.

Understanding personality helps in predicting how employees will behave in high-stress situations and allows for better management of potential risks.

2.3.4   Ancestry and Social Background

An individual's ancestry and social background play a significant role in shaping their attitudes, beliefs, and behaviors. These elements contribute to the development of personality and can influence how individuals perceive their roles and responsibilities in the workplace:

Ancestry: The cultural and familial background of an individual often dictates certain behavioral norms and expectations, which can affect their approach to work and safety.

Social Background: The environment in which an individual is raised, including socioeconomic status, education, and community, influences their values, work ethic, and attitude towards authority and rules.

In ground handling, understanding the diverse backgrounds of employees can aid in tailoring safety programs and communication strategies to be more effective. (Bandura, 1977)

2.3.5 Experience, Intelligence, Education, and Training

These factors are critical in shaping how individuals behave in the workplace, particularly in high-risk environments like ground handling:

Experience: Past experiences, both positive and negative, heavily influence behavior. Employees who have encountered accidents or near-misses may be more cautious and adhere strictly to safety protocols. This accumulated experience contributes significantly to an individual's safety awareness, enabling them to recognize better and respond to potential hazards.

Intelligence: Intelligence affects an individual's ability to learn, understand complex tasks, and solve problems. In ground handling, high levels of intelligence are beneficial for quickly adapting to new safety procedures and technologies. This cognitive capacity enhances the ability to process information critically, contributing to a more refined awareness of risks and safety measures.

Education and Training: Continuous education and training are essential for maintaining a competent workforce. In ground handling, regular training ensures that employees are up-to-date with the latest safety practices and are prepared to handle emergencies effectively.

These elements are integral to developing a skilled and safety-conscious workforce, capable of managing the risks associated with ground handling operations. Education and training also play a pivotal role in reinforcing safety awareness, helping employees internalize and recall critical safety information when needed.

2.3.6 Awareness

Awareness in the context of human behavior refers to the conscious recognition and understanding of information, situations, or stimuli. It involves the active perception and interpretation of sensory data relevant to safety within a particular environment. Grounded in risk perception theory, heightened safety awareness leads to increased risk perception and more cautious behavior. This is because individuals who are more aware of potential hazards are more likely to perceive these hazards as threats and take steps to mitigate them.

The process of awareness involves several key mechanisms:

Information Acquisition and Processing: Awareness begins with the reception of information through various sensory channels. This information is then processed and interpreted, leading to an understanding of its relevance and implications. For instance, awareness of a potential hazard in the workplace triggers cognitive processes that assess the risk and potential consequences, leading to the adoption of safe behaviors.

Attention and Focus: Awareness involves directing attention and focus towards specific stimuli, filtering out irrelevant information. This selective attention allows individuals to prioritize information that is relevant to their goals and values. An employee who is aware of the importance of safety will be more attentive to potential hazards and less likely to engage in risky behaviors.

Memory and Recall: Awareness relies on memory to store and retrieve information when needed, guiding decision-making and safety behavior.

Evaluation and Judgment: Awareness involves evaluating the available information and making judgments about its significance and potential impact. This process considers personal values, beliefs, and priorities, as well as social norms and expectations.

Awareness of the impact of one's actions is often shaped by personal values and social norms, which play a significant role in guiding behavior within various contexts. Hudson (2001)

Decision-Making and Action: Awareness culminates in the decision-making process, where individuals choose a course of action based on their evaluation of the available information. This decision is then translated into behavior, whether it be adopting safe work practices, making sustainable choices, or engaging in prosocial behavior.

2.3.7 Perception

Perception is the process by which individuals interpret and make sense of the information they receive from their environment. It is a critical factor in how employees identify and respond to potential hazards:

Sensory Perception: This involves the basic senses—sight, hearing, touch, taste, and smell—which are used to detect hazards in the environment. In ground handling, sharp sensory perception is vital for identifying risks and taking prompt action.

Cognitive Perception: Beyond sensory inputs, cognitive perception involves the interpretation of information based on past experiences, beliefs, and expectations. Employees' perceptions can be influenced by their training, experience, and cultural background, affecting how they assess risks and make decisions.

Understanding perception is essential for designing practical safety training and communication strategies that ensure employees accurately perceive and respond to risks in their environment.

Each of those above factors plays a significant role in shaping how individuals behave in a given situation, including in the context of behavior-based safety programs.

2.4. The Role of Human Behavior in Behavior-Based Risk Management for Ground Handling Operations: Concepts and Models

Human behavior plays a crucial role in ground handling operations within aviation, affecting various factors such as adherence to procedures, fatigue management, communication efficiency, and situational awareness (Smith, 2015). A behavior-based approach to risk management focuses on understanding and influencing employee behaviors to improve safety outcomes, which has been successfully applied in various industries, including aviation (Jones, 2018).

2.4.1. Behavior-Based Safety and Risk Management in Aviation: Theoretical Foundations and Practical Applications

Behavior-based safety (BBS) and risk management is a holistic approach that emphasizes the importance of human behavior in ensuring safety. Rooted in principles from behavioral psychology and organizational theory, BBS seeks to modify and mitigate behaviors that could compromise safety. This section explores both the theoretical foundations and practical implementations of BBS in aviation, emphasizing its potential to elevate safety performance in ground handling operations. (Geller, 2005)

At the core of BBS is the acknowledgment that human error is a significant contributor to safety incidents and accidents. Consequently, strategies are required to understand, influence, and reduce behaviors that pose risks to safety. This process involves addressing not only visible unsafe behaviors but also investigating the root causes and

psychological drivers behind those behaviors. By analyzing patterns in behavior, attitudes, and motivations, organizations can implement targeted interventions and corrective actions that foster safer practices among employees.

2.4.2. Proactive Risk Management in Human Factors

Moreover, behavior-based safety and risk management encompass the systematic identification, assessment, and mitigation of risks associated with human factors across all facets of aviation operations. This entails a proactive approach to hazard identification, risk assessment, and the implementation of controls aimed at minimizing human-related risks. By integrating behavioral insights into Safety Management System, organizations can tailor risk mitigation strategies to address specific behavioral challenges and vulnerabilities. (Li et al. (2019))

2.4.3. Key Elements of Behavior-Based Safety and Risk Management

Data Collection and Analysis: Effective BBS relies on comprehensive data collection methodologies, such as behavioral observation, incident reporting, and analytics, which provide insight into the behavioral patterns that influence safety.

Employee Engagement and Empowerment: Empowering employees to participate in safety initiatives and contribute to hazard identification fosters a culture of safety ownership and resilience. Engaging workers in the safety process improves risk management by promoting active feedback and collaboration.

Leadership Commitment to Safety: Leadership plays a vital role in promoting a safety-centric culture. Leaders must demonstrate their commitment by investing in safety

programs, supporting behavior-based safety initiatives, and encouraging a culture of continuous improvement.

Behavior-based safety and risk management offers a comprehensive approach that places human behavior at the forefront of aviation safety initiatives. By understanding, influencing, and managing employee behaviors, aviation organizations can reduce risks, prevent accidents, and promote a culture of safety excellence. Continuous learning, adaptation, and collaboration within the industry will lead to improved safety performance and operational efficiency.

Ground handling operations, in particular, involve complex interactions between human factors, technology, and environmental conditions, presenting inherent risks. This literature review explores how behavior-based safety and risk management strategies can enhance safety performance in ground handling operations, with a specific focus on the application of the following concepts:

- Fatigue management

- Procedural adherence

- Communication strategies

- Situational awareness

In this literature review, the researcher explores the role of behavior-based safety and risk management strategies in enhancing safety performance within ground handling operations, with a specific focus on the application of the following concepts:

Drift into Failure Concept: In recent years, behavior-based risk management has emerged as a pivotal focus within ground handling operations. Central to this discourse is

the concept of "Drift into Failure," originating from the scholarly endeavors of Sidney Dekker, a distinguished authority in safety science and human factors. Dekker's scholarly contributions delve into the intricate dynamics of system failure, emphasizing the nuanced interplay of various factors rather than singular catastrophic occurrences. Within this framework, he posits that systems tend to deteriorate gradually over time due to a confluence of organizational shifts, complacency, and overlooked risks, culminating in eventual breakdowns. This conceptualization assumes particular significance in the realm of aviation safety, acknowledging the critical influence of human behavior on both the emergence and mitigation of risks. (Dekker, 2011)

Dekker's seminal work, notably elucidated in his 2011 publication, furnishes a foundational groundwork, elucidating the intricate mechanisms underlying the incremental degradation of complex systems. Crucially, his scholarship underscores the imperative of addressing not only technical vulnerabilities but also the multifaceted human and organizational dimensions contributing to system erosion. This resonates with the fundamental tenets of behavior-based risk management, which advocate for a comprehensive approach encompassing the interplay between technology, human factors, and organizational culture.

Within the domain of ground handling operations, Dekker's conceptual framework assumes heightened relevance, given the intricate choreography inherent in ensuring safety within this dynamic milieu. Ground handling activities entail a labyrinthine nexus of interactions among personnel, equipment, procedures, and environmental exigencies, all subject to continual flux and adaptation. Against this backdrop, the specter of drift into

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failure looms prominently, necessitating a nuanced comprehension of underlying mechanisms and risk constituents.

Dekker's theoretical construct accentuates the imperative of holistically addressing the multifaceted nature of risk within ground handling operations. This mandates not only the mitigation of technical vulnerabilities but also the acknowledgment and remediation of human and organizational influences precipitating system degradation over time. By acknowledging the intricate interdependencies between technology, human behavior, and organizational ethos, ground handling entities can craft more resilient risk management strategies, cognizant of the inherent uncertainties and complexities of their operational milieu.

Moreover, Dekker's insights advocate for a proactive and holistic risk management ethos transcending conventional reactive paradigms. Rather than merely reacting to discrete failures in isolation, organizations are enjoined to adopt a forward-looking posture, preempting and mitigating the gradual drift toward failure. This necessitates the cultivation of a culture imbued with resilience, perpetual learning, and adaptive acumen, empowering personnel to discern and preempt potential risks before they metastasize into critical failures.

In summation, Dekker's scholarship on "Drift into Failure" furnishes a compelling framework for comprehending and navigating risk within intricate operational ecosystems such as ground handling operations. By assimilating his insights and integrating them into their risk management lexicon, ground handling entities stand poised to bolster their

capacity to proactively discern, mitigate, and forestall failures, thereby fortifying safety and operational robustness in the aviation domain.

Swiss Cheese Model: In the context of ground handling, Reason's (1997) "Swiss Cheese Model" further enriches our understanding of risk mechanisms. The model elucidates how multiple layers of defense, including technology, procedures, and human actions, can fail to prevent accidents due to latent conditions and active failures. This underscores the importance of a holistic approach that considers both individual and systemic factors in risk management.

Swiss Cheese Model stands as a seminal framework widely referenced in safety literature, vividly illustrating the intricate dynamics of accident prevention within complex systems, particularly pertinent in aviation safety (Reason's, 1990). This metaphorical depiction likens multiple layers of defense to slices of Swiss cheese, each with inherent weaknesses symbolized by holes. An accident, in this model, is the result of a hazardous trajectory when these vulnerabilities align across all layers, facilitating the passage of the hazard through the system.

The elegance of the Swiss Cheese Model lies in its portrayal of the multifaceted nature of safety defenses and their potential interactions. Each layer represents a distinct aspect of safety management, encompassing organizational policies, procedures, equipment reliability, human factors, and environmental conditions. These layers are interconnected yet independent, with their effectiveness contingent upon the absence of aligned holes. Therefore, the model underscores the imperative of implementing diverse and redundant

safety measures to address the inherent uncertainties and variability present in complex systems.

Moreover, the Swiss Cheese Model emphasizes the role of human error and system failures as contributing factors to accidents. It acknowledges that despite meticulous planning and implementation of safety protocols, vulnerabilities persist, necessitating a proactive and layered approach to risk mitigation. By recognizing the inevitability of individual and systemic weaknesses, organizations can adopt a preemptive stance, fortifying their defenses and minimizing the likelihood of catastrophic events.

Furthermore, the Swiss Cheese Model advocates for the cultivation of a safety culture that encourages open communication, continuous learning, and proactive hazard identification. Organizations can systematically identify and address potential weaknesses in their safety defenses through regular risk assessments, incident investigations, and feedback mechanisms. This proactive approach fosters a collective responsibility for safety among all stakeholders, from frontline personnel to senior management, promoting a resilience and reliability culture.

In essence, Reason's Swiss Cheese Model serves as a powerful visual metaphor for understanding the complexities of accident causation and prevention in dynamic systems such as aviation. By embracing its principles and integrating them into safety management practices, organizations can enhance their capacity to identify, mitigate, and ultimately prevent accidents, thereby safeguarding both personnel and assets in the aviation industry.

The SHELL Model: The SHELL model, proposed by Ian R. B. Hawkins and James Reason, provides a structured framework for analyzing human factors within complex

systems. It comprises five key elements: Software (e.g., procedures and regulations), Hardware (e.g., tools and equipment), Environment (e.g., physical surroundings and weather conditions), Liveware (e.g., human operators), and Liveware Interface (e.g., communication and interaction between humans and technology). By examining the interactions among these elements, the SHELL model facilitates a comprehensive understanding of how human performance influences safety outcomes in aviation and other high-risk industries. (Hawkins & Reason, 1995)

Ground handling operations present a dynamic and fast-paced environment where human errors can have significant safety implications. The SHELL model offers valuable insights into the factors contributing to safety incidents and accidents within this context. Analyzing ground handling operations through the lens of the SHELL model enables stakeholders to identify vulnerabilities and implement targeted interventions to mitigate risks.

Software: Ground handling operations rely on a multitude of procedures and protocols to ensure safety and efficiency. By analyzing the software component of the SHELL model, organizations can assess the adequacy of existing procedures and identify areas for improvement. For example, studies have shown that standardizing loading and unloading procedures based on human factors principles can reduce the risk of injury and damage to aircraft and equipment.

Hardware: The equipment and tools used in ground handling operations play a crucial role in ensuring the safety of personnel and aircraft. Through the hardware component of the SHELL model, organizations can evaluate the design and usability of

equipment to minimize the risk of accidents and injuries. For instance, ergonomic assessments of baggage handling equipment have led to the implementation of design modifications to reduce strain and fatigue among ground handlers.

Environment: The physical environment in which ground handling operations take place can vary widely, from adverse weather conditions to congested ramp areas. By considering the environmental factors within the SHELL model framework, organizations can implement strategies to mitigate the impact of external hazards on safety performance. This may include the development of contingency plans for inclement weather or the optimization of ramp layouts to minimize congestion and improve workflow efficiency.

Liveware: Ground handling operations heavily rely on the skills, knowledge, and decision-making abilities of personnel. Examining the liveware component of the SHELL model allows organizations to assess human performance factors such as fatigue, training adequacy, and situational awareness. For example, fatigue management programs based on fatigue risk assessment tools have been implemented to mitigate the impact of long working hours and irregular shifts on ground handling personnel.

Liveware Interface: Effective communication and coordination among ground handling personnel, pilots, and air traffic control are essential for safe and efficient operations. By focusing on the liveware interface within the SHELL model, organizations can identify communication breakdowns and implement strategies to enhance teamwork and collaboration. This may involve the introduction of standardized communication protocols or the use of technology-enabled communication tools to facilitate real-time information sharing.

Incorporating the SHELL model into the analysis of ground handling operations provides a holistic framework for understanding the complex interplay of human factors and their impact on safety performance. By leveraging the insights gained from the SHELL model analytics, organizations can develop targeted interventions to enhance safety culture, improve operational practices, and mitigate risks within the ground handling environment.

The integration of these theoretical frameworks and empirical findings provides a comprehensive foundation for behavior-based risk management in ground handling operations. By understanding the complex interplay of individual, organizational, and systemic factors, we can develop tailored interventions that address both technical and behavioral vulnerabilities. This includes implementing training programs that focus on situational awareness, decision-making, communication, and stress management, as well as fostering a positive safety culture that encourages open reporting and continuous improvement.

In conclusion, the literature on behavior-based risk management in ground handling operations highlights the critical importance of understanding and addressing human behavior in risk management. By integrating theoretical frameworks, empirical findings, and targeted interventions, we can enhance safety performance and create a resilient and proactive safety culture within this critical domain.

CHAPTER III:

METHODOLOGY

3.1.   Philosophical and Theoretical Framework

3.1.1   Philosophical Underpinnings

This research is grounded in a pragmatic philosophical framework. Pragmatism is a practical and flexible approach that emphasizes the use of multiple methods to address real-world problems. In this context, the study recognizes that both objective and subjective realities exist and that understanding the interplay between these realities is crucial for comprehensive insight.

The pragmatic approach allows the research to draw on both positivist and interpretivist paradigms. Positivism emphasizes objective measurement and statistical analysis, while interpretivism focuses on understanding subjective experiences and meanings. This dual approach facilitates a comprehensive understanding of the complex phenomena under investigation.

3.1.2   Ontological Assumptions

Adopting a critical realist ontology, this study posits that a real world exists independently of human perceptions and interpretations. This reality encompasses both observable phenomena, such as behavioral incidents, and underlying mechanisms, such as mental health conditions and societal structures, that contribute to the manifestation of uncontrolled behavioral factors. (Caspi et al., 2003)

Critical realism acknowledges that these underlying mechanisms may not always be directly observable but can be inferred and understood through rigorous empirical

investigation. This ontological perspective is well-suited for the research, as it allows for the exploration of both the surface-level manifestations of Uncontrolled behavioral factors and the deeper psychological and social factors that underpin it. The study will employ a mixed-methods approach, combining quantitative data collection and analysis with qualitative interviews and observations, to capture both the objective and subjective dimensions of this complex phenomenon.

3.1.3 Epistemological Assumptions

Guided by a modified objectivist epistemology, this research recognizes that while objective knowledge about workplace behavior and mental health is attainable, it is also influenced by subjective interpretations and social contexts. This epistemological stance acknowledges that researchers bring their own biases and perspectives to the research process and that these can influence the way data is collected, analyzed, and interpreted. Therefore, the study emphasizes the importance of transparency, reflexivity, and the use of multiple data sources to mitigate bias and enhance the trustworthiness of the findings.

3.2. Methodological Implications

The intricate relationship between uncontrolled workplace behaviors, mental health, and organizational outcomes necessitates a research approach that captures both broad patterns and nuanced details. This study adopts a mixed-methods design, strategically integrating quantitative and qualitative methodologies within a pragmatic framework, to achieve a holistic understanding that neither approach could achieve alone. This framework, informed by critical realist ontology and modified objectivist epistemology, significantly influences the research design and methods.

3.2.1   Mixed Methods Design

The mixed-methods design involves the systematic integration of quantitative and qualitative data collection and analysis to address the research questions and hypotheses comprehensively.

Quantitative data (e.g., survey responses, behavioral checklists) will be gathered primarily through surveys administered to ground handling personnel across Vietnam. This data will be analyzed statistically to identify patterns, correlations, and predictors related to the frequency and nature of uncontrolled behavioral factors, as well as employees' risk management perceptions.

Qualitative data (e.g., interview transcripts, open-ended survey responses) will be collected through in-depth interviews and direct observations of ground handling operations. These methods will provide insights into the underlying motivations for Uncontrolled behavioral factors, the contextual factors influencing them, and the lived experiences of employees and managers.

The integration of quantitative and qualitative data through triangulation will offer a nuanced understanding of the complex interplay between risk management practices, Uncontrolled behavioral factors, and safety outcomes. For example, quantitative findings revealing a negative correlation between effective risk management and Uncontrolled behavioral factors frequency can be further explored through qualitative data to elucidate the specific mechanisms underlying this relationship.

To ensure the validity and robustness of the findings, this study will employ the comparison and contrast of data from multiple sources such as surveys, interviews, observations, and existing records to identify the areas of convergence and divergence.

Researcher also acknowledges the positionality and potential biases throughout the research process. This involves critically reflecting on how their own experiences and perspectives may influence the research and taking steps to mitigate these biases. The study embraces an iterative process of data collection and analysis, allowing for continuous refinement of the research questions and methods as new insights emerge. This approach acknowledges that knowledge is not static but evolves through ongoing inquiry and dialogue.

3.2.2　Rationale for Mixed Methods

Quantitative methods offer the advantage of statistical rigor and generalizability through large sample sizes, enabling the identification of patterns and correlations.

Qualitative methods provide depth and context, illuminating the lived experiences and motivations of individuals, thereby enriching the interpretation of quantitative findings.

The integration of these approaches results in a comprehensive and robust understanding of the complex phenomena under investigation, informing the development of targeted interventions and prevention strategies.

3.3.　Survey Design

The survey design is a multifaceted approach to understanding workplace behavior and risk in ground handling process. It was guided by the research questions and hypotheses, aiming to collect comprehensive data on Uncontrolled behavioral factors, mental health

status, risk management perceptions, and workplace outcomes within the Vietnamese ground handling operations. Two distinct surveys were developed and administered online via Google Forms. The use of online surveys facilitated a large sample size and an efficient data collection process. Both surveys were designed to be concise and user-friendly, taking approximately 15-20 minutes to complete. The questions were worded clearly and objectively, avoiding jargon and leading questions. The full questionnaires for both surveys are included as appendices to this resarch (Appendix A and Appendix B).

3.3.1 Survey 1: Uncontrolled Behavioral Factors and Risk Perception

This survey was designed to investigate the prevalence and predictors of Uncontrolled behavioral factors within the Vietnamese ground handling industry. To achieve this, the survey operationalized two fundamental constructs: "Uncontrolled behavioral factors" and "risk management perception."

Uncontrolled behavioral factors: This construct was defined as observable actions that deviate from expected professional conduct. Specific examples included verbal aggression, passive-aggressive behavior, non-compliance with safety protocols, and disengagement from work tasks. By focusing on these concrete behaviors, the survey aimed to capture a nuanced understanding of the different ways in which Uncontrolled behavioral factors manifest in the workplace.

Risk Management Perception: This construct was assessed through items that gauged employees' views on the effectiveness of various risk management practices in their workplace. These items covered areas such as hazard identification, risk assessment, communication protocols, and overall safety management. By measuring employees'

perceptions of these practices, the survey aimed to understand how the perceived quality of risk management might influence the occurrence of Uncontrolled behavioral factors.

Question Types: The survey employed a combination of open-ended and closed-ended questions to gather both qualitative and quantitative data.

Open-ended questions: One key open-ended question asked respondents to provide their perspectives on the reasons that could lead to errors, incidents, or accidents in their work: "Please provide the reasons that may lead to errors, incidents, or accidents in the course of your work?". This question aimed to capture employees' unfiltered perspectives on the root causes of safety risks and to uncover the range of factors that employees believe contribute to safety risks in their daily work.

5-point Likert scale: The survey asked respondents to assess the impact of various factors on their work performance. The Likert scale responses provided a quantitative measure of the perceived effects of these factors, allowing for statistical analysis and comparisons across different groups. "How do you assess the impact of the following factors on the results of your work?" with factors like fatigue, stress, communication, and safety culture. These scales allowed respondents to quantify the perceived impact of various individual, organizational, and environmental factors on their work performance, thus helping to identify potential contributors to Uncontrolled behavioral factors.

Rationale: The inclusion of both open-ended and closed-ended questions was a deliberate choice to maximize the richness and depth of the data collected. The open-ended questions allowed for the exploration of complex and context-specific factors that may trigger Uncontrolled behavioral factors, while the Likert scales provided a quantitative measure of

the perceived impact of these factors. This combined approach enabled a more comprehensive assessment of the interplay between individual behaviors, workplace conditions, and risk management practices. By understanding both the subjective experiences of employees and the objective factors that influence their behavior, this survey aimed to provide a holistic picture of the challenges and opportunities for improving safety in the ground handling industry.

3.3.2 Survey 2: Mental Health Status and Workplace Behavior

This survey was designed to understand the influence of mental health on work behavior without judgment or repercussions. To achieve this, the survey operationalized two key constructs:

Mental Health Status: This construct was measured using a custom-designed set of questions. The survey included Likert scale items addressing how emotional and psychological factors, such as stress, mood swings, and workplace relationships, influence work behavior. Respondents were asked to rate their agreement with various statements, such as their ability to focus, their reaction to negative emotions, and the impact of mental fatigue on their job performance. The survey also addressed how positive emotions and comfort could improve motivation and accuracy at work.

Workplace Behavior: This construct was measured through items that assessed the respondents' performance and conduct in the workplace. The survey explored factors such as concentration, the effects of stress and pressure on focus, emotional stability, and the quality of relationships with colleagues and management. It aimed to capture the impact of

both positive and negative emotions on work behavior, including adherence to safety protocols and interaction with peers.

Question Types: The survey used Likert scales and multiple-choice questions to gather data on mental health and workplace behavior.

Multiple-Choice Questions: These were used to collect demographic information about the respondents, such as gender, age, job role, department, and tenure. This data helped categorize respondents and facilitated the exploration of potential differences in mental health and workplace behavior across demographic groups.

5-point Likert scale: Respondents rated their agreement with statements related to their mental health and workplace experiences on a 5-point scale, ranging from "Strongly Disagree" to "Strongly Agree." These questions assessed the impact of stress, emotional instability, and fatigue on concentration, work behavior, and interpersonal interactions.

Rationale: The use of validated psychometric scales to measure mental health status ensured the reliability and validity of the assessment. The Likert scales allowed for a nuanced measurement of perceptions and experiences, enabling a comprehensive evaluation of the impact of mental health on workplace behavior. By including demographic questions, the survey aimed to identify potential disparities in mental health and behavior among different groups within the ground handling workforce, thus providing valuable insights for targeted interventions and support programs.

3.3.3 Interviews and Observations

3.3.3.1 Interviews

A series of semi-structured interviews and structured observations were conducted to gain a deeper understanding of the factors contributing to Uncontrolled behavioral factors and the impact of mental health on workplace incidents. (Appendix C)

A semi-structured interview guide was developed, consisting of open-ended questions designed to elicit detailed responses about participants' observations of Uncontrolled behavioral factors, their experiences with mental health challenges in the workplace, and their perceptions of the impact of these factors on workplace safety and performance. Probes were included to encourage elaboration and clarification.

3.3.3.2 Observations

To complement these in-depth interviews, structured observations were conducted across various workplace settings within SAGS, including the ramp area, baggage handling areas, and check-in counters, to observe instances of Uncontrolled behavioral factors and their contexts. A standardized checklist was used to systematically record specific behaviors of interest (e.g., verbal aggression, passive-aggressiveness, disengagement) and contextual factors (e.g., workload, time pressure, interpersonal interactions). Detailed field notes supplemented the checklist to provide a more detailed description of the observed behaviors and their surrounding context. Observations were conducted during different shifts and times of day to ensure a representative sample of workplace interactions. The goal was to observe actual instances of Uncontrolled behavioral factors and the contexts in which they occurred.

3.4. Data Collection Methods

The surveys were piloted with a small sample of 55 employees to ensure clarity and gather feedback before being administered to a larger sample of 634 respondents for Survey 1 and 789 respondents for Survey 2.

3.4.1 Target Population

The target population for this study consisted of all ground handling personnel employed across various companies in Vietnam. This included individuals in diverse roles within the industry, regardless of their experience level or demographic background. To ensure a representative sample, the researcher leveraged their affiliation with the Airports Corporation of Vietnam (ACV), which manages 22 airports nationwide. This facilitated access to a broad range of potential participants across multiple airports. Collaboration with relevant departments within each airport aided in identifying employees who met the study's inclusion criteria, with a particular emphasis on recruiting individuals with varying levels of experience in ground handling.

The study's inclusion criteria encompassed all ground handling personnel employed by participating companies, provided they met the specific requirements of their assigned stratum. Conversely, individuals not directly involved in ground handling operations, such as administrative staff not working in operational areas, were excluded, as were those who did not provide informed consent. This diverse target population reflects the study's aim to understand uncontrolled behavioral factors and mental health across different job functions and levels of responsibility within the ground handling industry.

To uphold ethical standards and protect participant well-being, this study adhered to rigorous ethical protocols. All participants provided informed consent after receiving a detailed form outlining the study's purpose, voluntary nature, confidentiality measures, and potential risks and benefits. Anonymity was ensured as no personally identifiable information was collected through the surveys. The study obtained ethical approval from the Chairman of Saigon Ground Services and Airports Directors prior to data collection. These practices, combined with the use of online surveys and in-depth interviews, ensured the ethical integrity and validity of the data collected, while also allowing for a broad reach and a deeper understanding of the lived experiences of employees within the ground handling industry.

3.4.2 Sampling Frame

While a purposive sampling approach, prioritizing individuals with specific characteristics relevant to the research question was initially considered, practical constraints dictated the use of convenience sampling. Due to the absence of a comprehensive list of all ground handling personnel in Vietnam, the study relied on contacting ground handling companies directly to disseminate the survey to their employees. Companies were selected based on their size, geographical location, and willingness to participate, ensuring a diverse range of respondents while acknowledging the inherent limitations of this sampling method.

Participant Selection Criteria

Job Role: Include employees from various job roles within ground handling operations, including staff, supervisor, and manager from customer services, load control

services, loading services, ground operations services, baggage services, cabin cleaning services, and ground equipment operation services. This diversity will help capture different perspectives on the causes and consequences of Uncontrolled behavioral factors and variations in risk management practices across different functions.

Experience Level: Participants representing a diverse range of experience levels within the ground handling industry, including those with less than one year, 1-5 years, 6-10 years, and more than ten years of experience. This will allow the study to explore how experience influences perceptions of risk, adherence to safety protocols, and coping mechanisms for stress.

Geographic Location: Participants from different airports and three regions to account for potential variations in workplace culture, operational practices, and environmental factors that may influence behavior and risk perception.

Gender and Age: Participants from diverse gender and age groups to explore potential differences in experiences and perspectives related to Uncontrolled behavioral factors and mental health.

3.4.3 Sampling Procedure

Initial Contact: The researcher contacted the director and safety manager at each participating ground handling company to explain the purpose of the study and its potential benefits and to request their cooperation.

Email Invitation: Upon obtaining consent from the company, an email containing an invitation to participate in the survey, along with an informed consent form, was sent to the director in order to deploy to all ground handling employees at each company. The email

emphasized the voluntary and confidential nature of participation, and the potential benefits of the research for the ground handling operations.

Follow-up and Reminders: Reminder emails were sent regularly throughout the data collection period to maximize response rates. Company representatives were also followed up with to address any questions or concerns that arose during the process.

Rationale: The convenience sampling approach was chosen due to its feasibility and efficiency in accessing a large and diverse sample of ground handling personnel across Vietnam. By partnering with ground handling companies, the research team was able to leverage existing communication channels to reach a wide range of employees with minimum disruption to their work. The stratification ensured that the sample was representative of the diverse roles, experience levels, and responsibilities within the industry.

3.4.4 Sampling Limitations and Potential Biases

While convenience sampling was employed due to its practical advantages, the study acknowledges potential limitations and biases inherent in this approach. These include self-selection bias, where individuals with stronger opinions or interest in the topic may be more likely to participate, and non-response bias, where particular groups or perspectives may be underrepresented due to non-participation.

Additionally, social desirability bias may have influenced respondents to provide answers they perceive as more socially acceptable, particularly on sensitive topics like mental health.

To mitigate these biases, the researcher emphasized the importance of participation from all employees, sent reminder emails, and ensured the anonymity and confidentiality of responses

Despite these limitations, the convenience sampling approach was deemed appropriate for this exploratory study. The large sample size (n = 654 for Survey 1 and n = 814 for Survey 2) and the diversity of respondents across different companies and job roles contribute to the generalizability of the findings within the Vietnamese ground handling context.

3.4.5   Data Collection Procedures

The data for this study were collected through two online surveys, each focusing on a distinct aspect of workplace behavior and mental health. Both surveys were administered using Google Forms, which was chosen for its user-friendly interface, accessibility, and data management capabilities.

3.4.5.1 Survey 1: Uncontrolled Behavioral Factors in the Workplace

Pilot Testing: Prior to the main data collection phase, a two-week pilot study was conducted. A small group of employees (n = 20) from the target population participated in the pilot to assess the clarity of the questions, identify potential issues with response options, and estimate the time required for completion. Feedback from the pilot study was used to refine the survey instrument and ensure its effectiveness.

Main Data Collection: The revised survey was then distributed to a wider sample of employees at SAGS and 6 international airports in Vietnam, (n = 634). The survey link was disseminated via email, with a personalized invitation outlining the purpose of the

study, assuring confidentiality, and emphasizing the importance of participation. Reminders were sent periodically to encourage participation. The data collection period spanned two months to allow for sufficient response rates.

3.4.5.2 Survey 2: Impact of Mental Health Status on Workplace Behavior

Pilot Testing: Similar to Survey 1, a two-week pilot study was conducted with a small group of employees (n = 25) to refine the survey instrument and ensure its clarity and relevance.

Main Data Collection: The finalized survey was then administered to a broader sample of employees at SAGS and six international airports in Vietnam (n = 789). The distribution method, timeline, and communication strategy mirrored those used for Survey 1.

3.4.5.3 Interviews and Observations

Interviews were conducted privately with 15 employees directly or indirectly involved in incidents, accidents, or near misses. A purposive sample of 15 ground handling employees was carefully selected to ensure representation across diverse roles, including customer services agent, load controller, loading supervisor, ground support equipment operator, ground operations agent, baggage handler, and aircraft cabin cleaner. The samples also encompassed individuals from different departments, such as ground operations, ramp handling, maintenance center, customer services, and quality and safety departments. They represented a diverse range of ages, genders, and experience levels. Each interview lasted approximately 30-45 minutes and followed a semi-structured protocol (see Appendix C). This protocol was developed based on the themes and questions that emerged from the

quantitative data analysis and relevant concepts and theories identified in the literature review. The semi-structured format allowed for flexibility and probing while ensuring that key topics were covered consistently across all interviews.

The interview protocol was designed to delve deeper into the following key areas:

Exploring incidents: Participants were invited to recount specific incidents where errors, near-misses, or accidents (as defined by ISO 45001:2018) occurred. They were asked to provide detailed descriptions of the sequence of events, their thoughts and feelings, and any subsequent actions to respond to the incident. The goal was to gain a rich, contextualized understanding of how and why these events unfolded.

Analyzing contributing factors: Probing questions were employed to uncover the personal, environmental, and procedural factors that the participants perceived as contributing to the incidents. This included exploring issues such as communication breakdowns, equipment malfunctions, time pressure, fatigue, inadequate training, unclear procedures, and individual decision-making biases. The aim was to identify the root causes of errors, incidents, or accidents, providing valuable insights into workplace issues and pinpointing areas for potential improvement.

Identifying unsafe behaviors: Discussions focused on common unsafe behaviors or shortcuts observed among colleagues and the reasons behind these actions. Participants were encouraged to reflect on the perceived risks and benefits associated with such behaviors and to share their perspectives on why these behaviors might persist despite potential safety hazards.

Exploring the impact of fatigue: Recognizing fatigue as a significant risk factor in safety-critical industries, questions were dedicated to understanding how fatigue in both physical and mental that affects decision-making, actions, and overall safety in the ground handling context. Inquiries were made about participants' sleep patterns, workload, shift schedules, and the availability of rest breaks.

Generating solutions: Participants were actively encouraged to provide their insights and suggestions for improving safety behaviors, communication practices, training programs, equipment design and maintenance, operational procedures, and the overall work environment. This participatory approach aimed to leverage their practical experience and expertise in identifying potential solutions that could be implemented to enhance safety and well-being.

Uncovering underlying beliefs and attitudes: Questions probed deeper into employees' perceptions of safety, risk, responsibility, and organizational culture. This included exploring their beliefs about the importance of safety, their understanding of risk factors, their trust in management and colleagues, and their perceptions of the organization's commitment to safety. This exploration aimed to illuminate the underlying values and attitudes that shape employee behavior and influence safety outcomes

By exploring the "why" behind behaviors, the interviews aimed to uncover the underlying motivations, beliefs, and attitudes driving specific actions and delve into the individual and organizational factors contributing to safe and risky behaviors. The interviews also captured rich, contextualized experiences through personal narratives and examples, shedding light on daily challenges, risk management strategies, and the influence of various factors on

decision-making. Probing beyond surface-level explanations aimed to identify root causes of safety issues, examine the interplay of contributing factors, and uncover potential blind spots in existing practices.

Ultimately, these in-depth interviews sought to provide a comprehensive understanding of safety behavior, going beyond the "what" to the "why," enabling the development of targeted, effective interventions that can enhance safety and operational efficiency in the Vietnamese ground handling industry.

To encourage candid responses and address concerns about reprisal, participants were assured of the confidentiality of their contributions. The interviews were conducted in private settings, free from distractions and interruptions, to foster a safe and confidential space for open and honest communication

Observations were conducted across various shifts and times of day to capture a representative sample of workplace interactions and contextual details relevant to Uncontrolled behavioral factors. A standardized checklist was utilized to systematically record observed behaviors. This diverse sample aimed to capture a wide range of perspectives and experiences.

3.5. Data Analysis Techniques

Statistical methods was used to examine relationships between variables, they serve different purposes and have distinct applications in research.

3.5.1 Descriptive statistics

The researcher used quantitative data analysis to explore the deep-dive insights into employee's perceptions of their behavior and mental health at the workplace. The survey

data was meticulously analyzed using IBM SPSS Statistics (Version 27.0.1.0), a robust statistical software package. A variety of statistical techniques were employed to explore the relationships between variables, test hypotheses, and quantify the magnitude of effects.

Descriptive statistics were initially computed to summarize and characterize the sample and responses. These included:

Frequencies and Percentages

Frequencies and percentages were calculated for categorical variables, such as types of individual factors, mental health, and organizational factors that affected Uncontrolled behavioral factors among demographic factors, to reveal the distribution of responses across different categories. They represent the proportion of respondents who selected each value on the Likert scale value (1-5) for a given question. This analysis was conducted for each demographic factor (gender, department, employment status, length of time in the job, and age group) and for each question about Uncontrolled behavioral factors. By examining these frequencies and percentages, the study gains insights into the composition of the sample and can identify potential differences in responses between various groups, thus illuminating patterns and trends within the data.

Means and Standard Deviations

The analysis of means and standard deviations illuminates the central tendencies and variability within responses across distinct groups. The means were calculated by the average for each question and group of questions to understand the central tendency of the responses. The values were then compared across these categories to identify potential differences and trends among groups. By examining the mean, which represents the average

response for a particular group on a given survey item, this study can discern the typical level of agreement or disagreement within that group. Comparing means across different groups, such as males versus females or various departments, can unveil potential disparities in perceptions or experiences.

The standard deviation, a measure of dispersion and variation of responses around the mean, indicates how much individual responses differ from the average as well as the degree of consensus or divergence within a group's responses. This combined analysis of means and standard deviations enables the identification of patterns, trends, and areas warranting further investigation or intervention.

In order to compare the responses between different groups and identify any significant differences or patterns, the breakdown analysis was used to measure by various demographic factors by gender, department, job role, tenure, and age group.

Cross-tabulation

Cross-tabulation was used to analyze the relationship between categorical variables (e.g., gender, department, job role). It allows for the identification of patterns or associations between them. It also helps to explore whether certain demographic groups are more likely to attribute errors to personal attitudes than others.

Correlation analysis

Pearson correlation coefficients were calculated to examine the relationships between various factors influencing employee focus and performance. This analysis assessed the strength and direction of linear relationships between two or more quantitative items to potential stressors in the workplace (e.g., stress level, number of errors). It

quantifies the degree to which the variables change together, indicating whether they increase or decrease together (positive correlation) or move in opposite directions (negative correlation). It calculates a correlation coefficient (r) that ranges from -1 to 1.

-1: Perfect negative correlation (as one variable increases, the other decreases proportionally).

0: No correlation.

1: Perfect positive correlation (as one variable increases, the other increases proportionally).

It helps to examine the impact of various factors on employee focus and performance. The significant association between job role and Uncontrolled behavioral factors highlights the need for targeted interventions for specific roles. The ordinal logistic regression model demonstrates the predictive power of the frequency of observing Uncontrolled behavioral factors on perceptions of its negative impact, emphasizing the importance of early identification and intervention.

This analysis also aimed to identify which factors have the strongest influence and whether their relationship is positive (as one-factor increases, the other increases) or negative (as one-factor increases, the other decreases).

By quantifying the relationships between these variables, this study provides valuable evidence for developing targeted interventions that address the root causes of Uncontrolled behavioral factors and promote mental well-being in the Vietnamese ground handling industry. The findings also underscore the importance of tailoring interventions to specific job roles and demographic groups to maximize their effectiveness.

Regression analysis

This technique models the relationship between the likelihood of making an error (dependent variable) and several influence factors (independent variables): stress level, noise level, and years of experience. The goal is to develop a predictive model that estimates the probability of an error occurring based on the values of these influencing factors. Regression analysis yields coefficients for each independent variable, quantifying the magnitude and direction of their impact on the likelihood of making an error. For example, a positive coefficient for stress level would indicate that higher stress levels are associated with a greater likelihood of error.

Regression Sum of Square: The R-squared value (R^2) quantifies the proportion of variance in the error and the relationship between the predictors and the outcome that the model explains. A higher R^2 indicates a better fit of the model to the data. The ANOVA (Analysis of Variance) table is used to assess the overall statistical significance of the model. It determines whether the influenced factors collectively have a statistically significant effect on the likelihood of making an error. The final aim is to determine if the model is a good fit for the data and if the predictors are doing an excellent job explaining the variation in the error outcome.

Overall, combining correlation and regression analyses with descriptive statistics aims to provide a comprehensive understanding of the factors influencing employee behavior. The findings highlight the importance of various factors, including personal attitudes, skill and knowledge deficits, mental health status, and environmental conditions,

in shaping workplace behavior. It aims to identify critical areas for intervention and improvement to reduce employee error and enhance workplace performance.

3.5.2   Qualitative Data Analysis

The analysis began with an immersive reading of all transcripts and open-ended responses to comprehensively understand the data landscape. Initial notes and reflections were documented to capture emerging patterns and potential areas of interest. Transcribed interviews were analyzed using NVivo software. A thematic analysis approach was employed to identify recurring themes and patterns in the data, such as common triggers of Uncontrolled behavioral factors, coping mechanisms employed by employees, and perceived organizational responses.

Following each interview, the audio recordings were transcribed verbatim. Transcripts were reviewed for accuracy and de-identified to protect participant anonymity.

Observation data were analyzed using descriptive statistics to quantify the frequency and duration of observed behaviors. Field notes were also analyzed qualitatively to identify contextual factors that may contribute to or mitigate Uncontrolled behavioral factors. The final report synthesized the key findings from the analysis, providing a detailed account of each group, its supporting evidence from the data, and its implications for the broader research questions.

This analysis aimed to uncover the underlying reasons for Uncontrolled behavioral factors, the specific ways in which mental health impacts workplace experiences, and the coping mechanisms employed by employees.

3.5.3 Triangulation and Validation

A robust methodological approach incorporating data triangulation and external validation was employed to enhance the credibility and validity of the research findings. Data triangulation was achieved by systematically comparing and contrasting quantitative findings derived from statistical analyses of survey responses with qualitative insights gleaned from open-ended survey questions and in-depth interviews. This process allowed for a comprehensive understanding of the phenomenon under investigation, ensuring that statistical patterns were interpreted in light of the nuanced experiences and perceptions expressed by participants.

Furthermore, to ensure the external validity and generalizability of the findings, the research results were rigorously validated against existing organizational records from Saigon Ground Services Join Stock Company (SAGS), a prominent Vietnamese ground handling company. This involved a meticulous cross-referencing process, where survey findings regarding the prevalence and impact of Uncontrolled behavioral factors were compared to documented incidents of such behavior in SAGS's incident reports and non-conformity logs. Additionally, the qualitative themes identified in the research, such as the negative influence of workplace stressors on mental health, were examined in light of employee performance appraisals and human resources data, revealing consistent patterns of decreased productivity, increased absenteeism, and interpersonal conflicts in cases where employees reported experiencing mental health challenges.

This comprehensive validation process served to corroborate the research findings with real-world data from the ground handling industry, bolstering the study's conclusions

and enhancing their applicability to practical settings. By demonstrating the alignment between research findings and actual workplace experiences and outcomes, the study reinforces the robustness of its conclusions and provides valuable insights for developing targeted interventions to address Uncontrolled behavioral factors and promote a healthier and more productive work environment.

By employing this combination of software tools and analytical techniques, the study aimed to provide a rigorous and comprehensive analysis of the survey data, integrating both statistical insights and nuanced qualitative understanding to shed light on the complex interplay between mental health, workplace behavior, and organizational outcomes. This mixed-methods analysis provides a comprehensive understanding of the complex interplay between mental health, workplace behavior, and organizational outcomes. The findings can inform the development of targeted interventions to improve employee well-being, reduce Uncontrolled behavioral factors, and foster a positive and productive work environment.

Finally, this research methodology is firmly grounded in the principles of behavior-based risk management. By integrating multiple data sources and employing both quantitative and qualitative analysis, this study sought to not only identify the "what" of safety behaviors but also to delve into the "why," uncovering the underlying beliefs, attitudes, and motivations that shape employee actions and contribute to the complex landscape of ground handling operations. The comprehensive data collected will inform the development of targeted, behavior-based interventions that can foster a proactive safety culture and enhance operational efficiency within the Vietnamese ground handling operations.

CHAPTER IV:

RESULTS AND DISCUSSION

4.1. Overview of Data Collected

The data collected through Survey 1: Uncontrolled Behavioral Factors and Risk Perception in Ground Handling and Survey 2: Impact of Mental Health Status on Workplace Behavior provides comprehensive insights into how employees across various departments perceive their work performance and the factors influencing their behavior. Each survey focused on distinct aspects: the first addressed individual and organizational factors, while the second examined mental health and emotional well-being.

Respondents for both surveys were drawn from diverse operational areas, including:

- Aircraft Load Control;

- Customer Services;

- Aircraft Cabin Cleaning;

- Aircraft Loading Services;

- Ground Equipment Operations.

Participants represented a wide range of positions within the organization, including:

- Managers;

- Supervisors;

- Operational Staff.

The respondents' tenure within the company varied from less than one year to over a decade, offering a broad representation of experience. The age distribution of respondents

spanned across age groups under 30, between 30 and 40, and between 40 and 50 years old, ensuring a balanced demographic sample across different roles and departments.

Survey 1: Uncontrolled Behavioral Factors and Risk Perception in Ground Handling

Survey 1, which included responses from 654 employees, focused on identifying both individual and organizational factors that influence workplace behavior and overall performance. Respondents were asked to rate the impact of various performance-related factors, such as training, resources, workload, and safety protocols, on a numerical scale, providing a quantitative assessment of how these influences affect their daily work.

Survey 2: Impact of Mental Health Status on Workplace Behavior

Survey 2, with data collected from 815 employees, explored the impact of workplace stress, negative emotions, and mental fatigue on employee performance. Using a Likert scale, respondents indicated their level of agreement with statements regarding how stress, mood swings, and emotional challenges influenced their work. Additionally, the survey examined the times of day when employees experienced fatigue or impaired senses, as well as the role of environmental factors (e.g., noise, temperature) and personal factors (e.g., feeling disrespected or threatened) in contributing to mental fatigue.

4.2. Individual Performance Factors

This section focuses on the individual factors identified through Survey 1: Uncontrolled Behavioral Factors in the Workplace, which influence employee performance. The detailed findings are presented in Appendix F and will be referenced throughout this discussion. Key factors are categorized based on their role in shaping performance, offering a clearer understanding of how employees perceive these influences.

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4.2.1 Skill and Knowledge Deficits

One of the most significant individual performance factors identified was skill and knowledge deficits. Employees were asked to assess the extent to which a lack of specialized knowledge and training, insufficient information to understand tasks, a mismatch between job complexity and their capabilities, and a lack of understanding of right and wrong behavior impacted their work.

The analysis revealed that a large majority of respondents (76.7%) skill and knowledge deficits as significant impediments to their performance. Notably, 35.3% strongly agreed, 28.6% agreed, and 12.8% remained neutral, underscoring a widespread acknowledgment of this issue (see RQ1 in Appendix F).

These findings suggest that inadequate training and a lack of specialized knowledge are critical barriers to effective performance. Furthermore, a significant portion of the workforce linked these deficits to workplace errors, incidents, and accidents. The data indicates that this shortfall stems from inadequate training programs or limited access to professional development opportunities, leaving employees unprepared to handle tasks requiring advanced skills.

Impact of Information Deficiency

Building on the theme of skill deficits, the survey also explored how insufficient information affected performance. Information deficiency can further hinder task execution, especially in critical areas requiring precise knowledge.

The results showed that 78.4% of respondents believed a lack of necessary information negatively impacted their performance, with 28.4% strongly agreeing, 31% agreeing, and

19% neutral (see RQ2 in Appendix F). This highlights the importance of clear communication and proper information flow, as inadequate instructions were recognized as significant contributors to workplace errors and accidents.

Job Complexity and Capability Mismatch

Another key factor influencing employee performance is the mismatch between job complexity and individual capabilities. While skill deficits often result from insufficient training, job complexity can independently exacerbate performance issues, particularly when employees feel unqualified to manage complex tasks.

The survey found that 22.5% of respondents felt that their jobs were too complex for their capabilities, significantly affecting their performance. This group included 4% who strongly agreed, 3.2% who agreed, and 15.3% who were neutral. Although this represents a minority of the workforce, it indicates that job complexity poses a challenge for some employees (see RQ3 in Appendix F).

While most employees (77.5%) felt adequately equipped to manage their responsibilities, those who struggled with complex tasks likely faced challenges due to insufficient training, unclear job expectations, or limited experience. These findings emphasize the importance of tailored training programs, mentorship, and clear job descriptions to support employees handling complex roles.

Job Title Means Analysis – Job Complexity by Job Role

(see Results Analysis – Skill and Knowledge Deficits in Appendix J)

An in-depth analysis of job complexity across various roles highlights notable differences in how employees perceive their responsibilities. The data reveals clear

distinctions in how managers, supervisors, and staff experience job demands, offering a nuanced view of organizational dynamics.

Managers (Mean: 3.61, SD: 1.418)

Managers, while responsible for overseeing strategic decisions, face slightly less intense job complexity compared to supervisors. Their mean score suggests that, although their roles are challenging, they may benefit from more structured support systems and clearer guidelines. The higher standard deviation (SD: 1.418) indicates a wide range of experiences—some managers handle their roles well, while others struggle, possibly due to varying departmental pressures and levels of support.

Supervisors (Mean: 3.88, SD: 1.311)

Supervisors report the highest levels of job complexity. Their roles demand rapid decision-making, multitasking, and overseeing operations, often with fewer resources. This heightened perception of complexity underscores the significant pressures they face on the frontline. The standard deviation (SD: 1.311) suggests variability in how different supervisors cope—some manage the challenges effectively, while others find the role overwhelming, potentially due to differences in team dynamics or available support.

Staff (Mean: 3.65, SD: 1.286)

Despite having more defined roles, staff members also encounter job complexity. Their mean score aligns closely with that of managers, indicating that even frontline workers face notable challenges, possibly due to inadequate training or resource shortages. However, the lower standard deviation (SD: 1.286) suggests greater consistency in staff experiences,

reflecting the more structured nature of their tasks compared to the variable responsibilities of managers and supervisors.

Skill and Knowledge Deficits by Demographics

To gain a more nuanced understanding, the data was analyzed based on gender, department, and experience level. This analysis revealed significant variations in the prevalence and impact of skill gaps across different demographic groups.

Gender

Male (Mean: 3.61, SD: 1.300) vs. Female (Mean: 4.00, SD: 1.256) Both male and female employees reported experiencing skill and knowledge deficiencies, though females indicated slightly higher mean scores, suggesting a perception of greater skill gaps. This may reflect specific challenges faced by female employees, such as underrepresentation in certain departments or less access to training opportunities.

The standard deviation for females (1.256) being slightly higher than that for males (1.300) suggests that female employees experience greater variability in how they perceive skill deficits. Some women may face significant barriers to acquiring necessary skills, while others may feel adequately supported. These findings point to the need for more tailored training interventions to address gender-specific challenges, particularly for female employees who might be underrepresented in certain areas.

In summary, while skill and knowledge deficits are prevalent concerns for both genders, the higher variability among female employees indicates that their experiences with these deficits may differ more widely across roles or departments. This suggests the

necessity for targeted training programs that are sensitive to the differing needs of male and female employees.

Department

Customer Services (Mean: 3.91, SD: 1.333)

Employees in Customer Services reported the highest mean score, indicating that this department experiences the most significant skill and knowledge deficits. The variability (SD: 1.333) suggests that while most employees acknowledge these gaps, some may experience them more acutely, possibly due to the fast-paced, customer-facing nature of the job that demands a diverse skill set.

Ground Equipment Operations (Mean: 3.56, SD: 1.247)

Employees in Ground Equipment Operations reported lower mean scores, implying fewer skill and knowledge gaps compared to Customer Services. The slightly lower standard deviation (SD: 1.247) suggests more consistency in how these employees experience skill deficiencies. This may be due to the more technical and procedural nature of their work, which typically benefits from well-defined training programs and clearer operational guidelines.

Loading Services (Mean: 3.46, SD: 1.215)

Employees in Loading Services reported the lowest mean score, suggesting that skill deficits are less pronounced in this department. The lower standard deviation also implies that employees in this area have a more uniform perception of skill gaps, possibly due to clearer job roles or more consistent training programs.

In conclusion, skill and knowledge deficits are most prevalent in the Customer Services department, highlighting an urgent need for improved training and resources in this area. In contrast, employees in more technical roles, such as those in Ground Equipment Operations and Loading Services, report fewer challenges, likely due to more structured training and greater job clarity. These findings emphasize the importance of tailored training programs that address the specific needs of each department, particularly those with higher skill gap perceptions.

Experience Level

The analysis of skill and knowledge deficits by experience level revealed notable trends across different employee groups:

< 1 year (Mean: 3.44, SD: 1.247)

Employees with less than one year of experience reported the lowest mean score, indicating that skill deficiencies are not a significant challenge for them. This is likely because they are still in the process of acquiring foundational skills and are less exposed to more complex responsibilities that would require advanced knowledge.

< 5 years (Mean: 3.73, SD: 1.276) and **< 10 years (Mean: 3.74, SD: 1.336)** Employees with 5 to 10 years of experience reported higher mean scores, suggesting that skill deficiencies become more apparent as they progress in their roles. As responsibilities increase with tenure, these employees may encounter more complex tasks, requiring advanced skills that they do not feel fully equipped to handle. This growing complexity highlights the need for continual skills development as employees move beyond entry-level positions.

> 10 years (Mean: 3.83, SD: 1.336)

Employees with more than 10 years of experience reported the highest mean score, indicating that they are more likely to experience skill and knowledge gaps. This could be due to the evolving nature of their roles, which may demand ongoing learning to keep up with new technologies, policies, or industry standards. The relatively high standard deviation (SD: 1.336) suggests that these employees have diverse experiences, with some encountering more significant skill gaps than others, possibly depending on their specific roles or areas of responsibility.

In conclusion, the data suggests that skill and knowledge deficiencies become more pronounced as employees gain experience, particularly for those with over 10 years in their roles. This trend underscores the importance of continuous professional development and ongoing training to ensure that seasoned employees are equipped to adapt to evolving job demands. Targeted training interventions, especially for more experienced employees, are crucial for maintaining high performance and mitigating the risk of skill gaps over time.

4.2.2 Personal Attitudes

Personal attitudes significantly influence employee behavior, directly impacting workplace safety and performance. This section examines how subjective judgment, cutting corners, intentional mistakes, and habitual behaviors shape decision-making and adherence to safety protocols, all of which contribute to overall safety outcomes in the workplace.

Subjective Judgment

Subjective judgment occurs when employees rely on personal discretion instead of following established protocols. The data indicates that 66.1% of respondents believe subjective judgment significantly affects their work performance, with 27.1% agreeing, 18.8% strongly agreeing, and 20.2% remaining neutral (see RQ4 in Appendix F). These figures suggest that a substantial portion of employees recognize the influence of personal judgment on their decisions at work.

The analysis further reveals that subjective judgment contributes to workplace errors, incidents, and accidents. Personal biases and interpretations often lead employees to depend on their own judgment, especially when guidelines are unclear or when training is inconsistent. This variability in decision-making increases the likelihood of unsafe practices, heightening the risk of incidents.

Cutting Corners and Safety Risks

A key factor identified is the tendency to cut corners—skipping steps or bypassing protocols to save time or effort. A large majority, 72.5% of respondents, acknowledged that cutting corners negatively impacts work performance, with 32.3% strongly agreeing, 23.1% agreeing, and 17.1% neutral (see RQ5 in Appendix F). This reflects widespread recognition of how shortcuts undermine both safety and quality.

The data suggests that cutting corners is often driven by time pressures, inadequate resources, or insufficient training. Although these shortcuts may reduce immediate workload, they ultimately increase the risk of errors and accidents by bypassing essential safety procedures. To mitigate this risk, organizations must ensure that employees have

adequate resources, comprehensive training, and realistic deadlines, encouraging a culture where safety is prioritized over speed.

Survey Analysis: Subjective Judgment and Cutting Corners

(see Results Analysis – Personal Attitudes in Appendix J)

The survey data highlights notable variations in the use of subjective judgment and the tendency to cut corners across different factors such as job role, gender, department, and experience level.

Job Role

Managers (Mean: 3.36) and Supervisors (Mean: 3.3) report slightly lower mean scores than staff members (Mean: 3.47). This suggests that staff members may encounter more situations requiring subjective judgment or feel greater pressure to cut corners.

Supervisors exhibit the highest standard deviation (SD: 1.6), indicating greater variability in their responses. This may stem from their dual responsibilities of managing strategy and overseeing operational challenges, creating a wider range of experiences within this group.

Gender

Female employees (Mean: 3.8) report a higher mean score compared to male employees (Mean: 3.35), indicating a greater likelihood of engaging in subjective judgment and cutting corners among female staff.

Interestingly, the standard deviation for females (SD: 1.408) is slightly lower than that for males (SD: 1.447), suggesting more consistency in female responses. Overall, staff members, particularly female employees, are more prone to subjective judgment and cutting

corners than supervisors or managers. This may be due to the increased operational pressure they face within tight deadlines.

Department

Customer Services (Mean: 3.85) and Baggage Services (Mean: 3.48) reported the highest mean scores, while Ground Operations Services (Mean: 2.72) had the lowest. The higher scores in customer-facing roles likely result from frequent decision-making under pressure and regular customer interactions, necessitating quick responses. In contrast, Ground Operations Services, with its more structured processes, offers less flexibility for subjective judgment and minimizes opportunities to cut corners. These variations highlight the need for department-specific strategies to address unique operational pressures and risks.

Experience Level

Employees with less than 5 years of experience (Mean: 3.6) report the highest mean score, suggesting a higher propensity to engage in subjective judgment and cutting corners. This may be driven by unfamiliarity with established procedures or a perceived need to demonstrate efficiency.

In contrast, employees with more than 10 years of experience (Mean: 3.29) report a lower mean score, indicating closer adherence to established procedures and less reliance on subjective judgment or shortcuts.

The consistency in standard deviations across experience levels suggests that, despite differences in tenure, variability in responses remains steady. This indicates that targeted interventions should address both department-specific challenges and the experience level to mitigate risks associated with subjective judgment and cutting corners.

Deliberate Attempts to Cut Corners

The data highlights that deliberate attempts to cut corners are a major contributor to workplace errors, incidents, and accidents. A significant proportion of respondents agreed or strongly agreed that shortcuts are often used due to factors such as deadline pressure, lack of resources, or inadequate training. While these shortcuts may temporarily ease workload, they frequently compromise safety and quality, leading to increased risks and diminished performance.

To mitigate these behaviors, organizations must focus on fostering a culture of safety, providing sufficient resources, comprehensive training, and support, while also encouraging adherence to established protocols.

Intentional Mistakes as Passive Resistance

A smaller, yet significant, portion of employees (13.7%) acknowledged that they may have made deliberate mistakes as a form of passive resistance or protest against unresolved workplace issues. This group included 2.8% who strongly agreed, 3.1% who agreed, and 7.8% who were neutral (see RQ6 in Appendix F). While recognized by a minority, this behavior reflects deeper dissatisfaction and frustration within the workplace.

Addressing the root causes of discontent—such as poor communication, unresolved grievances, or lack of recognition—can help mitigate this behavior and reduce its potential impact on safety and productivity.

In conclusion, the findings reveal significant differences in the tendency to engage in subjective judgment and cutting corners, influenced by factors such as gender, job role, department, and experience level. Employees in customer-facing roles, female employees,

and less experienced staff are particularly prone to these behaviors. The data underscores the profound impact of job pressures, operational environments, and individual experience on workplace decision-making. Addressing these factors through tailored strategies is essential to fostering a safer, more effective work culture.

Means Analysis: Intentional Mistakes and Discontent by Gender and Age

The survey results indicate that the mean scores for intentional mistakes were consistent across both male and female employees. However, female respondents exhibited higher variability, as reflected in the standard deviation of 1.408. This suggests that while the overall tendency to engage in deliberate mistakes is similar between genders, some female employees may engage in this behavior more frequently than others.

In addition to the gender-based observations, the analysis also revealed age-specific trends. Employees aged 30-40 years reported the highest mean scores for deliberate mistakes, with an average of 3.47. This finding suggests that dissatisfaction, potentially leading to intentional errors, may be more prevalent within this age group. Such behavior could stem from factors like increased job pressures or unmet expectations during this stage of their careers. (see Results Analysis – Personal Attitudes in Appendix J)

Ethical Decision-Making and Habitual Behavior

A critical aspect of safety performance is the ability to make ethical decisions. The analysis revealed that 28.1% of respondents felt that a lack of clarity regarding ethical boundaries led them to rely on habitual behavior rather than making informed decisions. Specifically, 4.4% strongly agreed, 6.4% agreed, and 17.3% remained neutral, suggesting

that this issue is significant for some employees, though the majority (71.9%) did not see it as a major concern. (see RQ7 in Appendix F)

While most employees are confident in their ethical decision-making, the 28.1% who expressed concerns may lack sufficient training in ethics, face unclear company policies, or receive inconsistent guidance from leadership. These findings emphasize the need for more focused ethical training and clearer communication from management to ensure employees are well-equipped to make sound ethical decisions, ultimately improving safety performance.

Means Analysis: Ethical Decision-Making by Job Title

(see Results Analysis – Personal Attitudes in Appendix J)

The survey further explored how job titles impact ethical decision-making and the tendency to engage in intentional mistakes. While mean scores for intentional mistakes remained consistent across male and female employees, higher variability was observed among female respondents. This suggests that deliberate mistakes may be more frequent among some female employees, possibly influenced by job-specific challenges or experiences.

Age trends showed that employees aged 30-40 years were most likely to report dissatisfaction that could lead to intentional errors, with a mean score of 3.47. This group might face heightened job pressures or unmet expectations, contributing to such behaviors.

The analysis of means and standard deviations revealed significant variability across different departments, job titles, and years of experience, illustrating the complexity of addressing personal attitudes in the workplace. Tailored interventions—such as role-

specific training and leadership development programs—will be crucial to reducing safety risks and ensuring that employees adhere to high safety performance standards.

4.2.3 Motivation

Employees were asked to assess how factors such as unintentional errors, lack of motivation, dissatisfaction with pay, and limited enthusiasm impacted their job performance. Each of these elements plays a crucial role in influencing employee behavior and workplace safety. The following sections analyze the impact of each factor on performance.

The Impact of Unintentional Errors and Oversights

A significant portion of respondents (63.1%) indicated that unintentional errors or oversights had a notable influence on their work performance. This includes 18.3% who strongly agreed, 32.6% who agreed, and 12.2% who were neutral. These responses highlight the widespread acknowledgment that even minor mistakes can have critical effects on performance and safety outcomes. Many employees recognize that unintentional errors, while often small, contribute to workplace incidents and accidents, underlining the importance of addressing this issue to improve overall safety (see RQ8 in Appendix F).

Lack of Motivation or Encouragement

Building upon the issue of unintentional errors, the analysis revealed that a majority of respondents (73.4%) believed that a lack of motivation or encouragement adversely affected their performance. Among them, 28.3% strongly agreed, 22% agreed, and 23.1% were neutral. This data suggests that insufficient motivation is a major factor contributing to workplace errors and accidents. Motivated employees are more likely to engage

proactively with their tasks and less likely to make unintentional mistakes. Therefore, enhancing motivation and encouragement within the workforce could play a pivotal role in reducing errors and improving safety outcomes (see RQ9 in Appendix F).

Dissatisfaction with Salary and Benefits

A substantial majority of respondents (79.4%) reported that inadequate salary and benefits negatively impacted their work performance. This is supported by 24.2% who strongly agreed, 30.4% who agreed, and 24.8% who were neutral. Insufficient compensation not only diminishes motivation but also contributes significantly to workplace errors, incidents, and accidents. These findings underscore the need for competitive and fair compensation practices to enhance employee satisfaction, motivation, and overall performance (see RQ10 in Appendix F).

Disengagement and Lack of Enthusiasm

A substantial majority of respondents (79.4%) reported that inadequate salary and benefits negatively impacted their work performance. This is supported by 24.2% who strongly agreed, 30.4% who agreed, and 24.8% who were neutral. Insufficient compensation not only diminishes motivation but also contributes significantly to workplace errors, incidents, and accidents. These findings underscore the need for competitive and fair compensation practices to enhance employee satisfaction, motivation, and overall performance (see RQ10 in Appendix F).

Means Analysis of Motivation-Related Factors Across Departments, Experience, and Job Titles (see Results Analysis -Motivation in Appendix J)

To better understand how motivation-related factors impact performance, the data was analyzed across departments, job titles, and experience levels.

Departments

Baggage Services reported the highest mean score (4.00) for dissatisfaction with salary and benefits, with a standard deviation of 1.102, indicating some variability in responses within this group.

Cabin Cleaning Services followed closely with a high mean score of 3.87, with a lower standard deviation (0.990), suggesting more consistent dissatisfaction among employees.

Customer Services and Ground Equipment Operations Services also reported relatively high mean scores (3.76 and 3.36, respectively), with moderate consistency in their responses.

Experience

Employees with less than one year of experience reported a mean score of 3.55 for lack of motivation or encouragement, with a standard deviation of 1.430.

Employees with 1-5 years of experience recorded a slightly lower mean score (3.42) with higher consistency (standard deviation of 1.317).

Notably, employees with more than 10 years of experience recorded the highest mean score for dissatisfaction with salary and benefits (3.68), with a standard deviation of 1.167, highlighting a significant and persistent concern among longer-tenured employees.

Job Titles

Managers reported a mean score of 3.57 for dissatisfaction with salary and benefits, suggesting that compensation has a notable impact on their performance. The standard deviation of 1.149 indicates moderate variability in their responses.

Supervisors reported a slightly higher mean score of 3.69, while Staff had a mean score of 3.41, with similar levels of variability for both groups.

In conclusion, the results indicate that unintentional errors, lack of motivation, and inadequate compensation are significant contributors to workplace incidents. Addressing these issues will require enhancing employee motivation, improving organizational support systems, and fostering teamwork to promote better performance. Organizations should prioritize creating a fair compensation structure, providing encouragement, and ensuring employees feel valued to reduce errors and improve safety outcomes.

4.3. Organizational Factors

While personal attitudes and individual skills are key contributors to employee performance, they do not operate in isolation. The organizational environment, including the availability of tools, management support, and supervision, plays an equally critical role in shaping an employee's ability to perform effectively. Having thoroughly examined individual factors that influence behavior, we now shift focus to how organizational structure influences workplace performance and safety outcomes.

4.3.1 Resources and Support

One of the major organizational factors impacting performance is the availability of tools and resources. A significant portion of respondents (72%) indicated that a lack of resources hindered their ability to perform tasks efficiently. Specifically, 23.5% strongly

agreed, 22% agreed, and 26.5% remained neutral on the issue (see RQ12 in Appendix F). These findings highlight the widespread impact of resource shortages across the organization.

The data further suggests that insufficient resources are major contributors to workplace errors, incidents, and accidents. Employees who lack the necessary tools often experience frustration, which can lead to mistakes. The high percentage of respondents identifying resource shortages as a critical issue underscores the need for providing adequate equipment to improve both safety and performance.

To mitigate these risks, organizations must prioritize equipping employees with the necessary tools and resources to perform their duties effectively. This leads us to another critical organizational factor—the level of management support employees receive.

4.3.2 Management Support

Management support emerged as a critical factor influencing performance, with 83.3% of respondents stating that a lack of management support negatively affected their work. Specifically, 28.6% strongly agreed, 31.2% agreed, and 23.5% were neutral, underscoring the importance of consistent management involvement in fostering employee success (see RQ13 in Appendix F).

The absence of management support is linked to several negative outcomes, including lower morale, decreased motivation, and feelings of isolation. Employees who feel unsupported are more likely to experience burnout, reduced productivity, and heightened safety risks. The data strongly suggests that fostering a culture of support and

active engagement from management is key to improving both employee satisfaction and workplace safety.

4.3.3 Lack of Supervision

An overwhelming 90.2% of respondents indicated that insufficient supervision had a significant negative impact on their performance. Among these, 37.6% strongly agreed, 35.6% agreed, and 17% were neutral, emphasizing the crucial role of supervision in maintaining performance and safety standards (see RQ14 in Appendix F).

The data reveals that a lack of supervision is a major contributor to workplace errors, incidents, and accidents. Without adequate oversight, employees may lose focus, leading to increased mistakes and reduced productivity. This underscores the need for supervisors to provide clear guidance and consistent oversight to ensure both work efficiency and safety in the workplace.

Insights from Means and Standard Deviation Analysis

(see Results Analysis: Motivation in Appendix J)

The analysis of mean scores and standard deviations across various demographics—including departments, job roles, and experience levels—offers key insights into how organizational factors influence employee performance.

Resources and Support: Employees reported a mean score of 3.21 with a standard deviation of 1.415, indicating significant variability in how the availability of resources affects performance. Although resource scarcity is a widespread concern, its impact varies considerably depending on the employee's role or department.

Management Support: A mean score of 3.65 with a standard deviation of 1.185 reflects a more consistent experience among employees. While the lack of management support is a common issue across departments, it is uniformly experienced by most employees, underscoring its broad impact on performance.

Supervision: With a mean score of 3.96 and a standard deviation of 1.080, supervision was found to have a relatively uniform effect on performance. Employees across departments and job roles consistently reported the critical importance of supervision in ensuring performance success.

Departmental and Job Role Variations

Further analysis revealed distinct patterns across departments and job roles:

Customer Services consistently reported the highest mean scores for resource availability, management support, and supervision, indicating that employees in this department face significant challenges in these areas.

In contrast, Ground Equipment Operations Services showed lower mean scores for resource availability, suggesting greater satisfaction with the resources provided within this department.

Cabin Cleaning Services reported a high mean score for the lack of supervision, likely due to the nature of the work, which requires frequent oversight and specific guidance.

These variations emphasize the need for department-specific solutions that address the unique challenges employees face in different roles. Tailoring support and resources to meet the distinct needs of each department can improve both performance and workplace safety.

4.3.4 Work Processes and Communication

More efficient work processes and better communication also emerged as significant organizational barriers. The analysis revealed that a substantial portion of respondents (79.9%) believed that inadequate documentation and complex regulations significantly impacted their work performance. Specifically, 29.1% strongly agreed, 30.3% agreed, and 20.5% were neutral, indicating that nearly 80% of the workforce identified poor documentation and convoluted procedures as critical issues hindering their ability to perform effectively (see RQ15 in Appendix F).

The data further suggests that the lack of clear documentation and overly complex procedures are major contributors to workplace errors, incidents, and accidents. The high percentage of respondents who acknowledged these issues as significant factors affecting their performance indicates that many employees encounter misunderstandings and procedural mistakes. Inadequate documentation and difficult-to-follow instructions lead to frustration and reduced effectiveness, ultimately compromising workplace safety and performance.

Lack of Clear Standards

The analysis found that 33% of respondents felt that the absence of specific standards or criteria significantly impacted their work performance. This group included 4.4% who strongly agreed, 7.3% who agreed, and 21.3% who were neutral, highlighting that one-third of the workforce identified the lack of clear standards as a factor influencing their ability to perform efficiently.

While the majority of employees (67%) did not perceive the absence of clear standards as a major issue, the 33% who were neutral, agreed, or strongly agreed may have experienced confusion and inconsistency in their tasks. Without clear guidelines, varied interpretations of procedures are likely to occur, leading to inconsistent practices and potential errors. These findings underscore the importance of establishing clear and specific standards to ensure optimal performance and consistency across the workforce (see RQ16 in Appendix F).

Coordination and Teamwork

(see Results Analysis - Work Processes and Communication in Appendix J)

The analysis revealed that a majority of respondents (70.7%) believed that a lack of coordination and teamwork significantly impacted their work performance. Specifically, 23.1% strongly agreed, 20.8% agreed, and 26.8% were neutral. These findings highlight that nearly two-thirds of the workforce perceives poor coordination and teamwork as critical issues affecting their performance (see RQ17 in Appendix F).

The data further suggests that insufficient coordination and teamwork were major contributors to workplace errors, incidents, and accidents. A high percentage of respondents indicated that these factors negatively affected their performance, with poor coordination leading to misunderstandings, inefficiencies, and increased frustration among employees. Ultimately, these issues compromise both workplace effectiveness and safety.

Gender

Female employees reported a higher mean score (3.94) compared to male employees (3.46) for issues related to documentation, standard operating procedures, and work

processes. This suggests that female employees may experience greater challenges with complex or unclear procedures.

The standard deviations (1.221 for females and 1.341 for males) indicate significant variability within both groups, showing that some employees find these processes more difficult than others.

Departments

Baggage Services reported a mean score of 3.97 for issues related to unclear work processes, reflecting significant difficulties. The high standard deviation (1.349) suggests a wide range of experiences within this department.

Cabin Cleaning Services had the highest mean score (4.33) for work process challenges, with a lower standard deviation (0.816) indicating more consistent dissatisfaction among employees.

Customer Services reported a mean score of 3.92 with a standard deviation of 1.224, showing that while many employees face challenges, there is variability in the degree to which these issues are experienced.

Ground Equipment Operations reported a mean score of 3.33, with a standard deviation of 1.334, indicating that while some employees face difficulties, others are relatively satisfied with the work processes.

Ground Operations Services had a lower mean score (2.76), suggesting fewer challenges in this area, though the standard deviation (1.272) indicates some variability.

Load Control Services reported a mean score of 3.92, with a standard deviation of 1.248, indicating challenges similar to those in Customer Services but with more uniform experiences.

Loading Services reported a mean score of 3.71 with a standard deviation of 1.367, indicating moderate challenges with work processes and variability in experiences within the department.

Job Roles

Managers and Supervisors reported similar mean scores (3.61) for work processes, indicating that employees in leadership roles face comparable challenges with unclear documentation and complex procedures.

Staff members reported a mean score of 3.53, suggesting that non-leadership roles may experience slightly fewer challenges. However, the standard deviations (ranging from 1.298 to 1.449) show that difficulties vary widely across all job roles.

Experience Levels

Employees with less than one year of experience reported a mean score of 3.41, indicating challenges with unclear processes, though the standard deviation (1.272) shows that these experiences are not uniform across new employees.

Employees with 1-5 years of experience reported the highest mean score (3.62) and a standard deviation of 1.332, suggesting that mid-level employees face more pronounced challenges with work processes and documentation.

Employees with 5-10 years of experience showed a mean score of 3.52 and a standard deviation of 1.331, indicating that while challenges remain, they are slightly less pronounced than for those with 1-5 years of experience.

Employees with more than 10 years of experience reported a mean score of 3.64, with a standard deviation of 1.408, showing that long-tenured employees still face significant difficulties with work processes, though these challenges vary greatly between individuals.

Age Groups

The 30-40 years age group reported the highest mean score (3.59), indicating that employees in this age range face more challenges with work processes. The standard deviation of 1.344 suggests considerable variability within this group.

The under 30 years and 40-50 years age groups reported mean scores of 3.45 and 3.64, respectively, with similar levels of variability, suggesting that work process challenges are prevalent across all age groups but experienced differently by individuals.

Employees aged 50-55 years reported the lowest mean score (3.33) with a high standard deviation (1.494), indicating that while some face difficulties, others are relatively unaffected.

Employees aged 55-60 years showed a mean score of 3.00 with a higher standard deviation (1.826), suggesting that older employees may either find work processes easier or more challenging, depending on their specific roles and experiences.

In conclusion, work processes and documentation issues are significant challenges across most departments, particularly in Cabin Cleaning Services and Baggage Services,

where procedural clarity is lacking. Employees with 1-5 years of experience report the highest levels of difficulty, indicating that mid-level employees may struggle the most with unclear or complex processes.

The challenges with work processes are prevalent across all age groups, though the severity and experience of these challenges vary significantly. Regarding standards, the analysis highlights a concern about the need for clear criteria for determining right and wrong in the workplace. This issue was particularly evident in departments like Customer Services and Ground Equipment Operations, where task ambiguity can lead to confusion.

Finally, the analysis of teamwork and coordination revealed that poor collaboration is a critical issue across all departments. This was particularly pronounced in Customer Services, where teamwork is essential for operational success. The relatively lower standard deviation in this category indicates that most employees have a similar experience regarding the lack of teamwork, pointing to a systemic issue requiring organizational changes to foster better communication and collaboration.

Workload and Time Pressure

As the analysis shifts to another critical aspect of workplace dynamics, workload and time pressure emerge as key factors influencing employee performance and well-being.

Excessive Workload and Fatigue

The analysis revealed that a substantial portion of respondents (67.6%) identified excessive workload and fatigue as significant factors affecting their work performance. Specifically, 19.1% strongly agreed, 26.6% agreed, and 21.9% were neutral on the matter, underscoring the widespread recognition of the issue's impact. Over half of the workforce

views excessive workload and fatigue as critical barriers to effective performance (see RQ18 in Appendix F).

The data further indicates that excessive workload and fatigue are major contributors to workplace errors, incidents, and accidents. The high percentage of respondents who agreed or strongly agreed emphasizes the significance of these factors in hindering performance. Working under these conditions can reduce concentration, increase the likelihood of mistakes, and elevate stress levels, all of which negatively affect workplace safety and productivity.

Multitasking and Time Constraints

A considerable percentage of respondents (66%) reported that multitasking and time constraints significantly impacted their work performance. Specifically, 23.5% agreed, 24.6% strongly agreed, and 17.9% were neutral, highlighting that more than half of the workforce views multitasking and time constraints as critical issues affecting their ability to perform effectively (see RQ19 in Appendix F).

The data suggests that multitasking and time constraints are significant contributors to workplace errors, incidents, and accidents. The high percentage of respondents who recognized these factors as barriers to performance underscores the widespread acknowledgment of their impact. Engaging in multiple tasks simultaneously reduces focus, increases error rates, and heightens stress levels, ultimately compromising workplace safety and productivity.

Examination of Principal Factors Related to Workload and Time Pressure

Building upon the previous analysis, two principal factors linked to errors and incidents were further examined in relation to workload and time pressure:

1. **Excessive Workload and/or Fatigue**: This measure examines how frequently employees report feeling overwhelmed by their workload or fatigued due to excessive demands.

2. **Lack of Time Due to Multitasking**: This factor investigates how often employees feel strained by the need to manage multiple tasks simultaneously.

Statistical Insights: Mean Scores and Standard Deviations

(see Results Analysis – Workload and Time Pressure in Appendix J)

Following the examination of workload and time pressure, the next step in the analysis focuses on the statistical insights provided by mean scores and standard deviations. This analysis offers a deeper understanding of how these factors influence employee performance across various demographics and departments.

Gender

Female employees reported a slightly higher mean score of 3.23 for workload and time pressure, compared to male employees, who reported a mean of 3.15. This indicates that both genders experience moderate levels of stress due to excessive workload and time constraints. However, the higher standard deviation for female employees (1.573) suggests more variability in their experiences, implying that some female employees may experience significantly higher levels of pressure than others.

The lower standard deviation for male employees (1.279) indicates that their experiences with workload and time pressure are more consistent across the group.

Departments

Baggage Services reported a mean score of 3.17 for workload and time pressure, with a standard deviation of 1.627, indicating that while many employees face challenges, the severity of those challenges varies significantly within the department.

Cabin Cleaning Services reported a slightly lower mean score of 3.07, with a standard deviation of 1.335. This suggests that employees in this department also experience moderate levels of pressure, though with less variability than in Baggage Services.

Customer Services reported a mean score of 3.08 and a standard deviation of 1.584, highlighting that employees in this department also experience significant workload pressure, with some variation in how intensely this pressure is felt across individuals.

Ground Equipment Operations had a mean score of 3.24, indicating slightly higher workload and time pressure in this department. The standard deviation of 1.217 suggests that employees in this department face these challenges more uniformly compared to other departments.

Ground Operations Services reported the lowest mean score of 2.83, indicating that this department experiences relatively lower workload and time pressure. The standard deviation of 0.889 reflects a more consistent experience across the department.

Load Control Services and Loading Services showed similar trends, with Load Control Services reporting a mean score of 2.83 and Loading Services at 3.63, with standard deviations of 1.523 and 0.770, respectively. This suggests that while Load Control Services faces challenges with pressure, Loading Services employees experience more intense and uniform pressure.

Job Roles

Managers reported a mean score of 3.14 for workload and time pressure, indicating moderate levels of stress. The standard deviation of 1.407 shows variability in how different managers experience workload demands.

Staff members reported a slightly higher mean score of 3.18, with a standard deviation of 1.306, reflecting that workload pressure is consistently a concern across staff members, though the variability is moderate.

Supervisors reported a mean score of 3.13, with a standard deviation of 1.482, suggesting that supervisors, while experiencing similar levels of workload pressure, have more variation in how this pressure affects their roles.

Experience Levels

Employees with less than one year of experience reported the highest mean score (3.39), indicating that newer employees face the greatest levels of workload and time pressure. The standard deviation of 1.198 suggests that while pressure is significant, experiences are relatively consistent across new hires.

Employees with 1-5 years of experience reported a lower mean score (2.98) with a standard deviation of 1.334, suggesting slightly less pressure but with more variability in their experiences.

Employees with more than 10 years of experience reported a mean score of 3.18 and a standard deviation of 1.477, indicating moderate levels of workload pressure, though the impact of this pressure varies significantly across individuals.

Age Groups

The under 30 years age group reported a mean score of 3.29 for workload and time pressure, with a standard deviation of 1.242, indicating that younger employees experience a relatively higher level of stress, though variability within this group is moderate.

The 30-40 years group reported a mean score of 3.14, with a standard deviation of 1.357, suggesting that this group faces slightly less pressure than younger employees, with a wider range of experiences.

Employees aged 40-50 years reported a mean score of 3.12, with a standard deviation of 1.451, indicating similar levels of stress as the 30-40 age group, though with more variability in experiences.

The 50-55 years age group reported the lowest mean score of 2.90, indicating that older employees experience the least workload pressure. The standard deviation of 1.411 suggests that, while the average pressure is lower, some individuals within this group still experience significant stress.

Employees aged 55-60 years reported a mean score of 3.25, with a standard deviation of 0.957, indicating moderate levels of workload pressure with relatively low variability in how it is experienced.

In conclusion, the survey data highlights that both excessive workload and time pressure, particularly related to multitasking, are vital contributors to workplace inefficiencies and errors. While some variation exists across departments, job titles, and genders, the overall trend is consistent. Addressing these challenges requires a multifaceted approach, including workload management strategies, task prioritization, and time management training. Further research is recommended to explore the underlying causes of

departmental differences and to design specific interventions that mitigate stress and fatigue across all levels of the organization.

External Conditions

In addition to internal factors like workload and multitasking, external conditions also play a pivotal role in influencing employee performance. The next section examines how objective factors, such as weather and the working environment, contribute to workplace errors and incidents.

An important consideration when analyzing employee performance is the influence of external conditions, including weather and the working environment. These objective conditions play a significant role in shaping how employees carry out their tasks, often introducing physical and environmental challenges that impact both safety and effectiveness.

External Conditions and Their Impact

The analysis revealed that a large majority of respondents (74.3%) indicated that external conditions, including weather and the working environment, significantly influenced their performance. Specifically, 31.5% agreed, 23.4% strongly agreed, and 19.4% were neutral, highlighting the widespread acknowledgment of how these conditions hinder employees' ability to perform tasks effectively. Nearly three-quarters of the workforce identified adverse weather and poor working conditions as critical barriers to performance (see RQ20 in Appendix F).

The data further suggests that adverse weather conditions—such as extreme heat, cold, or storms—and suboptimal working environments (e.g., poor lighting or ventilation)

are major contributors to workplace errors, incidents, and accidents. High percentages of respondents agreeing or strongly agreeing with these issues underscore the critical role these conditions play in shaping employee behavior and performance. Adverse weather introduces physical hazards like slippery surfaces or impaired visibility, while poor working environments contribute to both mental and physical stress, leading to increased errors, fatigue, and accidents in the workplace.

Proactive Measures to Address External Conditions

The findings highlight the need for organizations to proactively address external conditions by implementing measures such as:

- Providing appropriate protective equipment

- Adjusting work schedules during extreme weather conditions

- Ensuring that work environments are well-maintained and conducive to safe, effective task performance

- By mitigating the impact of these external conditions, organizations can enhance both safety and overall performance, equipping employees to better manage the challenges posed by their working environments.

Statistical Analysis

(see Results Analysis**:** Workload and Time Pressure in Appendix J**)**

Mean Scores: The overall mean score of 3.41 indicates that a significant proportion of employees view weather and environmental conditions as key influences on their performance (see Means: Workload and Environment Factors in Appendix J).

Standard Deviation (1.294): This suggests moderate variation in how strongly employees perceive the impact of weather and working conditions on their performance. A higher standard deviation indicates that while many employees feel strongly affected, others experience less impact.

Demographic Insights

(see Results Analysis _ Workload and Time Pressure in Appendix J)

- **Gender:** Male employees reported a slightly higher mean score (3.48) compared to female employees (3.13), indicating that male employees may perceive a stronger influence of weather and working environments on their performance.

- **Departments:** Employees in Ground Equipment Operations Services reported the highest mean score (3.61), suggesting that they face more pronounced challenges from external conditions due to the nature of their job roles and exposure to environmental factors.

- **Experience:** There was no clear pattern related to experience level. Employees with less than 1 year of experience reported a higher mean score (3.70), while those with over 10 years of experience reported a lower mean (3.17), indicating no strong correlation between tenure and the perception of external conditions.

- **Years in Current Job:** Similarly, no discernible trend emerged based on job tenure, suggesting that years spent in the current role do not significantly influence perceptions of weather and environmental conditions.

- **Job Title**: No specific trend was found related to job title. For instance, managers reported a mean score of 3.02, while staff and supervisors reported mean scores of

3.47 and 3.28, respectively. This indicates that roles with higher responsibility or greater exposure to external conditions may require further investigation to provide more detailed insights.

In conclusion, the data underscores the significant impact that external conditions such as weather and the working environment have on employee performance. These factors, which affect a large portion of the workforce, contribute to workplace errors, fatigue, and accidents. To address these challenges, organizations must prioritize environmental adjustments, provide adequate protective equipment, and develop strategies that ensure work environments support both safety and productivity. Further exploration of demographic variations and job-specific challenges can help organizations design more targeted interventions.

Correlation and Regression Analysis of Workplace Behavioral Factors

Correlation Analysis Results

The Pearson correlation analysis was conducted to examine the strength and direction of the relationships between various workplace factors and the tendency to lose focus at work. The following results were observed:

- **Lack of Supervision and Insufficient Documentation** (see Appendix H)

    o Correlation Coefficient: 0.427

    o Interpretation: There is a moderate positive correlation between a lack of supervision and difficulties due to insufficient or unclear documentation. Employees who face issues with documentation are more likely to lose focus when not adequately supervised.

- **Lack of Supervision and Management Support** (see Appendix H)

  - Correlation Coefficient: 0.597

  - Interpretation: A strong positive correlation exists between lack of supervision and a lack of support from management. This indicates that employees who do not receive enough managerial support are significantly more likely to lose focus when supervision is absent.

- **Lack of Supervision and Job Standards** (Appendix H)

  - Correlation Coefficient: 0.579

  - Interpretation: There is a strong positive correlation between unclear job standards and the tendency to lose focus in the absence of supervision. This suggests that well-defined job standards are crucial in maintaining employee focus.

Summary of Correlation Analysis

The correlation analysis highlights the importance of clear documentation, management support, and well-defined job standards in maintaining employee focus. A lack of supervision, combined with these factors, can lead to significant reductions in productivity and increase the risk of errors.

Regression Analysis Results

A regression analysis was performed to predict the likelihood of employees losing focus based on various independent variables, including noise level, feelings of oppression, and years of experience.

- **Model Summary** (see Appendix H)

- R: 0.078

- R²: 0.006

- Interpretation: The model shows a weak relationship between the independent variables (noise, feelings of oppression, and years of experience) and the likelihood of losing focus at work. The R^2 value of 0.006 indicates that only 0.6% of the variability in focus loss can be explained by these factors.

- **ANOVA Significance** (see Appendix H)

  - F Value: 1.639

  - p-value: 0.179

  - Interpretation: The ANOVA test shows that the model is not statistically significant, meaning that the variables (noise, oppression, and experience) do not significantly predict focus loss in this dataset.

- **Coefficients for Independent Variables** (see Appendix H)

  - Noise Level (B = 0.165, p = 0.146): No statistically significant relationship between noise and loss of focus was found.

  - Feelings of Oppression (B = -0.177, p = 0.080): There is a weak, non-significant negative relationship between feeling oppressed and loss of focus.

  - Years of Experience (B = 0.010, p = 0.523): Years of experience did not significantly predict focus loss.

Summary of Regression Analysis

The regression analysis suggests that the independent variables (noise, oppression, and years of experience) do not significantly predict the likelihood of employees losing focus. While noise and oppression show some relationships, they are not strong enough to be considered significant predictors in this model.

In conclusion, The data from both correlation and regression analyses clearly demonstrate that internal workplace factors such as supervision, management support, and job standards play a significant role in influencing employee focus. In contrast, external factors like noise, feelings of oppression, and years of experience do not appear to significantly predict focus loss in this particular dataset.

Moreover, weather and working environments significantly influence employee performance, with varying degrees of impact across different departments. While demographic factors such as gender, experience, and job tenure do not play a major role in shaping perceptions of external conditions, department-specific challenges may warrant targeted interventions. Further analysis across job titles and specific responsibilities could yield valuable insights for designing strategies to mitigate the risks posed by adverse weather and poor working environments.

4.1.2 Survey 2: Impact of Mental Health Status on Workplace Behavior

This survey focused on key aspects of mental health and its influence on work performance, specifically examining the effects of stress, emotional fluctuations, and mental fatigue on concentration and productivity. The survey also explored how these factors contributed to memory or procedural errors, and at what times of day employees

experienced the most fatigue. Respondents identified both environmental and personal factors that exacerbated their mental exhaustion.

Impact of Stress and Pressure on Performance

The analysis revealed that a notable majority of respondents (74.6%) felt that stress and workplace pressure caused them to lose focus on their tasks. This finding, with 19.9% expressing neutrality, 21.2% agreeing, and 33.5% strongly agreeing, highlights the widespread recognition of stress and pressure as major obstacles to effective performance. A substantial portion of the workforce acknowledges that these factors hinder their ability to maintain focus and perform their duties effectively. (see RQ1 in Appendix G)

The data further suggests that stress and pressure significantly contribute to decreased concentration and overall work performance. The high percentage of agreement underscores that these challenges have a profound impact on employees' ability to focus, resulting in mental fatigue, increased errors, and reduced productivity.

Importance of Addressing Stress and Pressure

The prevalence of stress and pressure as major issues in the workplace emphasizes the need for organizations to implement strategies that alleviate these concerns. Such strategies are essential to safeguard both employee well-being and performance. Addressing these factors will help organizations maintain a healthier and more productive workforce.

Emotional Fluctuations and Their Influence on Workplace Behavior

The examination of stress and pressure naturally leads to a consideration of emotional fluctuations and how they affect workplace behavior and productivity. Emotional

ups and downs can further compound the effects of stress, making it difficult for employees to maintain a consistent level of performance throughout the day.

Mood Swings and Emotional Fluctuations

The analysis revealed that mood swings play a significant role in shaping workplace behavior, with 79.9% of respondents indicating that mood fluctuations led to increased agitation, irritability, withdrawal, and reluctance to improve. This conclusion is supported by 14% of respondents expressing neutrality, 40.5% agreeing, and 25.4% strongly agreeing, pointing to widespread acknowledgment of mood variability as a critical factor affecting workplace behavior and performance. (see RQ2 in Appendix G)

The data suggests that mood swings are significant contributors to negative behaviors and attitudes in the workplace. The high percentage of respondents who agreed or strongly agreed underscores that emotional fluctuations often lead to irritability, disengagement from team activities, and a reluctance to pursue self-improvement. These challenges negatively impact team dynamics and productivity, reinforcing the need for organizations to address mood-related challenges.

Addressing Mood Swings in the Workplace

To mitigate the effects of mood swings on workplace behavior, organizations should focus on implementing mental health initiatives, providing support resources, and promoting a positive work environment. Offering mental health support can help employees manage emotional fluctuations, reducing the negative impact on their behavior and improving team collaboration.

Impact of Employee-Management Relationships

In addition to mood swings, the quality of relationships between employees and management significantly influences workplace behavior. Poor relationships can exacerbate negative emotions and reduce cooperation, making it more difficult to maintain a productive and harmonious work environment. Strengthening employee-management communication and support systems can help alleviate mood-related issues and improve overall team dynamics.

Impact of Workplace Relationships on Emotional Well-being

The analysis revealed that 77.3% of respondents felt that poor relationships with colleagues and management led to negative emotions and a reluctance to interact or cooperate. This finding, with 17.2% expressing neutrality, 35.2% agreeing, and 24.9% strongly agreeing, underscores the significant role that workplace relationships play in shaping employee well-being and performance. (see RQ3 in Appendix G)

The data suggests that strained relationships with colleagues and management are major contributors to negative emotions and reduced cooperation in the workplace. A large portion of the workforce recognized that relational challenges hinder both performance and interpersonal interactions. Poor workplace relationships foster feelings of isolation, negativity, and a reluctance to engage in teamwork, all of which negatively impact productivity and disrupt workplace harmony.

Addressing Workplace Relationship Challenges

These findings underscore the need for organizations to prioritize the improvement of workplace relationships through:

- Team-building exercises to strengthen cooperation and foster positive interactions

- Conflict resolution training to help employees manage and resolve interpersonal disputes effectively

- Open communication channels to encourage transparency and trust between employees and management

By promoting a healthier relational dynamic, organizations can enhance employee satisfaction, improve workplace morale, and boost overall performance.

Statistical Analysis (see Results Analysis_Work Processes and Communication in Appendix J)

- **Mean Scores**: The mean score represents the average perception of the impact poor relationships have on work performance. In this analysis, the overall mean score of 3.17 indicates a moderate level of agreement that poor relationships are a significant factor influencing negative emotions and reduced cooperation.

- **Standard Deviation (Std. Deviation)**: The standard deviation of 1.476 suggests a relatively wide range of opinions among employees regarding the impact of poor relationships on workplace behavior. This variability indicates that employees have differing degrees of agreement about how much negative relationships influence their work performance.

Demographic Insights: (see Results Analysis_Work Processes and Communication in Appendix J)

- **Gender**: The data shows a higher percentage of females (28.7%) agreeing with the statement compared to males (71.3%). This suggests that female employees may be more

sensitive to the emotional toll of negative workplace relationships, possibly due to greater involvement in emotional labor or dynamics that disproportionately affect women.

- **Age**: Agreement increases with age, with **35.2%** of employees aged **40-50** agreeing compared to **17.2%** of those under **30**. This suggests that more experienced employees are more attuned to the effects of poor relationships, possibly due to greater exposure to varied workplace environments and interpersonal dynamics throughout their careers.

Departments: There is notable variability across departments:

- **Ground Equipment Operations Services** reported the highest percentage of agreement (34.2%), followed by Customer Services (21.0%).

- **Cabin Cleaning Services** reported the lowest agreement (16.3%).

These variations suggest that certain departments may experience higher levels of interpersonal conflict or communication challenges, negatively affecting employee well-being.

Job Title: **Staff members** showed the highest percentage of agreement (30.3%), followed by Managers (1.1%) and Supervisors (3.8%). This indicates that lower-level employees may feel the impact of poor relationships more acutely, possibly due to limited influence over their work environment compared to higher-level employees.

Experience: No clear pattern emerges concerning employee experience, with agreement percentages remaining relatively consistent across different experience levels. This suggests that the effects of poor relationships are felt across all career stages, regardless of the length of time in the role.

In conclusion, The data clearly indicates that negative relationships with colleagues and management significantly impact employee emotions, cooperation, and overall productivity. While there are minor variations based on gender, age, and department, poor workplace relationships are a widespread issue.

To mitigate this challenge, organizations should implement initiatives aimed at fostering positive relationships. These could include:

- Conflict resolution programs

- Team-building activities

- Enhanced communication strategies to promote a more collaborative and supportive work environment

Unstable or Negative Emotions

The analysis shows that a substantial portion of respondents (80%) reported that when experiencing unstable or negative emotions, they tend to lose focus and work by mere inertia. This finding, supported by 13.7% expressing neutrality, 42.1% agreeing, and 24.2% strongly agreeing, highlights the widespread recognition of this issue's impact. Nearly the entire workforce acknowledges that negative emotions are significant factors that hinder their ability to concentrate and perform effectively. (see RQ4 in Appendix G)

The data further suggests that unstable emotions are major contributors to reduced concentration and work quality. The high percentage of respondents agreeing or strongly agreeing highlights that emotional challenges significantly affect employee performance. Negative emotions can lead to diminished focus, decreased productivity, and a tendency to work mechanically, without genuine engagement. This finding underscores the importance

of organizations prioritizing emotional well-being to maintain high levels of concentration and productivity.

Mental Fatigue and Memory Retention

The analysis revealed that a substantial percentage of respondents believed that mental fatigue led to short-term memory loss, forgetfulness, and errors in their work. This finding, supported by 18.9% expressing neutrality, 29.7% agreeing, and 31.2% strongly agreeing, underscores a widespread recognition of this issue's impact. A significant majority of the workforce acknowledges that mental tiredness is a critical factor affecting their memory retention and overall accuracy. (see RQ5 in Appendix G)

The data further suggests that mental fatigue is a key contributor to forgetfulness, procedural errors, and diminished work performance. Many employees acknowledge mental exhaustion as a significant factor impairing their memory and accuracy, leading to lapses in short-term memory and increased mistakes in daily tasks.

Emotional Imbalance Between Personal and Professional Lives

The analysis revealed that 76.8% of respondents felt that emotional imbalance between their personal and professional lives negatively impacted their workplace behavior. Specifically, 20.9% were neutral, 40.2% agreed, and 15.7% strongly agreed, indicating broad acknowledgment of emotional imbalance as a critical factor influencing behavior and performance at work (see RQ6 in Appendix G).

The data suggests that emotional imbalance significantly affects workplace behavior and performance. Employees who experience emotional imbalance are more likely to

exhibit inconsistent behaviors, reduced productivity, and elevated stress, which in turn disrupt workplace efficiency and morale.

Positive Emotions and Motivation

Building on the influence of emotional balance on workplace behaviors, comfort and positive emotions also play a key role in enhancing motivation and work accuracy. The analysis revealed that a significant portion of respondents (86.7%) felt that comfort and positive emotions motivated them to complete their work accurately. Specifically, 11.5% were neutral, 35.3% agreed, and 39.9% strongly agreed, indicating widespread recognition of this factor's impact (see RQ7 in Appendix G).

The data suggests that comfort and positive emotions are significant contributors to enhanced motivation and precise work performance. The high percentage of respondents agreeing or strongly agreeing highlights that many employees view these positive emotional states as major drivers of work quality. When employees feel comfortable and experience positive emotions, they are more likely to stay motivated, focused, and accurate in their tasks.

Isolation and Alienation

Following the discussion on positive emotions, another critical factor affecting employee well-being is the feeling of isolation or alienation within the workplace. The analysis revealed that a large percentage of respondents (78.9%) felt that isolation or alienation from their work group led to depression and negative behaviors at work. Specifically, 16.8% were neutral, 40.5% agreed, and 21.6% strongly agreed, indicating broad recognition of this issue's impact (see RQ8 in Appendix G).

The data suggests that feelings of isolation or alienation were major contributors to depression and negative behaviors in the workplace. Employees who feel isolated are more likely to experience mental health challenges, such as depression, and may prefer to work independently in ways that reduce cooperation and productivity. This emotional state can undermine workplace morale, resulting in decreased collaboration and overall performance.

Impact of Late-Night Work on Performance

The analysis further revealed that a considerable share of respondents (73.4%) felt that they often experienced impaired senses, lack of situational awareness, and slow reflexes after midnight. This finding highlights a broad recognition of the cognitive and physical challenges associated with late-night work. A significant portion of the workforce acknowledges that working during late hours critically impacts their sensory and reflex capabilities. (see RQ9 in Appendix G)

The data suggests that late-night hours are major contributors to impaired cognitive functioning and physical performance, such as reduced awareness and slower response times. These impairments increase the likelihood of errors, accidents, and decreased overall productivity. To mitigate these risks, organizations should adopt strategies like:

Effective scheduling practices to minimize late-night work impact

Providing adequate breaks during shifts

Ensuring a well-lit and safe environment to support employee performance during late hours

Fatigue and Environmental Factors

The data further revealed that 69.8% of respondents reported feeling sleepy and fatigued after midnight, underscoring the detrimental effects of late-night work on energy levels and alertness (see RQ10 in Appendix G). These findings indicate that the early morning hours represent a critical period during which alertness and energy levels are most compromised.

Persistent fatigue and sleepiness during late-night work can lead to decreased productivity, increased errors, and a higher risk of accidents. To address these challenges, organizations should implement:

- Appropriate scheduling that limits prolonged late-night work

- Ample breaks and rest periods during shifts

- Maintaining well-lit and safe work environments to help reduce fatigue and improve alertness

Environmental Stressors and Their Impact on Well-Being

The analysis also revealed that various environmental stressors significantly affect mental fatigue and overall well-being in the workplace. Each environmental factor has varying degrees of impact on employees' physical and mental state:

Temperature (77.8%): The highest percentage of respondents identified temperature as a major contributor to mental fatigue. Extreme heat or cold leads to physical discomfort, distraction, and reduced cognitive function, emphasizing the need for temperature regulation strategies in the workplace.

Noise (72.9%): Noise was reported as a significant source of fatigue by employees. Excessive noise levels interfere with concentration and increase stress, highlighting the importance of controlling auditory disruptions in the work environment.

Unpleasant Smells (38.5%): While less significant than temperature and noise, unpleasant odors still impact a notable portion of employees, leading to discomfort and distraction. Managing odors in shared spaces could improve overall satisfaction.

Dust (38.2%): Dust exposure was reported by a similar percentage as unpleasant smells, causing respiratory irritation and contributing to fatigue. Keeping workspaces clean and well-ventilated could mitigate these effects.

Light (23.7%): Inadequate lighting causes eye strain and headaches, contributing to fatigue. Proper lighting is essential to prevent physical discomfort and maintain employee focus.

Vibration (15.5%): Though less widespread, vibration was a fatigue source for some employees, particularly those working with heavy machinery or transportation. Reducing exposure to vibrations can alleviate fatigue in such environments.

The high percentages of respondents affected by temperature and noise emphasize the critical influence of environmental factors on employee well-being and performance. Maintaining a comfortable work environment should be a priority for organizations seeking to enhance employee satisfaction and productivity. (see RQ11 in Appendix G)

Varying Impacts of Environmental Factors

Different environmental factors have varying impacts on employees, with temperature and noise identified as the most significant contributors to mental fatigue, while factors like vibration appear to have less of an impact. These differences highlight the need for tailored interventions that address specific environmental challenges based on the unique characteristics of the workplace.

Workplace Interventions for Enhanced Well-Being

Given the strong association between environmental stressors and mental fatigue, the implementation of environmental controls is vital. Interventions could include

temperature regulation, noise reduction strategies, and improvements to air quality to manage dust and unpleasant smells. A physically comfortable work environment can significantly enhance employee health, focus, and overall performance.

In conclusion, the analysis indicates that environmental conditions such as temperature, noise, dust, and unpleasant smells are key contributors to employee fatigue and decreased well-being. With temperature and noise being the most commonly reported issues, organizations should focus on controlling these factors to create a more conducive work environment. While factors like light and vibration were less frequently cited, addressing these issues where relevant can further contribute to improving workplace comfort. Overall, the findings underscore the importance of environmental management in maintaining employee productivity and satisfaction.

Interpersonal Dynamics and Their Influence on Well-Being

In addition to environmental factors, interpersonal dynamics play a crucial role in influencing employee well-being and performance. The survey results provide a comprehensive view of how poor workplace relationships with colleagues and management lead to negative emotions and reduced cooperation among employees. (see RQ12 in Appendix G)

The statistical analysis reveals that respondents identified several interpersonal factors as major causes of mental fatigue in the workplace:

- 57.8% of employees cited feeling disrespected,
- 55.2% mentioned being misunderstood,
- 50.7% indicated feeling oppressed,
- 37.8% pointed to jealousy,
- 22.7% reported feeling threatened,
- 22% cited aggression.

The most frequently mentioned factors—being disrespected, misunderstood, and oppressed—appear to significantly contribute to mental fatigue among employees.

The data suggests that interpersonal challenges such as disrespect, misunderstanding, and oppression are key contributors to mental fatigue at work. These factors were highlighted by a significant proportion of respondents, indicating widespread recognition of their impact on mental well-being and work performance.

Analysis of Key Interpersonal Stressors

- **Being Disrespected:** As the most cited factor, disrespect can lead to **feelings of worthlessness**, decreased motivation, and disengagement. Employees who feel disrespected may suffer from **burnout** and stress, negatively impacting their productivity.

- **Being Misunderstood**: Misunderstanding can cause **frustration** and **emotional exhaustion**. Employees who feel misunderstood are likely to struggle with communication and collaboration, exacerbating mental fatigue.

- **Feeling Oppressed**: A sense of oppression in the workplace generates **high levels of stress** and **anxiety**. Employees feeling oppressed may feel powerless, leading to emotional depletion.

While jealousy, threats, and aggression were less prevalent, they still contribute to mental fatigue. These experiences can create a toxic work environment where individuals feel unsafe or unsupported, further diminishing their mental resilience.

Statistical Insights into Interpersonal Dynamics

A more detailed analysis is required to fully understand the nuances of these findings, focusing on factors such as gender, department, job position, experience, and age group to identify specific areas of concern.

Gender Differences: Male employees reported a higher mean score (3.61) compared to females (3.44), suggesting that men may experience a slightly stronger emotional response to poor workplace relationships. While the difference is modest, it indicates that both genders are similarly affected, but males may exhibit a greater tendency to disengage when negative relationships arise.

Departmental Variations: The data reveals substantial differences between departments, with employees in Baggage Services and Cabin Cleaning Services reporting the highest emotional impact, each with a mean score of 3.83. This suggests that these departments may face heightened emotional fatigue and disengagement, possibly due to specific work pressures, reduced autonomy, or frequent shifts in team dynamics. On the other hand, Ground Operations Services employees reported a lower mean score (2.94), indicating stronger interpersonal relationships in this department, potentially attributed to different management styles or work dynamics.

Job Roles: Supervisors reported the highest emotional strain, with a mean score of 3.63, reflecting the unique challenges they face in managing teams and conflicts. Staff members and managers also experienced notable emotional impacts, with mean scores of 3.56 and 3.43, respectively. These findings imply that employees at all levels are affected, though those in supervisory roles may bear greater emotional burdens due to leadership responsibilities.

Experience Levels: Employees with fewer than 5 years of experience reported a higher mean score (3.65) than those with over 10 years of experience (3.62), suggesting that newer employees may be more vulnerable to the negative impacts of poor relationships. This could be due to less developed coping mechanisms or a lack of familiarity with organizational norms, making it crucial to provide stronger support systems for early-career employees.

Age Groups: The data highlights that older employees, particularly those aged 50–55, reported the highest emotional impact from negative relationships, with a mean score of 4.05. In contrast, employees under 30 had a lower mean score (3.43). This suggests that older employees may feel more emotionally affected by poor workplace relationships, possibly due to different expectations or interpersonal dynamics that have developed over the course of longer careers.

Conclusion on Interpersonal Dynamics

The data highlights the significant role of interpersonal relationships in contributing to mental fatigue and emotional disengagement in the workplace. High mean scores across various departments and job roles underscore the widespread nature of these challenges. Addressing interpersonal stressors such as disrespect, misunderstanding, and oppression is crucial for fostering a healthier work environment where employees can thrive.

Transitioning to Skill Gaps and Job Complexity

As the analysis transitions from interpersonal dynamics to skill gaps, information deficiency, and job complexity, it becomes clear that performance-related issues stem from both individual and organizational factors. Skill gaps, a lack of information, and mismatches between job complexity and employee capabilities are interconnected challenges that affect safety performance and task execution.

4.4   Cross-Verification of Findings

The survey data identified several key factors impacting employee performance and safety, with Resources and Support (81.86%), External Conditions (74.31%), and Workload and Time Pressure (66.82%) (see Appendix I) emerging as the top contributors to operational errors. Employees highlighted concerns about inadequate resources, harsh environmental conditions (e.g., extreme temperatures, noise), and heavy workloads leading to fatigue and reduced situational awareness.

To validate these survey findings, a triangulation analysis was conducted using survey responses, incident data from the *Ground Operations Incidents* dataset, and employee interviews. The incident data strongly aligned with the survey results, revealing that departments experiencing high workload and environmental stress—such as Baggage Services, Ground Equipment Operations, and Aircraft Loading Services—also recorded frequent incidents. These incidents included:

- **Employee Injuries**: Workers were injured while handling heavy baggage or operating equipment in stressful conditions. For example, one employee was injured during a high-temperature shift while operating ground equipment. The combination of excessive workload and environmental stress contributed to fatigue and impaired reflexes, as frequently cited in the survey results.

- **Aircraft Damage**: Incidents like dents and scratches on aircraft were often the result of rushed operations and insufficient supervision. In one case, a high loader operator damaged an aircraft fuselage under pressure to meet time constraints. The employee later reported feeling overwhelmed due to inadequate managerial support—echoing the survey's findings on the critical role of workload pressure and poor coordination in operational errors.

Employee interviews further reinforced these findings, with workers from Ground Equipment Operations reporting that high stress, insufficient supervision, and challenging environmental factors regularly led to safety violations. One interviewee stated, "The fast pace and lack of oversight make it hard to avoid mistakes, especially when things are rushed." This feedback mirrors the survey results, emphasizing how workload and environmental factors contribute to errors.

The triangulated approach also validated the impact of supervision on performance. Survey respondents highlighted that inadequate supervision often led to a loss of focus and

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increased errors. Incident data confirmed this, showing that errors such as improper baggage handling or incorrect towing procedures often occurred during shifts where supervisors were either absent or multitasking. For example, in one incident, a crew left unsupervised during a high-pressure turnaround caused a collision with ground equipment—validating the survey's claim that lack of supervision is a major factor in operational errors.

Employee testimonials provided qualitative support for the quantitative data. Many workers described the mental and physical toll of working under extreme environmental conditions and heavy workloads. One employee shared, "The noise and heat make it hard to concentrate, and when you're rushing to meet deadlines, accidents happen." This aligns directly with the 74.31% of survey respondents who identified external conditions as a key factor, and the 66.82% who pointed to workload and time pressure as major contributors to errors.

The combination of survey data, incident reports, and employee interviews strengthens the validity and credibility of the research findings. The alignment between subjective perceptions, objective incidents, and qualitative feedback clearly demonstrates that factors such as workload pressure, environmental stressors, and lack of supervision play a critical role in influencing safety and performance in ground handling operations. This triangulation of data provides a solid foundation for evidence-based recommendations aimed at improving operational efficiency and enhancing employee safety.

CHAPTER V:

CONCLUSION

Through the comprehensive analysis of the survey conducted within the context of ground handling services, it is evident that multiple factors contribute to employee performance, each playing a critical role in shaping the overall operational efficiency and risk exposure. These factors can be broadly divided into organizational factors and individual factors, each of which influences both the behavior of employees and the associated risks in ground handling operations. Organizations can improve operational effectiveness and significantly reduce behavioral risks by addressing these issues systematically. The following sections will outline these factors in order of priority, focusing first on the organizational factors before transitioning to the individual ones, emphasizing their impact on risk management.

For a detailed breakdown of the data supporting these findings, please refer to the results analysis in Appendix J.

5.1   Organizational Factors

5.1.1   Resource and Support

The most influential organizational factor identified was **Resources and Support**. The survey revealed that 81.86% of employees cited inadequate tools, equipment, and managerial support as critical contributors to inefficiencies and operational errors. From a risk management perspective, a lack of resources elevates the likelihood of accidents, delays, and safety violations. When employees are forced to work without proper tools or sufficient guidance, the probability of errors—especially in high-risk environments like ground handling—rises significantly.

To mitigate these risks, organizations should conduct a thorough audit of resource distribution to identify gaps where critical tools or equipment may be insufficient or

outdated. By ensuring employees have access to the necessary resources, task efficiency will improve, and frustrations caused by inadequate equipment will be reduced. Management should also adopt a more proactive approach by conducting regular check-ins, providing timely feedback, and maintaining open communication channels for employees to seek help when needed.

Implementing a real-time **resource management system** could further preempt shortages and bottlenecks, ensuring smoother operations and reducing the risk of unsafe practices or shortcuts. Addressing resource and support issues will directly enhance employee morale, productivity, and safety, reducing the incidence of accidents and creating a more efficient work environment.

5.1.2 External Conditions

Another critical factor influencing employee performance is **External Conditions**. The survey found that 74.31% of employees reported that adverse external factors, such as extreme weather conditions and physical working environments, hindered their ability to perform tasks efficiently and safely. Ground handling operations often expose workers to high temperatures, heavy rain, and humidity, which can negatively impact safety and productivity.

Prolonged exposure to harsh environmental conditions can cause fatigue, cognitive impairment, and physical discomfort, leading to errors. Workers experiencing these stressors are more likely to make mistakes due to reduced decision-making capabilities. From a behavioral risk management perspective, external conditions pose a significant risk to safety and efficiency.

Although external conditions cannot always be controlled, organizations must implement strategies to mitigate these risks. Key interventions include equipping employees with appropriate **protective gear** (e.g., weather-resistant uniforms and personal protective

equipment) and modifying **work schedules** to avoid extreme weather conditions. Adjusting workloads during times of severe weather can alleviate physical strain on employees, preventing fatigue-related errors.

Organizations should also provide **training** on managing weather-related risks, such as recognizing signs of heat stress and following safety protocols in inclement weather. This will empower employees to proactively safeguard their well-being, reducing the likelihood of behavioral lapses caused by environmental stressors.

Furthermore, organizations must develop and regularly update **contingency plans** to address disruptions caused by extreme weather. These plans should include strategies for rescheduling shifts, providing alternative work locations, or temporarily suspending non-essential tasks. Creating sheltered workstations with proper ventilation or climate control can also enhance employee comfort and focus, minimizing the risks associated with adverse external conditions. (Griffin and Neal, 2000)

By taking these steps, organizations can protect employees from environmental hazards while maintaining productivity and safety. In conclusion, although external conditions present an ongoing challenge in ground handling, a well-implemented risk management strategy that prioritizes employee protection will significantly reduce behavioral risks and ensure operational continuity.

Addressing Validated Issues

The alignment between perceived challenges, recorded incidents, and employee feedback further validates the importance of addressing these organizational factors. Organizations should focus on the following actions:

- **Improving Resources and Support**: Ensuring adequate tools and equipment are available, especially during high-pressure shifts, will alleviate workload pressures and reduce errors.

- **Enhancing Environmental Controls**: Implementing noise reduction measures, temperature management, and providing appropriate protective gear will create a safer and more comfortable working environment.

- **Strengthening Supervision**: Increasing managerial oversight during critical operations will ensure that teams are adequately supported, minimizing the risk of errors due to lack of supervision.

These targeted interventions, supported by triangulated data from the survey, incident reports, and employee feedback, will improve employee well-being, enhance performance, and reduce the frequency of incidents involving injuries or aircraft damage.

5.1.3 Workload and Time Pressure

Workload and time pressure emerge as the third most significant organizational factor influencing both employee performance and risk levels in ground handling services. The survey results indicate that employees are often burdened with excessive workloads, tight deadlines, and multiple tasks that require simultaneous attention. This high-pressure environment forces employees to operate under stress, which, in turn, increases the probability of errors, accidents, and non-compliance with safety protocols.

From a behavioral-based risk management perspective, the relationship between excessive workload and risk-taking behavior is well-documented. When faced with overwhelming tasks and limited time, employees may resort to unsafe practices, such as rushing through tasks, cutting corners, or neglecting safety protocols. These behaviors, driven by the pressure to meet unrealistic deadlines, directly increase the likelihood of accidents and operational errors. Furthermore, the cognitive strain from juggling multiple tasks reduces employees' focus and decision-making abilities, making them more susceptible to mistakes that could compromise safety and operational integrity.

To effectively mitigate the behavioral risks associated with workload and time pressure, organizations must prioritize a systematic review of task allocation. Ensuring that tasks are distributed equitably among employees is crucial to preventing any one individual or team from becoming overburdened. This can be achieved by conducting regular workload assessments to identify departments or roles where employees are under excessive strain. A balanced workload across teams not only enhances productivity but also reduces the likelihood of employees engaging in unsafe, risk-prone behaviors.

In addition to redistributing tasks, organizations must establish realistic timelines for task completion. Ground handling operations, by their nature, often involve time-sensitive tasks; however, it is essential that deadlines consider both the complexity of tasks and the resources available to employees. Setting achievable deadlines allows employees to focus on the quality of their work rather than simply meeting unrealistic time constraints, thereby minimizing the risk of errors.

Moreover, in situations where the workload consistently exceeds the available employee capacity, increasing staffing levels or reallocating resources is a necessary step. By addressing staffing shortages, the organization can alleviate the strain on employees, reducing the behavioral risks associated with overwork. Introducing workflow management tools can also enhance operational efficiency, enabling employees to better prioritize tasks and streamline their processes.

Additionally, organizations can invest in training programs that focus on time management and task prioritization. These programs empower employees to organize their work more effectively, helping them manage their workload without compromising safety. Training should also emphasize the importance of maintaining safety protocols even in high-pressure situations, reinforcing a culture where safety is never sacrificed for speed.

Burnout is another significant risk when employees are consistently overburdened. The survey findings highlight that employees under intense time pressure often experience decreased focus and higher stress levels, leading to both a decline in work quality and a risk of physical and mental exhaustion. Long-term exposure to such pressures not only endangers employee well-being but also increases the potential for safety incidents and operational failures.

To combat burnout and sustain long-term employee performance, organizations should establish support systems that promote work-life balance and well-being. This could include offering flexible work schedules, regular breaks, and mental health support initiatives. Providing employees with the tools to manage stress and maintain a healthy work-life balance can significantly reduce the negative impact of workload and time pressure on their behavior and performance.

By addressing the challenges associated with workload and time pressure, organizations can create a more balanced and sustainable work environment that promotes both employee well-being and operational success. In the context of behavioral-based risk management, reducing excessive workload and ensuring realistic deadlines are critical steps in minimizing unsafe behaviors and preventing accidents. Ultimately, an organization that values both safety and quality over speed will not only see improvements in employee satisfaction but also enhanced overall operational resilience.

5.1.4 Work Processes and Communication

Ineffective work processes and poor communication are critical organizational factors that significantly contribute to confusion, delays, and operational errors in ground handling services. These issues not only heighten the risk of accidents but also increase the likelihood of non-compliance with established safety regulations. Inconsistent communication between departments and poorly defined processes make it difficult for

employees to execute their tasks safely and accurately. As a result, the probability of behavioral risks—such as errors, misunderstandings, and risky decision-making—rises substantially.

From a behavioral-based risk management perspective, it is essential for organizations to address these challenges to minimize operational risks. Unclear work instructions and the lack of standard operating procedures (SOPs) not only confuse employees but also reduce their confidence in decision-making. Employees who are uncertain about the correct procedures are more likely to engage in risk-taking behaviors, as they may cut corners or make unsafe decisions to meet operational demands.

To mitigate these risks, organizations must streamline their communication channels and ensure that SOPs are well-documented, easily accessible, and regularly updated. The clarity of work processes is crucial to minimizing ambiguity and ensuring that all employees have a clear understanding of their roles and responsibilities. This includes conducting a comprehensive review of all existing procedures, identifying gaps or inconsistencies, and making sure that any changes are promptly communicated to all staff members.

Once SOPs are clearly defined, regular training sessions should be conducted to ensure that employees are familiar with the procedures and know how to apply them in their day-to-day tasks. This training should also emphasize the importance of adhering to safety protocols, even in high-pressure situations. By reinforcing these processes through training, the organization can reduce the likelihood of employees engaging in unsafe behaviors, thus lowering the overall risk profile.

On the communication front, organizations should implement robust internal communication systems that promote transparency and collaboration across all departments. Encouraging cross-departmental collaboration ensures that employees are aligned with the organization's goals and reduces the likelihood of operational silos, which often lead to

miscommunication. Establishing clear lines of communication between teams and management is essential to prevent misunderstandings and ensure that information is shared efficiently.

In addition to traditional communication methods, the organization should adopt digital platforms that facilitate real-time communication and coordination among employees. These platforms can serve as central hubs for sharing SOPs, reporting safety concerns, and providing instant feedback. Regular meetings and feedback loops can also help improve transparency, allowing employees to raise concerns and share suggestions for improving work processes.

By enhancing communication and structuring work processes effectively, organizations can significantly reduce operational errors and foster a culture of safety where employees feel confident and supported in their roles. Clear communication and well-defined processes empower employees to focus on their tasks without the distraction of uncertainty, leading to improved performance and reduced behavioral risks. In doing so, the organization can not only achieve higher operational efficiency but also ensure that safety remains a top priority.

Furthermore, a continuous improvement framework should be established, where work processes and communication systems are periodically reviewed and updated in response to evolving operational demands. By incorporating employee feedback into this review process, organizations can ensure that the changes implemented are practical and address real-world challenges faced by the workforce.

Ultimately, addressing the issues related to work processes and communication is a vital step in effective behavioral-based risk management. Streamlined procedures and open communication channels reduce the potential for errors, lower stress levels among employees, and foster a workplace culture that values safety and accuracy over speed. As a

result, both individual performance and organizational safety standards are elevated, reducing the overall risk of incidents in ground handling operations.

5.2   Individual Factors

While organizational factors lay the groundwork for operational efficiency and safety, individual factors also play a critical role in influencing behavior and associated risks. The following section explores the key individual factors highlighted in the survey and discusses their relationship with risk management in ground handling operations.

5.2.1   Motivation

The findings suggest that workplace incidents are frequently driven by unintentional errors, lack of motivation, and inadequate compensation. A lack of motivation has emerged as a key driver of disengagement and unsafe behaviors within ground handling operations. The survey reveals that employees who perceive their compensation as insufficient or feel inadequately recognized for their contributions are more likely to disengage from their tasks, leading to increased risks. This disengagement can manifest in several ways, including careless actions, reduced productivity, and even deliberate non-compliance with established safety protocols. From a behavioral risk management perspective, low motivation significantly increases the likelihood of behavioral risks, as disengaged employees are less inclined to adhere to safety standards or take proactive measures to prevent accidents.

From a behavioral risk management perspective, low motivation can result in complacency, where employees no longer feel invested in the quality of their work or the safety of their environment. When employees lack enthusiasm or feel undervalued, they may cut corners, overlook safety procedures, or fail to report hazards, all of which heighten the risk of incidents in the workplace. Moreover, insufficient motivation can exacerbate

stress levels, as employees may feel overwhelmed by tasks without seeing corresponding rewards, further increasing the likelihood of mistakes and unsafe practices.

To address this issue, organizations must adopt a holistic approach to enhancing employee motivation, ensuring that every worker feels both valued and rewarded for their efforts. Ensuring competitive compensation is the first and most obvious step. Organizations must regularly review and update their salary structures to ensure they align with industry standards and reflect the contributions of employees. Inadequate pay can be a direct cause of dissatisfaction, and by offering competitive wages, organizations can eliminate one of the primary sources of disengagement.

Beyond compensation, organizations should implement recognition programs that celebrate individual and team accomplishments. Recognizing employees' hard work through performance-based bonuses, public acknowledgment, or even simple expressions of appreciation can have a profound impact on morale and motivation. When employees feel their efforts are recognized, they are more likely to remain committed to their roles and adhere to safety protocols, reducing the risk of behavioral lapses.

In addition to recognition, providing career development opportunities is essential for sustaining long-term motivation. Employees who see a clear path for advancement within the organization are more likely to remain engaged, as they can visualize the rewards of continued dedication. Offering training programs, mentorship opportunities, and pathways for promotion can reignite motivation within the workforce. Employees who feel that they have the opportunity to grow and develop within the organization will be more committed to performing their duties effectively and safely.

Fostering a positive workplace culture is equally critical in maintaining high levels of motivation. Employees thrive in environments where they feel supported and valued not only for their work but also as individuals. Organizations must cultivate a culture where

regular feedback is provided, and where clear communication regarding career advancement and development is the norm. By maintaining open communication channels, employees are more likely to feel connected to the organization's goals, leading to increased loyalty and dedication. A supportive culture also encourages employees to voice concerns or suggest improvements, further contributing to a safer and more efficient workplace.

Finally, maintaining a focus on work-life balance is an important component of motivation. When employees feel that their personal well-being is respected and valued by the organization, they are more likely to remain motivated and dedicated. Offering flexibility in work schedules, providing mental health resources, and promoting a healthy work-life balance can enhance employees' overall satisfaction, which in turn reduces the likelihood of burnout and disengagement. Satisfied employees are more likely to maintain high safety standards and contribute positively to the overall safety culture of the organization.

In conclusion, addressing motivation through a combination of competitive compensation, recognition programs, career development opportunities, and a supportive workplace culture is essential for reducing behavioral risks in ground handling services. When employees are motivated and feel valued, they are far more likely to adhere to safety practices, take proactive measures to prevent accidents, and remain committed to their roles. By investing in the motivation and well-being of employees, organizations can foster a more engaged, productive, and safe workforce.

5.2.2 Skill and Knowledge Deficits

Skill and knowledge deficits represent a significant risk factor in ground handling operations. Employees who lack the necessary training or technical expertise are inherently more prone to making mistakes, particularly when tasked with complex or high-stakes duties. These errors not only hinder operational efficiency but also pose considerable safety

risks, as untrained or underprepared employees may unintentionally compromise safety protocols or fail to identify potential hazards. The survey highlights that many employees feel ill-equipped to handle the complexities of their roles, signaling a critical gap in readiness and capability that exacerbates behavioral risks.

From a behavioral-based risk management perspective, skill deficits are a major source of human error, which can have severe consequences in the ground handling industry. Employees without adequate training may struggle with decision-making under pressure, overlook safety guidelines, or improperly operate equipment, leading to increased incidents of accidents and operational failures. Given the fast-paced and highly coordinated nature of ground handling operations, even minor mistakes can escalate quickly, endangering both personnel and equipment.

To effectively mitigate these risks, organizations must prioritize continuous training and development as a cornerstone of their risk management strategy. Investing in upskilling programs that focus on enhancing technical knowledge, safety protocols, and risk awareness is essential for empowering employees to carry out their duties competently and safely. These training programs should not be a one-time event but rather a continuous effort to ensure that all employees stay up to date with the latest industry standards, technological advancements, and safety practices. By reinforcing the importance of safety and competence, the organization can reduce the likelihood of mistakes stemming from skill deficiencies.

Furthermore, mentorship programs can play a critical role in addressing knowledge gaps within the workforce. Pairing less experienced employees with seasoned professionals allows for the transfer of practical knowledge that might not be covered in formal training programs. Mentorship provides employees with hands-on guidance, ensuring that they not only understand the technical aspects of their roles but also learn how to apply safety

protocols effectively in real-world scenarios. This knowledge transfer is vital for building a workforce that is both skilled and safety-conscious.

Organizations should also tailor their training initiatives to meet the specific needs of each department. Ground handling operations encompass a wide range of tasks, from aircraft loading and fueling to passenger services and logistics. Each of these roles presents unique challenges, and training programs must be customized to equip employees with the relevant skills to excel in their particular positions. For example, employees working with heavy machinery may require specialized training on equipment operation and maintenance, while those in passenger handling roles may need additional training on communication and risk assessment.

By investing in comprehensive employee development programs, organizations not only enhance their human capital but also foster a culture of continuous learning. Employees who feel empowered by their training are more likely to take ownership of their responsibilities, adhere to safety protocols, and contribute positively to the organization's overall safety culture. This sense of empowerment leads to increased confidence, job satisfaction, and performance, further reducing the risk of behavioral-based incidents.

Moreover, focusing on skill development aligns with the broader objectives of behavioral-based risk management by proactively addressing the root causes of human error. When employees are equipped with the necessary tools and knowledge to perform their jobs effectively, the organization can reduce the occurrence of unsafe behaviors and minimize the risk of accidents. This not only improves operational safety but also enhances organizational resilience, ensuring that ground handling operations run smoothly even under pressure.

In conclusion, addressing skill and knowledge deficits through continuous training, tailored development programs, and mentorship systems is vital for minimizing the risks

associated with human error in ground handling services. By empowering employees with the skills and confidence they need to excel, organizations can create a safer, more efficient, and more resilient operational environment, significantly reducing the likelihood of accidents and improving overall performance.

5.2.3   Personal attitude

Personal attitude is a critical determinant of both safety and risk behaviors within the workplace. Employees with negative attitudes or dissatisfaction are more likely to engage in risky behaviors, ignore safety protocols, or underperform in their roles. The survey results revealed that some employees even admitted to making deliberate mistakes as a form of protest or dissatisfaction. This behavior not only undermines individual performance but also increases the organization's exposure to risks, potentially resulting in accidents, errors, and safety violations.

From a behavioral-based risk management perspective, negative attitudes are a significant concern as they are directly linked to unsafe behaviors. When employees feel disengaged, undervalued, or disconnected from their work environment, they are more likely to neglect safety protocols, bypass routine safety checks, or take shortcuts. These actions elevate the risk of operational failures and incidents. For example, employees might forego important safety steps, leading to increased potential for accidents in high-pressure environments like ground handling.

The data identifies personal attitudes such as subjective judgment, cutting corners, intentional mistakes, and ethical decision-making as key factors influencing safety performance. Employees who feel compelled to rely on personal judgment or engage in

habitual behaviors are more prone to unsafe practices. Although this behavior is not widespread, those who engage in it present a significant risk to workplace safety.

To address these attitude-related risks, organizations need to foster a supportive and inclusive workplace culture where employees feel valued and engaged. Encouraging open communication channels allows employees to voice dissatisfaction or concerns constructively. Whether through regular meetings, anonymous feedback systems, or open forums, ensuring transparent communication helps resolve grievances before they escalate into disengagement or risky behaviors.

Implementing conflict resolution mechanisms is also essential to managing interpersonal or team-based disputes that may contribute to negative attitudes. By providing employees with tools to resolve conflicts, organizations can reduce tensions that otherwise manifest as unsafe behavior. Employees who feel supported in resolving workplace issues are more likely to stay engaged and adhere to safety protocols.

Leadership plays a crucial role in shaping employee attitudes and behaviors. By actively promoting a safety-first culture, managers and supervisors can reinforce the importance of following protocols and reporting potential risks. Employees who view safety as a shared organizational value are less likely to compromise it. Leadership should consistently lead by example, demonstrating their commitment to safety in both actions and policies.

Employee engagement initiatives can further align personal attitudes with organizational safety goals. Activities like team-building exercises, leadership training, and recognition programs create a sense of belonging and purpose, reducing the likelihood of

behavioral risks. Engaged employees are more connected to the organization's mission and values, which fosters safer and more effective work practices.

Addressing dissatisfaction at its root is vital for long-term success. Negative attitudes often stem from unresolved conflicts, lack of recognition, or feeling undervalued. Organizations should proactively address these issues through regular feedback, recognition programs, and opportunities for growth. Doing so will mitigate dissatisfaction and realign employee attitudes with organizational objectives.

Conclusion: The Impact of Personal Attitudes on Safety Performance

Personal attitudes, including subjective judgment, cutting corners, intentional mistakes, and ethical decision-making, play a pivotal role in determining employee safety performance. Employees who rely on personal discretion, feel pressured to cut corners, or engage in habitual behaviors are more likely to compromise workplace safety. Although such behaviors are limited to a minority of the workforce, they pose a substantial risk to overall operational safety.

Addressing these challenges requires a comprehensive approach that includes training, clear communication, and leadership support. Reinforcing safety protocols and aligning personal attitudes with the organization's safety culture are crucial steps in minimizing risks. By fostering a work environment that prioritizes safety and addresses individual concerns, organizations can mitigate the risks associated with unsafe behaviors, improving both performance and safety outcomes.

In conclusion, the data highlights that many employees experience mental fatigue due to interpersonal stressors such as disrespect, misunderstanding, and oppression. This

calls for urgent organizational interventions to address these challenges. Enhancing communication, promoting respect, and providing conflict resolution support can significantly reduce stress, improve mental well-being, and boost overall performance. Prioritizing these initiatives will result in a more supportive, productive, and safer workplace environment.

CHAPTER VI:

SUMMARY AND RECOMMENDATIONS

6.1. Summary of Key Findings

The survey results provide critical insights into the behavioral risks that affect ground handling operations, arising from both organizational and individual factors. These factors significantly influence operational efficiency and safety and require focused mitigation efforts.

6.1.1 Organizational Factors:

Several organizational factors have been identified as contributing to behavioral risks:

Resource Allocation and Adequacy: Inadequate resources limit employees' ability to perform their duties safely and efficiently, leading to heightened risks of errors and unsafe working conditions.

External Conditions: Unpredictable environmental factors, such as extreme weather, directly impact employee performance and safety, , necessitating proactive measures to mitigate risks.

Communication Gaps: Inefficient communication within organizations leads to misunderstandings and operational inefficiencies, which increase the potential for safety incidents.

Workload and Time Pressure: Overburdened employees are more likely to cut corners, rush tasks, or disregard safety protocols, all of which elevate the risk of accidents.

6.1.2 Individual Factors:

In addition to organizational weaknesses, individual behavioral factors play a crucial role in risk:

Motivation Deficits: Employees who feel undercompensated or undervalued are more likely to disengage from their roles, which correlates with unsafe behaviors.

Skill and Knowledge Deficits: Inadequate training or expertise contributes to mistakes, especially in high-stakes or complex tasks, necessitating continuous skill development.

Personal Attitudes: Negative attitudes, especially when employees feel disconnected from the organization, can result in deliberate disregard for safety protocols, thus increasing operational risks.

6.2. Recommendations

6.2.1 Mitigating Behavioral Risks Through Strategic Interventions

A comprehensive strategy to address the behavioral risks identified must prioritize systemic improvements and targeted behavioral modifications. The following strategic interventions are recommended to enhance safety, operational efficiency, and employee well-being:

Resource Investment

Adequate allocation of resources, tools, and equipment is essential to support safe and efficient operations. Continued Monitoring and Support should be implemented through regular assessments of workload and time pressures, especially for employees in high-stress roles. Targeted Support for New Hires is vital since employees with less than one year of experience report higher levels of workload stress. Organizations should provide additional training, resources, and mentorship to help new employees manage their responsibilities. Additionally, Clarifying and Simplifying Work Processes by improving documentation and streamlining standard operating procedures will help reduce variability in employee experiences.

Enhanced Communication

Organizations should strengthen communication structures to reduce misunderstandings and improve collaboration. Tailored solutions that address unique departmental challenges will ensure employees receive proper guidance to perform their tasks effectively. Open communication channels and feedback mechanisms will enable the organization to address issues before they escalate, fostering a transparent work environment where concerns are heard and acted upon.

Workload Management

To alleviate excessive workloads and time pressures, workload balancing across experience levels is necessary. Employees with longer tenures and those in more demanding roles report significant variability in workload pressure. Organizations should ensure work is evenly distributed, reducing the risk of fatigue and errors. Managing workloads efficiently is key to minimizing rushed or unsafe work practices, which have been identified as contributors to accidents and incidents.

Continuous Training and Development

Ongoing training programs that align with industry standards and safety protocols ensure employees remain competent in their roles. Targeted training for mid-level employees, especially those with 1-5 years of experience who face challenges with complex roles and unclear standards, is essential for mitigating risks. Regular development opportunities will help employees adapt to evolving safety requirements and reduce operational risks.

Employee Engagement and Recognition

Fostering motivation and commitment through recognition programs and career development opportunities can enhance employee adherence to safety protocols. By motivating employees to engage in positive behaviors, organizations can transition from a

mindset of compliance ("I have to") to one of intrinsic motivation ("I want to"). Employees who feel valued are more likely to take ownership of their tasks and adhere to safety standards willingly.

6.2.2 Behavioral Control Strategy Recommendation

To effectively manage and control employee behavior, the following behavior control strategy is proposed. This strategy aims to shift employee behavior from a mindset of "I have to" to "I want to" through the following key elements:

Changing Perception

Begin by reshaping employees' perceptions of their roles and responsibilities. Raising awareness about the importance of their contributions to the organization's safety and success will help them internalize safety and performance measures. Regular communication, leadership-driven examples, and training sessions should highlight the value of their work, encouraging employees to embrace their responsibilities willingly.

Discipline and Accountability

Implement a structured discipline system that holds employees accountable while promoting fairness and transparency. This culture of accountability should not be based on fear of punishment but on understanding the long-term benefits of adhering to safety protocols. Clear guidelines and consistent reinforcement will ensure that employees adopt behaviors aligned with the organization's safety and operational objectives.

Optimal Resource Utilization

Providing the necessary tools, equipment, and resources enables employees to perform their jobs safely and efficiently. Proper resource allocation reduces frustration and empowers employees to take ownership of their tasks. Resource management signals that the organization is committed to their well-being, motivating employees to engage positively in their work.

Group Dynamics and Peer Influence

Leverage group dynamics and peer influence to encourage positive behavior change. Employees tend to adopt behaviors that are normalized within their teams. By fostering a culture where safety, responsibility, and proactive engagement are the norm, employees are more likely to align their behaviors with these values. Regular team meetings and shared goals will reinforce the collective responsibility for maintaining high standards.

Fostering Self-Awareness and Intrinsic Motivation

The ultimate goal is to cultivate intrinsic motivation among employees, where they shift from complying with rules because they "have to" toward embracing safety goals because they "want to." This can be achieved by promoting self-awareness and ownership of behavior through feedback mechanisms, personal development programs, and empowerment initiatives. When employees understand the personal and organizational benefits of their actions, they will be more inclined to make proactive and safe decisions.

6.2.3 Merging Systemic and Behavioral Strategies

Aligning organizational improvements with targeted behavioral interventions will create a safer, more productive, and resilient workforce. Addressing resource and support issues, implementing enhanced communication, and ensuring balanced workloads are key systemic changes that will reduce operational risks. Meanwhile, a behavioral control strategy that emphasizes changing perception, fostering discipline, leveraging group dynamics, and nurturing intrinsic motivation will lead to sustainable behavior changes.

This comprehensive approach will not only enhance operational safety but also improve performance, ensuring that employees are motivated to adhere to safety protocols because they want to, not because they have to.

Understanding how behavioral elements influence risk is critical for shaping future risk management practices. Further exploration in this area will uncover new ways to integrate behavioral insights into safety frameworks, leading to more proactive, tailored strategies that enhance both individual performance and organizational safety. By focusing on how positive behavioral shifts contribute to mitigating risk, organizations can create a more resilient workforce that actively participates in maintaining a safe work environment.

6.2.2   The Integrated Behavioral-Based Risk Management Framework
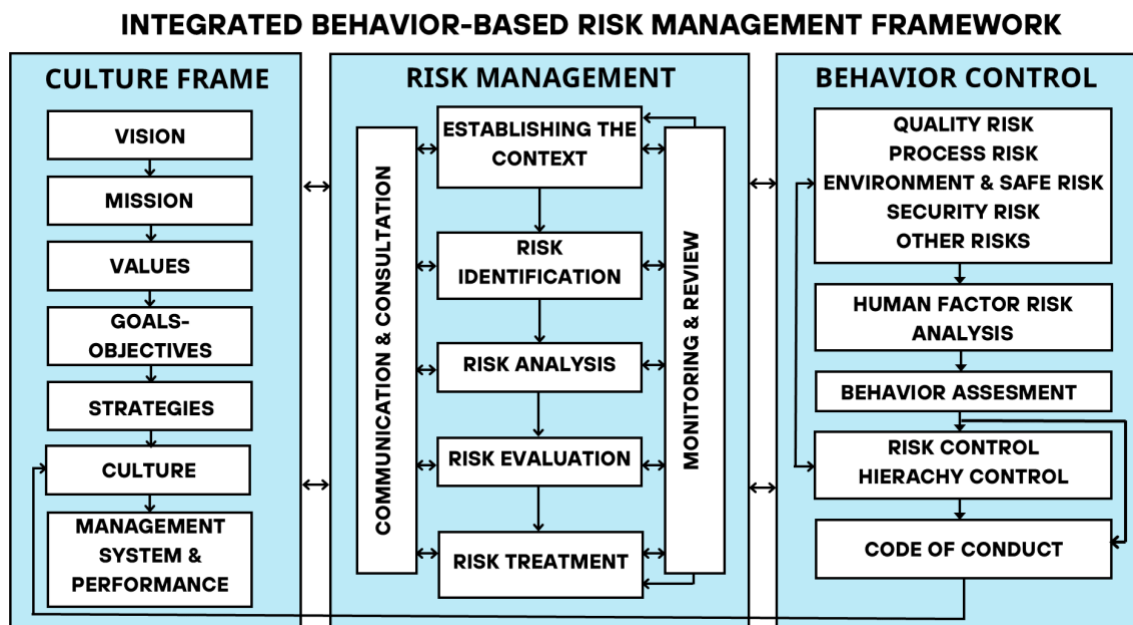
In response to the behavioral risks identified, the Integrated Behavioral-Based Risk Management Framework has been developed. This framework offers a structured and comprehensive approach to risk management by placing human behavior at the core of risk mitigation strategies. While integrating traditional risk management principles, the framework emphasizes addressing key human factors such as decision-making, adherence to procedures, and organizational culture.

The framework promotes a balanced focus on both technical and human aspects of risk management. This holistic approach is essential for ground handling operations, where the interaction between systems, processes, tools, and employee behavior is critical to preventing incidents and ensuring operational safety. The framework acknowledges that, while optimizing technical systems can mitigate risk, equal attention must be devoted to influencing employee behavior, leadership effectiveness, and organizational culture.

Key components of the framework include behavioral assessments, control hierarchies, and communication strategies, ensuring that risks are managed from multiple perspectives. This allows for a more robust evaluation of how human behavior contributes to risk and provides clear methods for mitigating those risks.

In ground handling operations, the framework facilitates a systematic approach to risk management, integrating behavioral controls into the organization's broader strategy, including its culture, vision, mission, and operations. Core processes such as risk identification, analysis, evaluation, and treatment are applied with a focus on human factors that influence safety, performance, and overall risk exposure. Additionally, the framework emphasizes continuous monitoring and review, ensuring that risk management strategies remain adaptive to changing conditions.

The types of risks covered in this framework range from quality risks, process risks, and environmental and safety risks, to human factor risks, making it especially relevant in the high-stakes environment of ground handling. The use of hierarchical controls, including elimination, substitution, engineering, and administrative controls, ensures a structured method for reducing risk exposure at all levels.

A notable element of the framework is its focus on safety culture, which plays a crucial role in not only ground handling operations but across industries. A strong safety culture ensures that behavioral factors are consistently monitored, evaluated, and improved.

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This element should be deeply researched. By fostering a strong safety culture, organizations can significantly reduce risks and improve operational safety.

In conclusion, the Integrated Behavioral-Based Risk Management Framework provides a multi-dimensional model for managing risks in ground handling operations. By integrating behavioral and technical controls, it allows organizations to manage risks holistically, enhancing safety, operational efficiency, and organizational resilience. This framework is particularly well-suited to the complex risk landscape of ground handling, where human actions and technical processes must be managed in a coordinated and effective manner.

Additionally, through interviews and observations, habits and intuition were identifed as significant in influencing employee behavior. These factors, while were not thoroughly explored in this study due to time and resource constraints. It is recommended that future research focuses on how habitual behaviors and intuitive decision-making affect risk, potentially yielding valuable insights that could enhance the effectiveness of behavioral-based risk management strategies.

This framework's applicability extends beyond ground handling operations. The Integrated Behavioral-Based Risk Management Framework offers a model that can be adapted to various industries where human behavior plays a critical role in influencing safety and performance. Its comprehensive approach, which combines behavioral and technical controls, ensures that it can be applied to different operational environments, making it a valuable tool for industries, not only within the Vietnamese ground handling sector but also in a global aviation context, as well as across other industries.

APPENDIX A

SURVEY COVER LETTER

Le Thi Hoang Oanh

SSBM, DBA Student

Email: oanhlth2014@gmail.com

Phone Number: +84 0903699827

Date: April 15th, 2024

Subject: Request for Participation in Ground Handling Operations Behavioral Risk Management Surveys

Dear [Managers' Name],

As part of my Doctorate in Business Administration (DBA) research, I am conducting a series of surveys to explore the **behavioral risks** and **mental well-being** of employees involved in ground handling operations at international airports in Vietnam. The goal of this research is to develop a comprehensive understanding of the factors influencing employee performance and safety, with the aim of proposing more effective risk management solutions.

I kindly seek your support in facilitating this research by sharing the link of surveys to your employees. Their participation will be invaluable in providing insights into behavioral risks and workplace conditions, which are critical to improving both operational safety and efficiency.

For my colleagues,

The surveys are designed to assess a variety of factors, including:

Workplace Behavior and Risk Factors (Appendix C)

This questionnaire investigates uncontrolled behaviors in the workplace and identifies key organizational and personal factors that contribute to errors or accidents.

Mental Health and Its Impact on Work Behavior (Appendix D)

This survey focuses on how mental health conditions—such as stress and fatigue—affect work performance and safety behavior.

This open-ended questionnaire seeks detailed feedback on specific incidents, behaviors, and safety practices in the workplace.

For the Managers,

This process is essential to the success of this research. I kindly ask that you:

+   Ensure the surveys are shared to a representative sample of employees across different departments.

+   Encourage your employees to complete the surveys honestly and thoroughly.

+   Collect the completed surveys in a timely manner.

Confidentiality

Please note that participation is entirely voluntary and anonymous. All responses will be treated with the utmost confidentiality, and the results will be used solely for academic research purposes. Your employees' feedback is crucial in helping me build a safer and more efficient work environment.

Instructions

Employees are requested to fill out all sections from the link.

Completed surveys online by May 05th, 2024 after which they will be forwarded to me.

Should you or your employees have any questions or require further information, please feel free to contact me directly at oanhlth2014@gmail.com or +84 0903699827

Thank you for your time and support in facilitating this important research. Your cooperation will help pave the way for meaningful improvements in risk management within ground handling operations.

    Sincerely,

    Le Thi Hoang Oanh

    SSBM, DBA Student

Behavior - Based in Ground Handling Risk Management

Researcher:

Le Thi Hoang Oanh

Doctorate in Business Administration (DBA) Student

Swiss School of Business and Management (SSBM)

Email: oanhlth2014@gmail.com

Phone: +84 0903699827

Purpose of the Study:

You are invited to participate in a research study aimed at understanding the behavioral risks and mental well-being of employees working in ground handling operations at international airports in Vietnam. The study will gather insights to develop more effective risk management solutions that will improve operational safety and efficiency.

Procedures:

If you agree to participate in this study, you will be asked to complete one or more surveys that will take approximately 10-15 minutes. The surveys will focus on workplace behaviors, mental health conditions, and safety practices in ground handling operations. Participation is voluntary, and you can withdraw at any time without penalty.

Confidentiality:

Your participation in this research is confidential. All data collected from the survey will

remain anonymous, and no personally identifiable information will be recorded. The results will be used solely for academic purposes and reported in aggregate form. Your responses will not be shared with anyone and will not affect your employment status.

Voluntary Participation:

Participation in this study is entirely voluntary. You may decline to participate, or you may withdraw from the study at any time without any consequences. Refusal to participate will not affect your relationship with your employer.

Risks and Benefits:

There are minimal risks associated with participating in this research. You may feel uncomfortable answering some questions, but you may skip any questions that you do not wish to answer. The findings of this study may benefit employees by providing insights that could lead to improvements in workplace safety and mental well-being.

Contact Information:

If you have any questions or need further clarification regarding the study, feel free to contact me at the email or phone number provided above. You may also contact my academic supervisor at UpGrad Vietnam, SSBM.

Statement of Consent:

By participating in this survey, you are agreeing that you have read and understood the information provided above and that you voluntarily agree to participate in this study.

QUESTIONNAIRES ON EXPLORING UNCONTROLLED BEHAVIORAL FACTORS

Please state your gender

1. Male
2. Female

Which department are you working in?

1. Customer Services
2. Load Control Services
3. Loading Services
4. Ground Operations Services
5. Baggage Services
6. Cabin Cleaning Services
7. Ground Equipment Operations Services

You are currently:

1. Staff
2. Manager
3. Supervisor

How long have you been doing this job?

1. < 1 year
2. < 5 years
3. <10 years
4. > 10 years

What age group do you belong to?

1. < 30 years old
2. 30-40 years old
3. 40-50 years old
4. 50-55 years old
5. 55- 60 years old

This survey will not have any impact on your current job, and we sincerely hope to receive your honest feedback.

Please select the option that best reflects your opinion.

1 – Strongly disagree   2 - Disagree   3 - Neutral 4 - Agree   5 – Strongly agree

No	Please provide the reasons that may lead to errors, incidents, or accidents in the course of your work	Feedback
1.	Due to my lack of specialized knowledge and insufficient training.	1 2 3 4 5
2.	Due to a lack of tools, equipment, and supporting resources.	1 2 3 4 5
3.	Due to a lack of documentation and/or standard operation procedures, or work instruction lengthy, complex, and hard-to-follow regulations.	1 2 3 4 5
4.	Due to a lack of necessary information to understand the correct way of performing the task.	1 2 3 4 5
5.	Due to objective conditions such as weather and the working environment.	1 2 3 4 5
6.	Due to my unintentional errors or oversights.	1 2 3 4 5
7.	Due to my subjective judgment.	1 2 3 4 5
8.	Due to my deliberate attempt to cut corners.	1 2 3 4 5
9.	Due to a lack of motivation or encouragement.	1 2 3 4 5
10.	Due to the inadequate salary and benefits package, I may not work wholeheartedly.	1 2 3 4 5
11.	Due to having to work under excessive workload and/or fatigue.	1 2 3 4 5
12.	Due to deliberately making mistakes in order to express dissatisfaction with a certain issue.	1 2 3 4 5
13.	Due to a lack of time because of having to perform too many tasks simultaneously.	1 2 3 4 5
14.	Due to not being enthusiastic about the current job I am doing.	1 2 3 4 5

No	Please provide the reasons that may lead to errors, incidents, or accidents in the course of your work	Feedback
15.	Due to the job being too complex and beyond my capabilities.	1 2 3 4 5
16.	Due to my lack of understanding of the boundaries between right and wrong, I tend to follow habit.	1 2 3 4 5
17.	Due to the job not having specific standards or criteria to determine right or wrong.	1 2 3 4 5
18.	Due to a lack of coordination and teamwork spirit.	1 2 3 4 5
19.	Due to a lack of support from relevant management levels.	1 2 3 4 5
20.	Due to a lack of supervision, I work with less focus.	1 2 3 4 5

Thank you for taking the time to complete this survey!
Wishing you always work with a cheerful and energetic spirit!!

APPENDIX D

QUESTIONNAIRE ON HOW MENTAL HEALTH STATUS AFFECTS WORK

BEHAVIOR

Please state your gender

1. Male
2. Female

Which department are you working in?

1. Customer Services
2. Load Control Services
3. Loading Services
4. Ground Operations Services
5. Baggage Services
6. Cabin Cleaning Services
7. Ground Equipment Operations Services

You are currently:

1. Staff
2. Manager
3. Supervisor

How long have you been doing this job?

1. < 1 year
2. < 5 years
3. <10 years
4. > 10 years

What age group do you belong to?

1. < 30 years old
2. 30-40 years old
3. 40-50 years old
4. 50-55 years old
5. 55- 60 years old

This survey will not have any impact on your current job, and we sincerely hope to receive your honest feedback.

Please select the option that best reflects your opinion.

1 – Strongly disagree   2 - Disagree   3 - Neutral 4 - Agree   5 – Strongly agree

No	How do you assess the impact of the following factors on the results of your work?	Feedback
1.	When I experience stress and pressure, I often lose focus on work.	1 2 3 4 5
2.	When I have mood swings, I am easily agitated, irritable, easily withdrawn and do not want to get better.	1 2 3 4 5
3.	When the working environment has bad relationships with colleagues and management, I often have negative emotions and do not want to interact or cooperate.	1 2 3 4 5
4.	When I have unstable (negative) emotions, I tend not to concentrate and work by pure inertia.	1 2 3 4 5
5.	When I am mentally tired, I find myself often losing short-term memory, and this can lead to forgetfulness, forgetting procedures or causing errors.	1 2 3 4 5
6.	When I have an emotional imbalance in my personal life and at work, it will negatively impact the standard behaviors I am implementing.	1 2 3 4 5
7.	When I have comfort and positive emotions, it will motivate me to complete my work accurately.	1 2 3 4 5
8.	When I feel isolated or alienated from the work group, I tend to get depressed and want to work my own way, even having negative behaviors at work.	1 2 3 4 5

No	How do you assess the impact of the following factors on the results of your work?	Feedback

9.	I often have impaired senses, lack of situational awareness and slow reflexes around the following hours:
	    o 11:00-12:00
	    o 13:00-14:00
	    o 15:00-16:00
	    o 20:00-21:00
	    o 22:00-23:00
	    o After 00:00	

10.	I often feel sleepy and tired around the clock:
	    o 11:00-12:00
	    o 13:00-14:00
	    o 15:00-16:00
	    o 20:00-21:00
	    o 22:00-23:00
	    o After 00:00	

11.	In your opinion, the environmental conditions that cause significant fatigue in the area where you work are: (Multiple conditions can be selected)
	    o Temperature
	    o Noise
	    o Light
	    o Vibration
	    o Dust
	    o Unpleasant smell	

12.	In your opinion, factors that cause significant mental fatigue can also be due to: (Multiple reasons can be chosen)
	    o Being oppressed
	    o Aggression
	    o Threatened
	    o Misunderstood
	    o Being disrespected
	    o Being jealous	

Thank you for taking the time to complete this survey!
Wishing you always work with a cheerful and energetic spirit!!

IN-DEPTH INTERVIEW QUESTIONNAIRE

Gender: Male Female. **Age:** < 30 <40 <50 <55 <60

Department: **Position:**

  1. Customer Services   **1.** Staff

  2. Load Control Services   **2.** Manager

  3. Loading Services   **3.** Supervisor

  4. Ground Operations Services

  5. Baggage Services

  6. Cabin Cleaning Services

  7. Ground Equipment Operations Services

Position experience: < 1 year < 5 years <10 years > 10 years

OPEN-ENDED QUESTIONS

Section 1: Incident Analysis

1. Can you describe a specific incident where an error, near-miss, or accident occurred during ground handling operations? Walk me through the steps that led to the event and your thoughts at the time.

2. Thinking back on that incident, what factors (personal, environmental, procedural, etc.) do you believe contributed to the error?

3. Could you elaborate on any specific personal factors (e.g., fatigue, stress, distractions) that might have played a role in the incident?

4. Were there any environmental factors (e.g., noise, weather, time pressure) that may have influenced your actions or decisions?

5. Did any procedural factors (e.g., unclear instructions, lack of training, inadequate resources) contribute to the incident?

6. What additional factors, not listed above, contribute to errors or incidents in ground handling operations?

7. In what ways do you think communication (or lack thereof) between ground handling teams, cabin crews, or other stakeholders contributes to errors or incidents? Can you provide specific examples?

8. Please describe any situations where you felt unsafe while performing ground handling tasks.

9. How was the incident handled immediately after it occurred, and what steps were taken to prevent similar incidents in the future?

10. Have there been any changes in policies, procedures, or training since the incident, and do you feel these changes have been effective in reducing errors or incidents?

Section 2: Behavior

1. In your experience, what are the most common types of unsafe behaviors or shortcuts you see colleagues take during daily ground handling operations?

2. In your opinion, what are the underlying reasons behind these unsafe behaviors (e.g., pressure to meet on time performance, lack of awareness, inadequate supervision)?

3. What kind of feedback or communication do you receive from your supervisors or colleagues regarding safety performance?

4. What are your suggestions for improving safety behaviors in your workplace?

5. What do you think would be the most effective ways to improve safety behavior and reduce risks in ground handling? (Consider asking about training, communication, tools, incentives, culture, etc.)

6. If you could change one thing about the ground handling work environment, procedures, or equipment to improve safety, what would it be and why?

7. How do you think the current reward or incentive systems (if any) influence safe behavior in ground handling operations? Do they encourage safe practices, or are there ways they could be improved to better promote safety?

8. Can you describe any specific incidents where unsafe behavior led to an accident or near-miss? What were the consequences, and how were they addressed?

9. How do you think peer pressure or team dynamics affect individual safety behaviors? Can you provide examples?

10. What role does management play in promoting or hindering safe behaviors in ground handling operations? How can they improve their approach?

Section 3: Mental and Physical Well-being

1. How often do you experience stress, fatigue, or burnout in your job?

2. What factors in your work environment contribute to these feelings (e.g., workload, shift patterns, work-life balance)?

3. Are there any resources or support systems available to help you manage stress and fatigue? If so, how effective are they?

4. How does your mental and physical well-being impact your work performance and safety behavior?

5. How does fatigue (physical or mental) affect your decision-making and actions on the job? Can you share any examples?

6. Have you noticed any changes in your health since starting this job? If so, what kind of changes?

7. What strategies do you personally use to manage stress and maintain your well-being?

8. How supportive is your management in addressing issues related to employee well-being? Can you provide examples?

9. In what ways could your workplace improve to better support your mental and physical health?

10. Can you describe a situation where your physical or mental state negatively affected your work? How was the situation resolved?

PROBING QUESTIONS

1. Can you give me specific examples of unsafe behaviors you have observed in the workplace?

2. How did that make you feel, and how did it impact your perception of safety at work?

3. What were the consequences of that action, both immediate and long-term?

4. What could have been done differently to prevent the unsafe behavior or its consequences?

5. What kind of training or support would be most helpful in promoting safe behaviors?

6. Can you describe a time when you observed a colleague intervene to correct an unsafe behavior? What was the outcome?

7. How do you think leadership can better support safe behavior practices among employees?

8. What are some common barriers that prevent employees from following safety protocols?

9. How effective do you think the current safety policies are in encouraging safe behaviors? Why or why not?

10. What suggestions do you have for improving the reporting and feedback system for unsafe behaviors?

APPENDIX F

RESPONSE RESULTS OF UNCONTROLLED BEHAVIORAL FACTORS SURVEY

No.	QUESTION	Scale 1	Scale 2	Scale 3	Scale 4	Scale 5
RQ1	Due to my lack of specialized knowledge and insufficient training.	7.5%	15.7%	12.8%	28.6%	35.3%
RQ2	Due to a lack of necessary information to understand the correct way of performing the task.	14.8%	6.7%	19.0%	31.0%	28.4%
RQ3	Due to the job being too complex and beyond my capabilities.	44.0%	33.5%	15.3%	3.2%	4.0%
RQ4	Due to my subjective judgment.	19.9%	14.1%	20.2%	27.1%	18.8%
RQ5	Due to my deliberate attempt to cut corners.	16.4%	11.2%	17.1%	23.1%	32.3%
RQ6	Due to deliberately making mistakes in order to express dissatisfaction with a certain issue.	61.3%	25.1%	7.8%	3.1%	2.8%
RQ7	Due to my lack of understanding of the boundaries between right and wrong, I tend to follow habit.	40.8%	31.0%	17.3%	6.4%	4.4%
RQ8	Due to my unintentional errors or oversights.	20.8%	16.1%	12.2%	32.6%	18.3%
RQ9	Due to a lack of motivation or encouragement.	14.7%	11.9%	23.1%	22.0%	28.3%
RQ10	Due to the inadequate salary and benefits package, I may not work wholeheartedly.	11.8%	8.9%	24.8%	30.4%	24.2%
RQ11	Due to not being enthusiastic about the current job I am doing.	49.2%	28.6%	14.5%	4.0%	3.7%
RQ12	Due to a lack of tools, equipment, and supporting resources.	20.0%	8.0%	26.5%	22.0%	23.5%

No.	QUESTION	Scale 1	Scale 2	Scale 3	Scale 4	Scale 5
RQ13	Due to a lack of support from relevant management levels.	6.7%	9.9%	23.5%	31.2%	28.6%
RQ14	Due to a lack of supervision, I work with less focus.	4.6%	5.2%	17.0%	35.6%	37.6%
RQ15	Due to a lack of documentation and/or standard operation procedures, or work instruction lengthy, complex, and hard-to-follow regulations.	13.5%	6.7%	20.5%	30.3%	29.1%
RQ16	Due to the job not having specific standards or criteria to determine right or wrong.	36.7%	30.3%	21.3%	7.3%	4.4%
RQ17	Due to a lack of coordination and teamwork spirit.	6.3%	23.1%	26.8%	20.8%	23.1%
RQ18	Due to having to work under excessive workload and/or fatigue.	15.4%	17.0%	21.9%	26.6%	19.1%
RQ19	Due to a lack of time because of having to perform too many tasks simultaneously.	21.6%	12.4%	17.9%	23.5%	24.6%
RQ20	Due to objective conditions such as weather and the working environment.	11.2%	14.5%	19.4%	31.5%	23.4%

RESPONSE RESULTS OF WORKPLACE MENTAL HEALTH FACTORS SURVEY

No	Question	Response	Distrubution
RQ1	When I experience stress and pressure, I often lose focus on work.	Strongly Agree	33.5%
		Agree	21.2%
		Neither Agree nor Disagree	19.9%
		Disagree	10.6%
		Strongly Disagree	14.8%
RQ2	When I have mood swings, I am easily agitated, irritable, easily withdrawn and do not want to get better.	Strongly Agree	14.8%
		Agree	10.6%
		Neither Agree nor Disagree	19.9%
		Disagree	21.2%
		Strongly Disagree	33.5%
RQ3	When the working environment has bad relationships with colleagues and management, I often have negative emotions and do not want to interact or cooperate.	Strongly Agree	24.9%
		Agree	35.2%
		Neither Agree nor Disagree	17.2%
		Disagree	16.2%
		Strongly Disagree	6.5%
RQ4	When I have unstable (negative) emotions, I tend not to concentrate and work by pure inertia.	Strongly Agree	24.2%
		Agree	42.1%
		Neither Agree nor Disagree	4.3%
		Disagree	13.7%
		Strongly Disagree	15.7%

No	Question	Response	Distrubution
RQ5	When I am mentally tired, I find myself often losing short-term memory, and this can lead to forgetfulness, forgetting procedures, or causing errors	Strongly Agree	31.2%
		Agree	29.7%
		Neither Agree nor Disagree	18.9%
		Disagree	8.5%
		Strongly Disagree	11.7%
RQ6	When I have an emotional imbalance in my personal life and at work, it will negatively impact the standard behaviors I am implementing	Strongly Agree	15.7%
		Agree	40.2%
		Neither Agree nor Disagree	5.4%
		Disagree	20.9%
		Strongly Disagree	17.8%
RQ7	When I have comfort and positive emotions, it will motivate me to complete my work accurately	Strongly Agree	39.9%
		Agree	35.3%
		Neither Agree nor Disagree	6.6%
		Disagree	11.5%
		Strongly Disagree	6.6%
RQ8	When I feel isolated or alienated from the work group, I tend to get depressed and want to work my own way, even having negative behaviors at work.	Strongly Agree	21.6%
		Agree	40.5%
		Neither Agree nor Disagree	16.8%
		Disagree	16.1%
		Strongly Disagree	5.0%

RQ9	I often have impaired sense, lack of situational awareness and slow reflexes around the following hours:	After 00:00	73.4%
		13:00-14:00	10.2%
		22:00-23:00	8.7%
		11:00-12:00	4.9%
		15:00-16:00	1.5%
		20:00-21:00	1.3%
RQ10	I often feel sleepy and tired around the clock:	After 00:00	69.8%
		13:00-14:00	12.4%
		22:00-23:00	9.7%
		11:00-12:00	4.8%
		15:00-16:00	1.7%
		20:00-21:00	1.6%
RQ11	In your opinion, the environmental conditions that cause significant fatigue in the area where you work are: (Multiple conditions can be selected)	Temperature	77.8%
		Noise	72.9%
		Unpleasant smell	38.5%
		Dust	38.2%
		Light	23.7%
		Vibration	15.5%
RQ12	In your opinion, factors that cause significant mental fatigue can also be due to: (Multiple responses can be chosen).	Being disrespected	57.8%
		Misunderstood	55.2%
		Being oppressed	50.7%
		Being jealous	37.8%
		Threatened	22.7%
		Being aggressive	22.0%

CORRELATION AND REGRESSION ANALYSIS OF WORKPLACE

BEHAVIORAL FACTORS

1. Correlations

		20. Due to a lack of supervision, I work with less focus.	4. Due to a lack of necessary information to understand the correct way of performing the task.	17. Due to the job not having specific standards or criteria to determine right or wrong.	19. Due to a lack of support from relevant management levels.
20. Due to a lack of supervision, I work with less focus.	Pearson Correlation	1	.427**	-.579**	.597**
	Sig. (2-tailed)		.000	.000	.000
	N	654	654	654	654
4. Due to a lack of necessary information to understand the correct way of performing the task.	Pearson Correlation	.427**	1	-.496**	.523**
	Sig. (2-tailed)	.000		.000	.000
	N	654	654	654	654
17. Due to the job not having specific standards or criteria to determine right or wrong.	Pearson Correlation	-.579**	-.496**	1	-.642**
	Sig. (2-tailed)	.000	.000		.000
	N	654	654	654	654
19. Due to a lack of support from relevant management levels.	Pearson Correlation	.597**	.523**	-.642**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	654	654	654	654

**. Correlation is significant at the 0.01 level (2-tailed).

2. Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Duration, @11Noise, @12Being Oppressed[b]	.	Enter

a. Dependent Variable: **1 - When I experience stress and pressure, I often lose focus on work**.

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.078[a]	.006	.002	1.421

a. Predictors: (Constant), Duration, @11Noise, @12Being Oppressed

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.928	3	3.309	1.639	.179[b]
	Residual	1637.488	811	2.019		
	Total	1647.416	814			

a. Dependent Variable: 1 - When I experience stress and pressure, I often lose focus on work.

b. Predictors: (Constant), Duration, @11Noise, @12Being Oppressed

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.385	.142		23.821	.000
	@11Noise	.165	.113	.052	1.455	.146
	@12Being Oppressed	-.177	.101	-.062	-1.756	.080
	Duration	.010	.015	.022	.640	.523

a. Dependent Variable: 1 - When I experience stress and pressure, I often lose focus on work.

APPENDIX I

IMPACT OF BEHAVIORAL FACTORS BY GROUP

No	Group of Factors	Percentage (%)
1.	Resources and Support	81.86
2.	External Conditions	74.31
3.	Workload and Time Pressure	66.82
4.	Motivation	59.52
5.	Work Processes and Communication	51.49
6.	Skill and Knowledge Deficits	51.45
7.	Personal Attitude	45.07

SURVEY RESULTS ANALYSIS

Results Analysis – Skill and Knowledge Deficits			
Job Role	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Manager	3.61	1.418	44
Supervisor	3.88	1.311	99
Staff	3.65	1.286	511
Gender	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Male	3.61	1.3	530
Female	4	1.256	124
Department	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Baggage Services	3.93	1.438	29
Cabin Cleaning Services	4.2	1.014	15
Customer Services	3.91	1.333	177
Ground Equipment Operations	3.56	1.247	356
Ground Operations Services	3.48	1.455	29
Load Control Services	3.79	1.474	24
Loading Services	3.46	1.215	24
Experience Level	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
< 1 year	3.44	1.247	148
< 5 years	3.73	1.276	225
<10 years	3.74	1.336	168
>10 years	3.83	1.336	113

Results Analysis – Personal Attitude			
Job Role	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Manager	3.36	1.511	44
Supervisor	3.3	1.6	99
Staff	3.47	1.414	511
Gender	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Male	3.35	1.447	530
Female	3.8	1.408	124
Department	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Customer Services	3.85	1.363	177
Baggage Services	3.48	1.573	29
Ground Equipment Operations	3.3	1.447	356
Cabin Cleaning Services	3.27	1.28	15
Loading Services	3.17	1.341	24
Ground Operations Services	2.72	1.334	29
Load Control Services	3.5	1.615	24
Experience Level	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
< 1 year	3.36	1.356	148
< 5 years	3.6	1.417	225
< 10 years	3.29	1.509	168
> 10 years	3.29	1.509	113

Results Analysis – Motivation			
Job Role	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Manager	3.57	1.511	44
Supervisor	3.69	1.6	99
Staff	3.41	1.414	511
Gender	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Male	3.35	1.447	530
Female	3.8	1.408	124
Department	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Customer Services	3.76	1.363	177
Baggage Services	4	1.102	29
Ground Equipment Operations	3.36	1.447	356
Cabin Cleaning Services	3.87	0.99	15
Loading Services	3.17	1.341	24
Ground Operations Services	2.72	1.334	29
Load Control Services	3.5	1.615	24
Experience Level	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
< 1 year	3.55	1.356	148
< 5 years	3.42	1.417	225
< 10 years	3.68	1.509	168
> 10 years	3.29	1.509	113

Results Analysis – Resource and Support			
Job Role	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Manager	3.48	1.32	44
Supervisor	3.17	1.428	99
Staff	3.3	1.381	511
Gender	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Male	3.45	1.381	530
Female	3.15	1.418	124
Department	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Customer Services	3.41	1.408	177
Baggage Services	3.86	1.274	29
Ground Equipment Operations	3.07	1.407	356
Cabin Cleaning Services	3.33	1.447	15
Loading Services	3.17	1.341	24
Ground Operations Services	2.83	1.49	29
Load Control Services	3.42	1.501	24
Experience Level	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
< 1 year	3.03	1.507	148
< 5 years	3.26	1.438	225
< 10 years	3.42	1.341	168
> 10 years	3.29	1.509	113
Age Group	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
<30 years	3.05	1.463	182
30-40 years	3.25	1.391	355
40-50 years	3.37	1.396	92
50-55 years	3.14	1.493	21
55-60 years	3.5	1.291	4

Results Analysis – Work Processes and Communication			
Job Role	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Manager	3.61	1.298	44
Supervisor	3.53	1.313	99
Staff	3.3	1.381	511
Gender	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Male	3.46	1.341	530
Female	3.94	1.221	124
Department	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Customer Services	3.41	1.408	177
Baggage Services	3.97	1.349	29
Ground Equipment Operations	3.33	1.334	356
Cabin Cleaning Services	4.33	0.816	15
Loading Services	3.17	1.341	24
Ground Operations Services	2.76	1.272	29
Load Control Services	3.42	1.501	24
Experience Level	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
< 1 year	3.41	1.272	148
< 5 years	3.62	1.332	225
< 10 years	3.42	1.341	168
> 10 years	3.64	1.408	113
Age Group	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
<30 years	3.45	1.264	182
30-40 years	3.59	1.344	355
40-50 years	3.64	1.363	92
50-55 years	3.33	1.494	21
55-60 years	3	1.826	4

Results Analysis – Workload and Time Pressure			
Job Role	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Manager	3.14	1.407	44
Supervisor	3.13	1.482	99
Staff	3.18	1.306	511
Gender	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Male	3.15	1.279	530
Female	3.23	1.573	124
Department	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
Customer Services	3.08	1.584	177
Baggage Services	3.97	1.349	29
Ground Equipment Operations	3.24	1.217	356
Cabin Cleaning Services	4.33	0.816	15
Loading Services	3.17	1.341	24
Ground Operations Services	2.83	0.889	29
Load Control Services	3.63	0.77	24
Experience Level	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
< 1 year	3.39	1.198	148
< 5 years	2.98	1.334	225
< 10 years	3.42	1.341	168
> 10 years	3.18	1.477	113
Age Group	**Mean Score**	**Standard Deviation**	**N (Sample Size)**
<30 years	3.29	1.242	182
30-40 years	3.14	1.357	355
40-50 years	3.12	1.451	92
50-55 years	2.9	1.411	21
55-60 years	3.25	0.957	4

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