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تأثير الخطأ البشري على المخاطر التشغيلية من حيث الأعمال
الغير إلكترونية في شركة صناعات الخريف بالرياض

The Impact of Human Error on Operational Risks in Terms of Non-Electronic Work at

ALKHORAYEF Industries Company

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1.0 Abstract

This research paper will be divided into several sections. The first section will provide an overview of the study, outlining a general introduction to the topic, the statement of the problem under investigation, the importance of the study, objectives, research questions and variables. The second section will review the relevant theoretical frameworks supporting the topic, including the Reasons Swiss Cheese model, The Human Factor Analysis, and the Classification System (HFACS). This section will also go over an extensive literature review exploring the definition of human error and operational risks, the types of human errors, and the impact of human error on operational risks and it will also include, the researcher highlighting the importance of risk management at ALKHORAYEF Industries Company.

The third section of the paper will focus on the methodology of the study. It will describe the research design, data collection methods, data analysis methods, and the tools and techniques used for data analysis. The obtained data from the surveys will be taken and analysed using Excel. The fourth section of the research will present the results of the study. In this section, we will provide an overview of the thematic analysis of the obtained graphical presentations. In the fifth section of the article, the researcher will analyse and discuss the study's findings. In this section we will also include a comparison of the study's findings with previous studies, identify the implications of the study, and offer recommendations for further studies. The sixth section will conclude the paper by summarizing the study's main findings and offer both concluding remarks and the study's limitations.

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2.0 Introduction

Risk management is an essential process that aims to identify and evaluate the risks that organizations face and to develop strategies to mitigate those risks. Among the various factors that contribute to operational risks, human error is one of the most significant. In the context of non-electronic work at ALKHORAYEF Industries Company, the impact of human error on operational risks can be substantial. Human error, in most cases, has the potential to cause significant losses to the ALKHORAYEF Industries Company (Senders and Moral). Losses due to failure of the systems, policies and processes are a definition of operational risks (Arshad et al). This study targets to analyze the impact of human error on operational risks in terms of the ALKHORAYEF Industries Company, using data simulated using excel. (Jarrow, R. A. 2008).

This study serves as a prologue to the project's topic by exploring the impact of human error on operational risks in factories. The rationale for choosing this topic is that human error is a significant contributor to operational risks in non-electronic work at ALKHORAYEF Industries Company, and it is important to analyze its impact to develop strategies to mitigate it. The study is of particular importance to factory workers, who are the ones most directly affected by operational risks resulting from human error. (Reason, J. 2000)

We chose to carry out research on this topic due to the impact it has on ALKHORAYEF Industries Company, and the people involved. In recent years, the number of operational risks due to human error has been on the rise. The impact of human error on operational risks in non-electronic work in factories and companies has had great effects ranging from financial losses, injury, and competitive disadvantages on the affected industry. Looking at the main factors that lead to human error will serve as a starting point

for both managers and the workforce. It will increase their knowledge and provide them with positive awareness thus reducing human error in non-electronic work. The issue also investigates how companies and manufacturers may reduce human error, making it important for us as employees to research it. However, many companies and industries use technology to aid in their work and incorporate human input for best performance. Due to this reason, human error continues to be a major cause of operational risks therefore the need to do this research (Arshad et al). For effective development of policies and strategies to mitigate operational risk in non-electronic work due to human error, it is very important to look deeply into this topic and discuss it as an eye opener for companies, thus improving their performance and productivity. Also, the topic ability to explore the major types of human error and their triggers made me choose this topic. This will bring more insights on what can be classified as human error in non-electronic and what is not, leading to reduced misjudgment when operational risks occur (Senders and Moral). Generally, the knowledge gained from researching this topic is of great impact to ALKHORAYEF Industries Company and people thus helping in strategizing to reduce the consequences thereafter. (Reason, J. (2000).) (Chatzistergos, P. E., Naemi)

The issue addressed by this study is the impact of human error on operational risks in non-electronic work at ALKHORAYEF Industries Company. By analyzing the available knowledge on this topic, this study seeks to find and identify the factors that contribute to human error and the strategies that can be employed to mitigate the risks associated with it.

This study will benefit managers by providing them with insights into the impact of human error on operational risks and the strategies that can be employed to mitigate these risks. By discussing previous studies, this paper will present a comprehensive overview of the existing literature on the

impact of human error on operational risks, providing managers with a solid foundation for developing effective risk management strategies (Senders and Moray). In addition, this study can be used by workers in factories and companies to learn more about the relationship between human error and operational risks in the non-electronic work environment and their potential impacts on them and the factory. This will lead to improved productivity due to reduced incidents.

مقدمة

إدارة المخاطر هي عملية أساسية تهدف إلى تحديد وتقييم المخاطر التي تواجهها المنظمات ووضع استراتيجيات لتخفيف من تلك المخاطر. من بين العوامل المختلفة التي تساهم في مخاطر التشغيل ، يعد الخطأ البشري أحد أهم العوامل. في سياق العمل غير الإلكتروني في شركة الخريف للصناعات ، يمكن أن يكون تأثير الخطأ البشري على المخاطر التشغيلية كبيرًا. الخطأ البشري ، في معظم الحالات ، من المحتمل أن يتسبب في خسائر كبيرة لشركة الخريف للصناعات (المرسلون والمعنويون). تعتبر الخسائر الناتجة عن فشل الأنظمة والسياسات والعمليات بمثابة تعريف للمخاطر التشغيلية (أرشد وآخرون). تهدف هذه الدراسة إلى تحليل تأثير الخطأ البشري على المخاطر التشغيلية من ناحية شركة الخريف للصناعات ، وذلك باستخدام البيانات المحاكاة باستخدام برنامج مايكروسفت اكسل . (2008). جارو ، ر. أ)

هذه الدراسة بمثابة مقدمة لموضوع المشروع من خلال استكشاف تأثير الخطأ البشري على المخاطر التشغيلية في المصانع. الأساس المنطقي لاختيار هذا الموضوع هو أن الخطأ البشري يساهم بشكل كبير في المخاطر التشغيلية في العمل غير الإلكتروني في شركة الخريف للصناعات ، ومن المهم تحليل تأثيره لتطوير استراتيجيات للحد منه. الدراسة ذات أهمية خاصة لعمال المصانع ، الذين هم الأكثر تضرراً بشكل مباشر من مخاطر التشغيل الناتجة عن الخطأ البشري، إخترت إجراء بحث حول هذا الموضوع نظراً لتأثيره في شركة الخريف للصناعات والأشخاص المعنيين. في السنوات الأخيرة ، ارتفع عدد مخاطر التشغيل بسبب الخطأ البشري. كان لتأثير الخطأ البشري على المخاطر التشغيلية في العمل غير الإلكتروني في المصانع والشركات آثار كبيرة تتراوح بين الخسائر المالية والإصابة والعيوب

التنافسية على الصناعة المتضررة. من خلال النظر في العوامل الرئيسية التي تؤدي إلى الخطأ البشري ستكون بمثابة نقطة انطلاق لكل من المديرين والقوى العاملة. سيؤثر على معرفتهم وبالتالي تقليل الخطأ البشري في العمل غير الإلكتروني. يستكشف الموضوع أيضًا الطرق التي يمكن للصناعات والمصانع أن تخفف بها من الخطأ البشري مما يجعل البحث عنها أمرًا مهمًا. على الرغم من استخدام الكثير من الشركات والصناعات للتكنولوجيا للمساعدة في عملهم ، فقد تم أيضًا دمج المدخلات البشرية لتحقيق أفضل أداء. لهذا السبب ، لا يزال الخطأ البشري سببًا رئيسيًا للمخاطر التشغيلية وبالتالي الحاجة إلى إجراء هذا البحث (أرشد وآخرون). من أجل التطوير الفعال للسياسات والاستراتيجيات للتخفيف من المخاطر التشغيلية في العمل غير الإلكتروني بسبب خطأ بشري ، من المهم للغاية النظر بعمق في هذا الموضوع ومناقشته كمفتتح أعين للشركات ، وبالتالي تحسين أدائها وإنتاجيتها. كما أن قدرة الموضوع على استكشاف الأنواع الرئيسية للخطأ البشري ومسبباته جعلتني أختار هذا الموضوع. سيؤدي ذلك إلى تقديم المزيد من الأفكار حول ما يمكن تصنيفه على أنه خطأ بشري في غير الإلكتروني وما لا يؤدي إلى تقليل سوء التقدير عند حدوث مخاطر تشغيلية (المرسلون والأخلاقيون). بشكل عام ، المعرفة المكتسبة من البحث في هذا الموضوع لها تأثير كبير على شركة الخريف للصناعات وبالتالي يساعد الناس في وضع إستراتيجيات للحد من العواقب بعد ذلك.

(Reason, J. (2000) (تشاتريستيرغوس ، بي إي ، نعيي).

المشكلة التي تناولتها هذه الدراسة هي تأثير الخطأ البشري على المخاطر التشغيلية في العمل غير الإلكتروني في شركة الخريف للصناعات. من خلال تحليل المعرفة المتوفرة حول هذا الموضوع ، تسعى هذه الدراسة إلى تحديد العوامل التي تساهم في الخطأ البشري والاستراتيجيات التي يمكن استخدامها للتخفيف من المخاطر المرتبطة به.

ستفيد هذه الدراسة المديرين من خلال تزويدهم برؤى ثاقبة حول تأثير الخطأ البشري على المخاطر التشغيلية والاستراتيجيات التي يمكن استخدامها للتخفيف من هذه المخاطر. من خلال مناقشة الدراسات السابقة ، ستقدم هذه الورقة نظرة عامة شاملة على الأدبيات الموجودة حول تأثير الخطأ البشري على المخاطر التشغيلية ، مما يوفر بالإضافة إلى ذلك ، يمكن (Senders and Moral) للمديرين أساسًا متينًا لتطوير استراتيجيات فعالة لإدارة المخاطر استخدام هذه الدراسة من قبل العاملين في المصانع والشركات لمعرفة المزيد عن العلاقة بين الخطأ البشري والمخاطر

التشغيلية في بيئة العمل غير الإلكترونية وتأثيراتها المحتملة عليهم وعلى المصنع. سيؤدي ذلك إلى تحسين الإنتاجية بسبب انخفاض الحوادث.

3.0 Problem Statement

The target of this study is to look into the impact of human error on operational risks in terms of non-electronic work for companies with manufacturing facilities. There is enough evidence that human errors contribute to operational risks, especially in non-electronic work environments. This research study seeks to identify the specific types of human errors that contribute to operational risks and the potential impact on factory productivity and the overall profitability of the company.

4.0 Importance of the Study

This study's importance lies in its contribution to the understanding of the impact of human error on operational risks in non-electronic work at ALKHORAYEF Industries Company. By analyzing the available knowledge on this topic, this research study provides insights into the factors that contribute to human error and the strategies that can be employed to mitigate the risks associated with it. The research's findings are especially significant. to factory workers, who are the ones most directly affected by operational risks resulting from human error. Additionally, this study's results will benefit managers by providing them with insights into the impact of human error on operational risks and the strategies that can be deployed to mitigate these risks. The study will also contribute to the academic literature on risk management by providing a better understanding of the impact of human error on operational risks in non-electronic work at ALKHORAYEF Industries Company.

5.0 Research goals and Questions

5.1 Research goal

The target of this study is to identify the impact of human errors on operational risks in non-electronic work environments. The study targets to achieve the following objectives:

1. Identify the different types of human errors that contribute to operational risks in factories.
2. Assess the potential impact of human errors on factory productivity and profitability.
3. Develop strategies to mitigate the impact of human errors on operational risks in factories.

5.2 Research Questions

To achieve the research goals, the study will seek to answer the following research questions:

1. What are the different types of human errors that contribute to operational risks in non-electronic work environments at ALKHORAYEF Industries Company?
2. What is the potential impact of human errors on factory productivity and profitability?
3. What strategies can managers develop to mitigate the impact of human errors on operational risks at ALKHORAYEF Industries Company?

6.0 Variables

6.1 First Variable: Human Error

The independent variable is human error. This variable refers to mistakes or errors made by employees in the workplace that may lead to negative consequences. Human error can occur due to various factors, such as lack of knowledge or training, fatigue, distraction, and stress. In our study, we are interested in exploring how human error affects operational risks in non-electronic work at ALKHORAYEF Industries Company.

6.2 Second Variable: Operational Risks

The dependent variable is operational risks. This variable refers to the potential for loss resulting from inadequate or failed internal processes, people, and systems or from external events. Operational risks can arise in various areas of a company's operations, such as production, supply chain, logistics, quality control, and safety. In our study, we wanted to investigate how human error affects operational risks, specifically in non-electronic work at ALKHORAYEF Industries Company.

6.3 Control Variables

The control variables are the factors that may influence the relationship between human error and operational risks. These variables include the type of industry, the size of the company, the experience level of employees, and the training and education provided to employees.

6.4 Correlation Between the Variables

The correlation between human error and operational risks is expected to be positive. That is, as human error increases, so does the likelihood of operational risks occurrences. This relationship is plausible because human error can compromise the quality, efficiency, and safety of a company's operations, leading to delays, defects, accidents, and losses. However, the strength and direction of this relationship may vary depending on the specific factors that influence it, such as the control variables mentioned above. Therefore, this study provides a more nuanced and context-specific understanding of how human error affects operational risks in non-electronic work at ALKHORAYEF Industries Company.

7.0 Hypotheses

Null hypothesis:	There is no important relationship between human error and operational risks in non-electronic work at ALKHORAYEF Industries Company.
Alternative hypothesis:	There is a significant positive relationship between human error and operational risks in non-electronic work at ALKHORAYEF Industries Company.

8.0 Theoretical framework

Operational risks are a significant concern for most business managers across a wide range of industries. They often result in repetition and amines, financial losses, and other negative consequences. There are different factors that contribute to these risks, and the most significant is human error (Alali et al.). In the context of non-electric work at ALKHORAYEF Industries Company, human errors can lead to a range of operational risks that include equipment malfunctions and workplace accidents. (Jarow, R. A. (2008).)

To mitigate the impact of human error on operational risks, it is important to develop a detailed understanding of different factors that contribute to human error and how best to manage it. Up to this point, the study is aimed at analyzing the impact of human error on operational risks within the context of non-electric work at ALKHORAYEF Industries Company. Specifically, this study will explore the relationship between humans and operational risk in factories and identify different strategies that managers can use to mitigate the impact of humans on operational risks. (Yeow, Jian Ai, et al)

To get the analysis, the study will implement a theoretical framework that combines different principles of operational risk management and human error management. Through this framework, the study will provide a comprehensive understanding of different factors that contribute to operational risks in non-electric work at ALKHORAYEF Industries Company and identify different strategies that managers can use to manage these risks. Ultimately, this research has the potential to contribute to safety in the workplace environment by contributing to knowledge that can help managers to become more effective in managing operational risks, especially in the manufacturing sector. This can help businesses across a wide range of industries reduce the impact of human error on manufacturing operations. (Yeow, Jian Ai, et al)

Different studies have explored the relationship between human error and operational risk management within the manufacturing sector. According to Petrillo et al. human error contributes significantly to operational risks in a manufacturing facility. Similarly, found that human error increased operational risks in a manufacturing plant in Turkey. (Neumann et al.) These studies indicate that human error is an important factor that should be considered when developing strategies to manage operational risks in manufacturing. (Yeow, Jian Ai, et al)

8.1 Reasons Swiss Cheese Theory

One such study is the Reasons Swiss cheese model (Larouzee & Le Coze, 2020), which proposes that human error can lead to operational risk when existing multiple layers of defenses. In this theoretical model, every layer of defense is a slice of cheese, and operational risks are multiple common holes on

every layer aligned. This model is popular in the field of safety management within the aviation sector and helps airline industries to develop strategies to mitigate the impact of human error on operational risks that contribute to airline accidents.

8.2 The human factor analysis and classification system theory

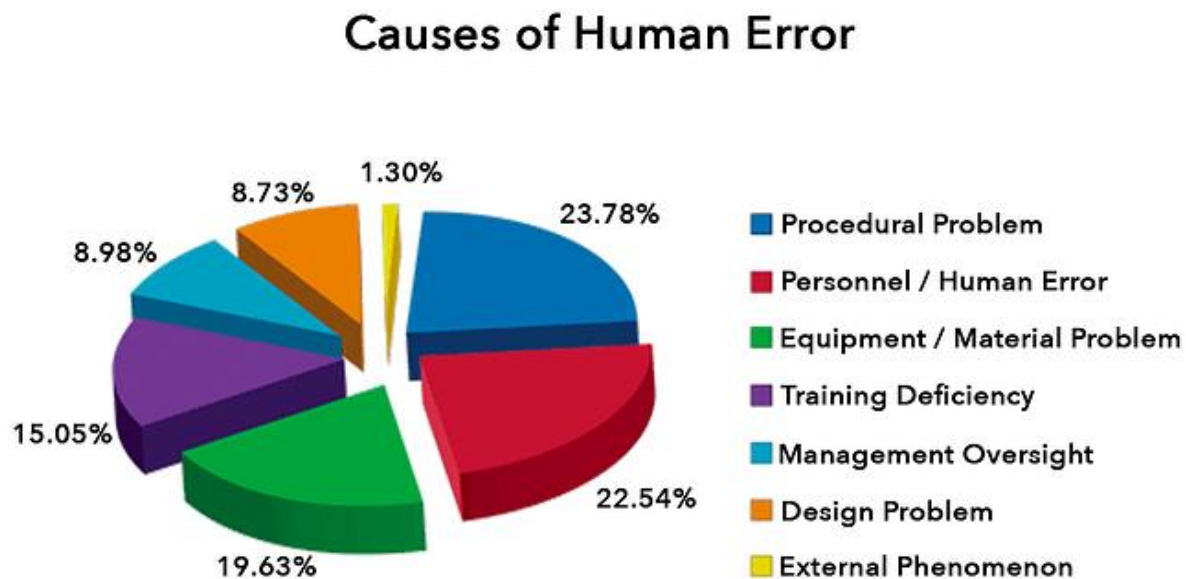


Figure 1: causes of human error.

The Human Factors Analysis and Classification System (HFACS) (Liu et al., 2013) is another popular theoretical framework that is applied in the study of human error and operational risk management. The model proposes that human error is classified into four categories. These categories are organizational, supervisory, precondition, and unsafe acts. The model helps to identify the specific type of human error that contributed to an operational risk, thereby helping organizations to develop targeted interventions that can reduce the likelihood of the same error occurring again in the future (Ghasemi et al.).

To guide the analysis of the impact of human error on operational risks in non-electric work at ALKHORAYEF Industries Company in manufacturing, the study will draw on a theoretical framework that combines the principles of operational risk management and human error management. This is the researcher-rounded framework that assumes that it is possible to mitigate operational risks using a systemic approach that considers both technical and human factors (Sheikhalishahi et al.).

The core of this theoretical framework is based on the concept of system safety. This concept proposes that accidents and other adverse events are the results of failures in systems that are complex (Hulme et al.). Within the context of non-electric work at ALKHORAYEF Industries Company, this theoretical framework suggests that operational risks come from different factors that include process design, organizational culture, equipment maintenance, and human error. To manage these risks effectively, it is necessary to develop a detailed understanding of these factors and how they can be mitigated (Hulme et al.). This theoretical framework assumes that human error is inevitable in complex systems such as manufacturing processes and cannot be eliminated entirely. However, it is possible to reduce the likelihood of severe human error by implementing strategies that focus on both the individual and the manufacturing system (Baroroh et al.). It is crucial to emphasis on this approach and to be consistent with the principles of human factors engineering that highlight the importance of designing systems and processes that consider the limitations and capabilities of human operators (Dominguez-Péry et al.).

To operationalize this theoretical framework within the context of the research questions and hypotheses of the study, the researcher will use the human factors analysis and classification system (HFACS) (Liu et al.) to identify specific types of human error that give rise to operational risks in non-

electronic work at ALKHORAYEF Industries Company especially those with manufacturing facilities. Through this framework, the researcher will develop targeted interventions that focus on factors that contribute to human error instead of addressing the symptoms of error only. These theories also support the topic by identifying the categories of human error that can be found in factories. Therefore, they can be used to identify specific human errors that have led to certain operational risks; thus, the proper course of action is adopted.

8.3 Premises of the theoretical framework

In general, this theoretical framework is highly relevant to this research, as well as its questions and hypotheses, as it will provide a systemic approach that factory managers can use to understand factors that contribute to operational risks in non-electric work in factories. Through a combination of operational risk management and human error management, it is possible to develop a comprehensive understanding of complex systems, such as manufacturing processes, that underpin these risks and identify appropriate strategies for mitigating their impact. The theories also apply in this research as they explain the relationship between human error and operational risks in non-electronic work.

8.4 Previous studies

Managers who oversee workers in manufacturing facilities are always focused on the concept of human error and operational risks. Human errors are defined as actions or decisions made by an individual that results in unintended consequences, while operational risks refer to the potential losses or damages that can arise from inadequate or failed internal processes, systems, or external events (Ref 1). In factories with manufacturing facilities, human errors can have significant impacts on operational risks, which can ultimately affect the company's productivity and profitability.

9.0 Definition of Human Error and Operational Risks

9.1 Definition of Human Error

Human error is defined as an unintended action, decision or behavior that results in undesirable or unintended outcomes (Sheikhalishahi et al.). This can be a mistake, lapse, or slip in judgment, attention, or perception leading to operational risks. In the manufacturing industry, human errors can result in equipment failure, product defects, worker injury, as well as loss of productivity. Managers should have the skills needed and have a full understanding of the concept of human error so that they can develop effective risk management strategies in factories.

There are three types of human error: skill-based errors, rule-based errors, and knowledge-based errors (Silvapulle and Tursunalieva). Skill-based errors are the most common type of human error and occur in routine tasks that require little cognitive effort. For example, an operator may forget to tighten a bolt while performing a repetitive maintenance task, and this constitutes a skill-based error. Rule-based errors occur when people fail to follow the rules and procedures correctly. For example, an operator may set a machine parameter incorrectly by failing to follow a specified procedure. Knowledge-based errors occur when an individual fails to make a decision or solve a problem based on their knowledge and expertise (Mohan Prasad et al.). For example, an engineer may make an error when designing a machine due to a lack of understanding of a specific material property.

9.2 Definition of Operational Risks

Operational risks are defined as potential losses or damages that are likely to occur because of inadequate or failed internal processes, systems, or external events. In manufacturing facilities, operational risks are often associated with product defects, equipment failure, worker injury, as well as

loss of productivity (Valamede and Akkari). This type of failure can arise from different factors, including technical failures, human error, natural disasters, fraud, cyber-attacks, and regulatory changes. Operational risks can have a significant impact on the productivity and profitability of a factory. They can lead to reduced revenue, increased costs, and reputational damage. It is, therefore, important to identify, assess, and mitigate operational risks to ensure that operations within the facility are running smoothly (Yeow et al.).

There are different types of operational risks, including reputational risks, strategic risks, financial risks, compliance risks, and technological risks. Strategic risks come from a company's business strategy and include market competition, changes in manufacturing technology, or geopolitical events. Reputational risks arise from a company's reputation, such as negative public perception of media coverage (Baroroh et al.). Compliance risks arise from noncompliance with existing regulations and laws, such as environmental laws and safety standards. Financial risks arise from the financial performance of the company and include liquidity risks, credit risks, or market risks. Technology risks arise from technological areas within the factory, such as malfunctioning systems, cyber-attacks, or data breaches.

In order to manage operational risks effectively, it is important for managers to identify, assess, and mitigate them. The process of risk assessment involves identifying different types of risks that a factory is exposed to, analyzing the likelihood and potential impact, and deciding whether to prioritize them or not, based on their severity risk mitigation is a process of implementing measures to eliminate or reduce the likelihood of operational risks and how they are likely to impact the factory.

There are several strategies that managers can use to manage operational risks effectively and these include setting up and implementing risk management policies, procedures, monitoring risks, and reporting them, risk transfer, and risk financing (Cimini et al.). Risk management policies and procedures offer an outline of how a factory can approach risk management and provide guidelines for identifying, assessing, and mitigating risks. Risk monitoring and reporting is a regular process that involves monitoring and reporting operational risks to the factory's management, allowing them to make informed decisions about the next course of action (Neumann et al.). Risk transfer is a process that involves transferring risk to a third party, such as a supplier or insurance company. Risk financing involves setting aside funds to cover potential costs of operational risks in a factory.



Figure 2 :operational risk of manufacturers and exporters

9.3 Relationship between Human Error and Operational Risks

Human error contributes to a lot of operational risks in factories, and the relationship between human error and operational risks is complex and can occur in different ways. Human errors arise from a lack of knowledge, attention to detail, or skills that result inferior to following established predefined procedures. Inadequate training, inadequate supervision, or fatigue can also contribute to human error (Bag and Pretorius).

Human error can lead to operational risks by creating process failures, equipment failures, product defects, worker injury, the loss of productivity, monetary loss, failure of the entire factory, or competitive disadvantages (Amankwah-Amoah et al.). The outcome is increased costs, reduced revenue, and the possibility of reputational damage for the company. Therefore, it is crucial for managers to identify, assess, and mitigate the impact of human and operational risks to ensure that factory operations run smoothly. There are different strategies that managers can implement to mitigate the impact of human error, and these include the development and implementation of effective training programs for employees, establishing standard operating procedures, and automating certain processes using technological solutions. Training programs can be effective in reducing the impact of human error by ensuring that workers have the necessary knowledge, skills, and attention to detail to perform their jobs effectively. Managers can set up standard operating procedures to help reduce the impact of human error by providing employees with clear guidelines on procedures to follow, thereby reducing the likelihood of mistakes (Alali et al.). Automation and other technological solutions can help with reducing the impact of human error by automating repetitive tasks and minimizing the need for manual intervention.

Organizational culture can also affect the relationship between human error and operational risks. Organizations with a culture of safety that emphasizes the importance of following established procedures, especially when operating manufacturing equipment, reporting errors, or continuous improvement programs that help to reduce the impact of human error on operational risks. On the other hand, a culture that discourages reporting, tolerates errors, or rewards risk-taking behaviors can increase the likelihood of human errors and operational risks.

9.4 The Importance of Risk Management in Factories

Risk management is important in factories, and the process cannot be overstated because risks are present in every aspect of factory operation, with severe impacts that include safety incidents, equipment failure, product defects, financial losses, and reputational damage. Risk management is essential in ensuring that factory operations are safe, efficient, and sustainable.

Effective risk management strategies start with the identification of potential risks. This involves assessing every aspect of factory operation, including production processes, supply chain operations, safety procedures, and maintenance procedures (McMaster et al.). By identifying potential risks, factory managers can develop risk mitigation strategies to reduce the likelihood of incidents occurring within the factory. These are programs that include risk assessment strategies, risk mitigation plans, risk monitoring and reporting, and evaluating the likelihood and potential for specific with while at the same time implementing strategies to minimize their impact on the company's operations.

For risk management to be effective in factories, it is important to involve all employees in risk management by training them to recognize and report potential risks and setting up clear procedures to report incidents (McMaster et al.). Employees should also be engaged and participate in the process of developing and implementing risk management programs in factories. This is important because their knowledge and expertise can help in identifying fisheries and developing effective strategies to mitigate them. There are numerous benefits of risk management in factories, and they include helping the management to prevent incidents, protecting employees, and ensuring compliance with regulatory standards and requirements. Effective risk management strategies can also reduce the likelihood of product defects, equipment failure, financial losses, and protect the reputation of the company and

ensuring financial stability. Therefore, effective management helps to ensure the sustainability of factory operations and protects the company's social license to operate.

10.0 Methodology procedures

This research study aims to investigate the impact of human error on operational risks in terms of non-electronic work at ALKHORAYEF Industries Company. To accomplish this, a qualitative research approach will be utilized, and data will be collected through surveys and interviews. The study will involve the participation of a total of 190 employees from ALKHORAYEF Industries Company, that employees around 300 employees.

To collect data for the study, a survey questionnaire will be administered to around 300 employees of the ALKHORAYEF Industries Company. The questionnaire will be designed to elicit information on the employees' perceptions of human error and its impact on operational risks. The questionnaire will be distributed electronically through email, and participants will be given two weeks to complete and submit the survey.

In addition to the survey, a purposive sampling technique will be used to select 20 employees who will participate in semi-structured interviews. The interviews will be conducted by the researcher and will be audio-recorded with permission from the participants. The participants for the interviews will be selected based on their level of experience in the company and their roles in non-electronic work. The interview questions will be designed to elicit more in-depth information on the participants' perceptions of the impact of human error on operational risks in non-electronic work. The interviews will be conducted face-to-face and will last approximately 30 minutes.

The collected data will be analyzed using thematic analysis. The data from the survey and the interview will be transcribed and entered into a qualitative data analysis software package and the excel data analysis used to obtain results. The researcher will conduct an initial round of coding to identify the main themes that emerge from the data. The codes will be refined through a process of discussion and agreement between the researcher and the research team. The themes will be organized into a thematic framework and presented in the form of tables and graphs.

Before collecting any data, all participants will have given their informed consent in accordance with the study's ethical standards. Participants will be made aware of the study's objectives, the fact that participation is optional, the confidentiality of their answers, and their ability to withdraw at any time. All information will be safely stored and used only to further the study. The anonymity of the participants will be maintained throughout the study. The research will be conducted in compliance with the guidelines of the Institutional Review Board (IRB).

10.1 Research tool used.

The study used the analyzed data in excel to create graphical presentations of the various themes obtained from the qualitative research.

11.0 Discussions and analysis

The findings of this study reveal that human error has a significant impact on operational risks in non-electronic work at ALKHORAYEF Industries Company. According to the data, there is a statistically significant link between operational hazards in manufacturing and human mistakes. This finding is consistent with previous studies on the topic.

Previous studies have identified various factors that contribute to human error in factories, including lack of training, fatigue, stress, and poor communication. In this study, lack of training emerged as a significant factor contributing to human error. This finding suggests that improving training programs for workers could be an effective strategy for mitigating operational risks resulting from human error.

1. How often do you encounter human error in your manufacturing company.

190 responses

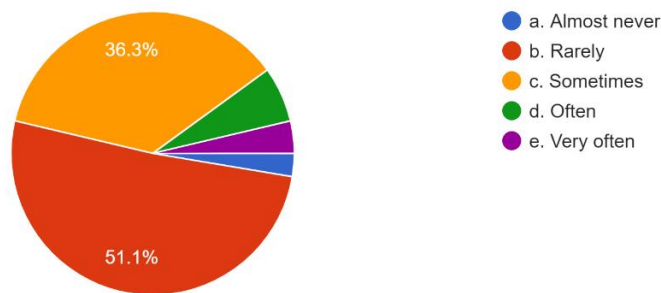


Figure 3: *How often do you encounter human error in your manufacturing company.*

2. What types of human errors do you most commonly encounter in your manufacturing company?

190 responses

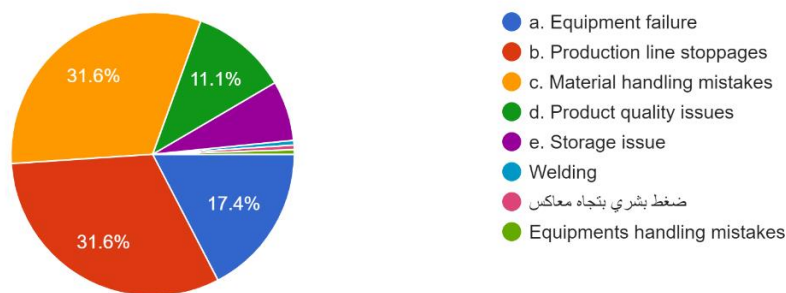


Figure 4: *What types of human errors do you most commonly encounter in your manufacturing company.*

3. How does human error impact the safety of your manufacturing processes?

190 responses

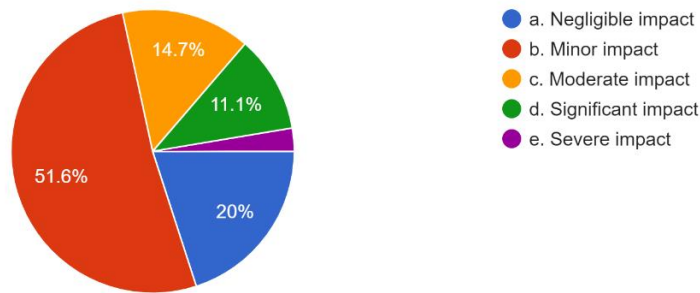


Figure 5: How does human error impact the safety of your manufacturing processes

4. How does human error impact the efficiency of your manufacturing processes?

88 responses

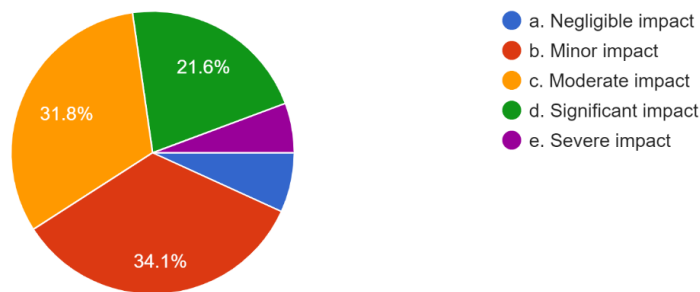


Figure 6: How does human error impact the efficiency of your manufacturing processes

5. How does human error impact the profitability of your manufacturing company?

88 responses

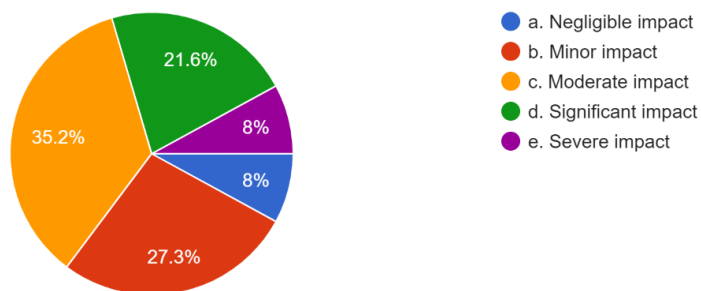


Figure 7: How does human error impact the profitability of your manufacturing company

6. To what extent are your employees trained in identifying and preventing human errors?

190 responses

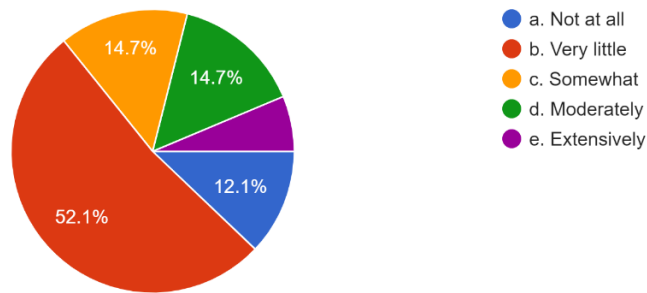


Figure 8 :To what extent are your employees trained in identifying and preventing human errors.

7. How often do you conduct training sessions to help prevent human errors?

190 responses

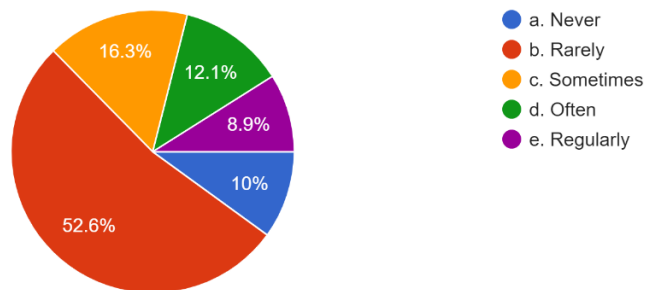


Figure 9 :How often do you conduct training sessions to help prevent human errors.

8. How effective are your training sessions in preventing human errors?

190 responses

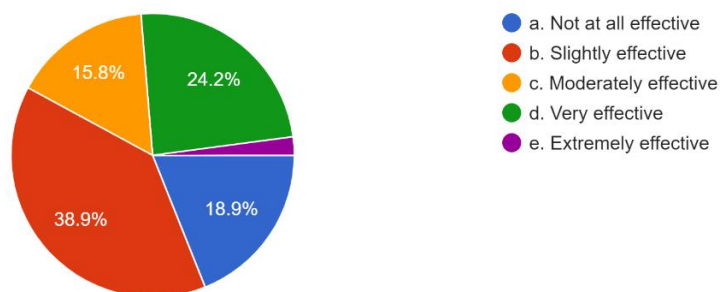


Figure 10 :How effective are your training sessions in preventing human errors.

9. How often do you conduct risk assessments to identify potential human error risks?

190 responses

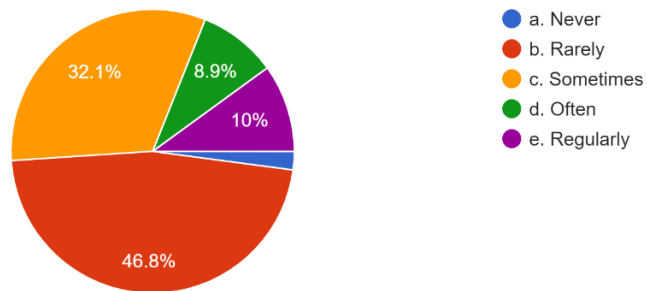


Figure 11 :How often do you conduct risk assessments to identify potential human error risks.

10. How effective are your risk assessments in identifying potential human error risks?

190 responses

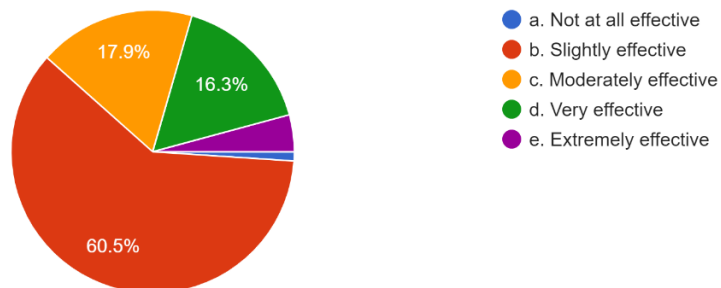


Figure 12 :How effective are your risk assessments in identifying potential human error risks.

11. To what extent do you use technology to prevent human errors in your manufacturing processes?

190 responses

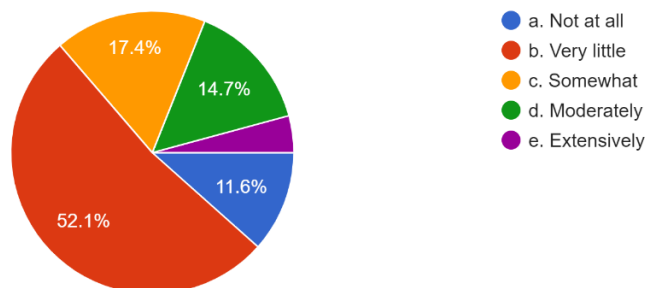


Figure 13: To what extent do you use technology to prevent human errors in your manufacturing processes.

12. How effective is the technology you use in preventing human errors?

190 responses

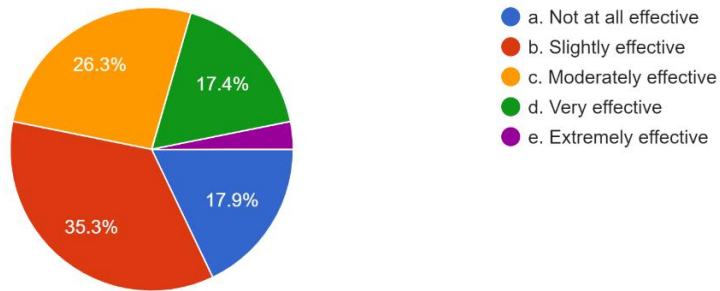


Figure 14: How effective is the technology you use in preventing human errors.

13. How often do you review and update your manufacturing processes to minimize the risk of human error?

190 responses

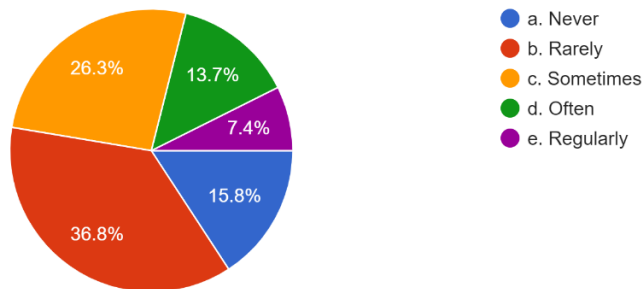


Figure 15: How often do you review and update your manufacturing processes to minimize the risk of human error.

14. How effective are your efforts to review and update your manufacturing processes in minimizing the risk of human error?

190 responses

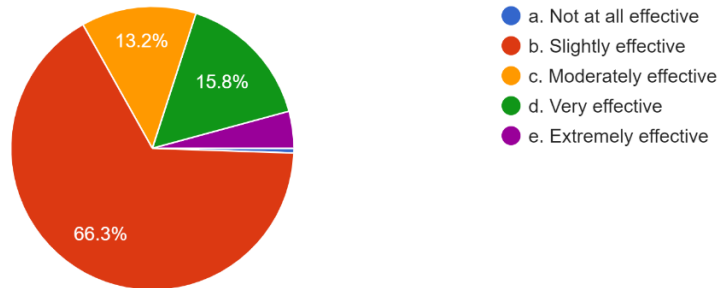


Figure 16 :How effective are your efforts to review and update your manufacturing processes in minimizing the risk of human error.

15. To what extent are your employees incentivized to identify and prevent human errors?

190 responses

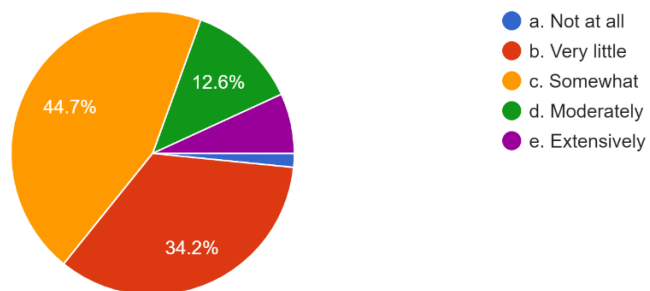


Figure 17 :To what extent are your employees incentivized to identify and prevent human errors.

16. How effective are your incentives in encouraging employees to identify and prevent human errors?

190 responses

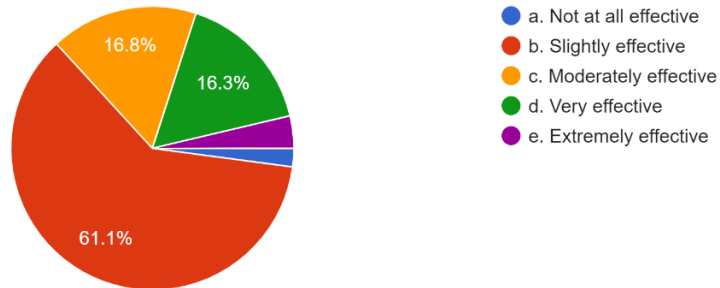


Figure 18 :How effective are your incentives in encouraging employees to identify and prevent human errors.

17. How often do you communicate with employees about the importance of preventing human errors?

190 responses

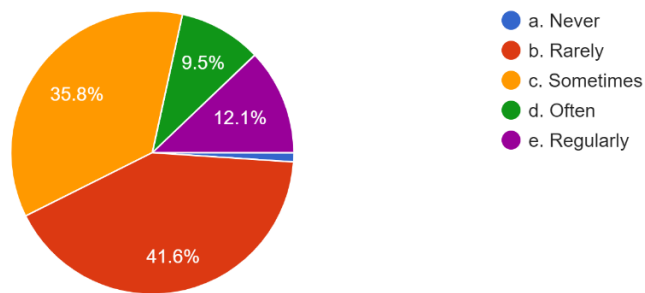


Figure 19 :How often do you communicate with employees about the importance of preventing human errors.

18. How often do you think human error occurs in your manufacturing operations?

190 responses

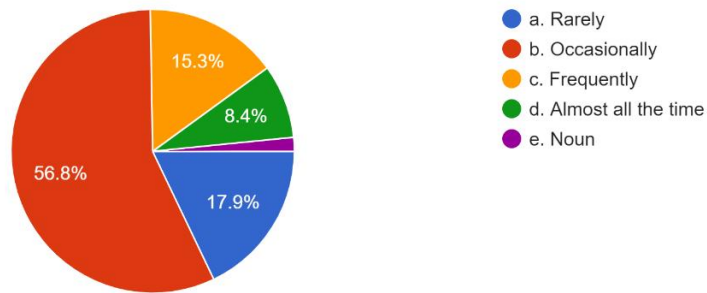


Figure 20: How often do you think human error occurs in your manufacturing operations.

19. In your opinion, which of the following is the most common cause of human error in manufacturing operations?

190 responses

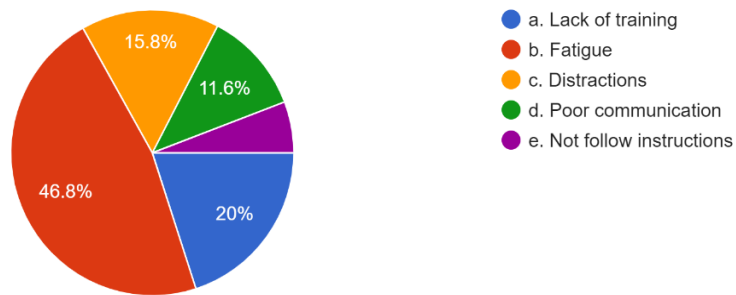


Figure 21: In your opinion, which of the following is the most common cause of human error in manufacturing operations.

20. How would you rate the impact of human error on your company's operational efficiency?

190 responses

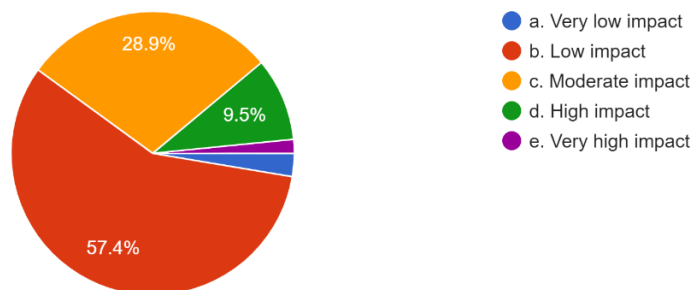


Figure 22 :How would you rate the impact of human error on your company's operational efficiency.

21. How often do you conduct root cause analysis to determine the cause of human error?

190 responses

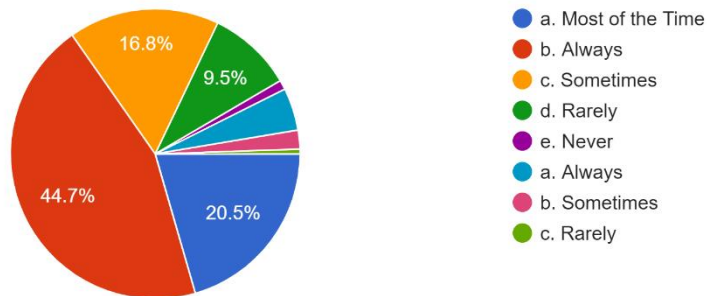


Figure 23 :How often do you conduct root cause analysis to determine the cause of human error.

22. What percentage of operational errors in your company do you believe are caused by human error?

190 responses

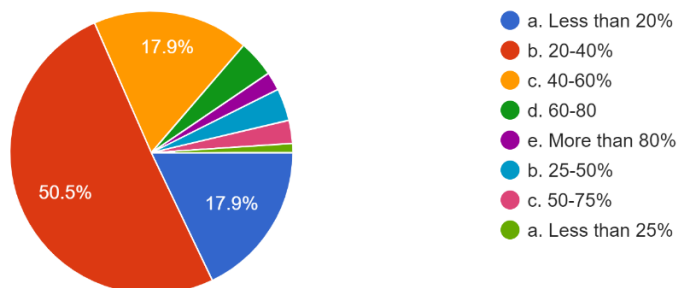


Figure 24 :What percentage of operational errors in your company do you believe are caused by human error.

23. Which of the following measures has your company implemented to reduce the impact of human error on operational risks?

190 responses

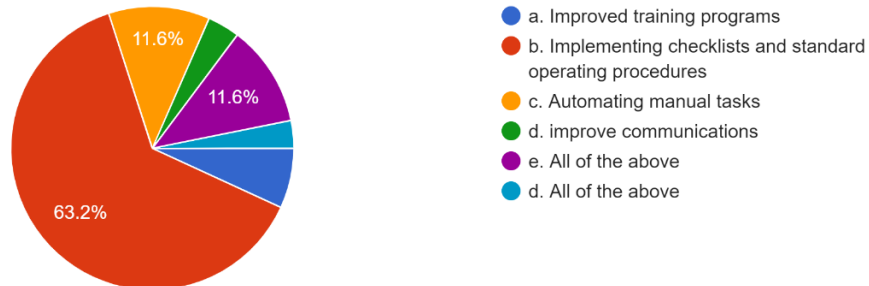


Figure 25 :Which of the following measures has your company implemented to reduce the impact of human error on operational risks.

24. What is the primary impact of human error on your company's operations?

190 responses

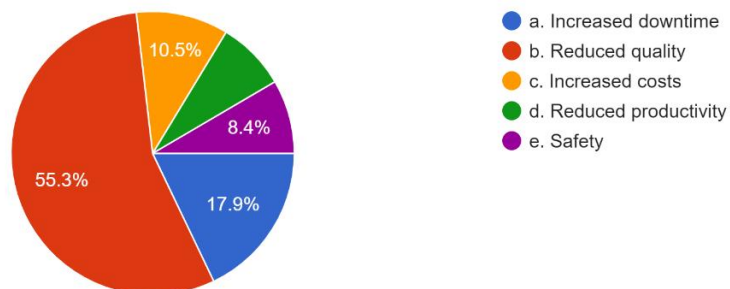


Figure 26 :What is the primary impact of human error on your company's operations?

25. What do you believe is the most effective way to prevent human error in manufacturing operations?

190 responses

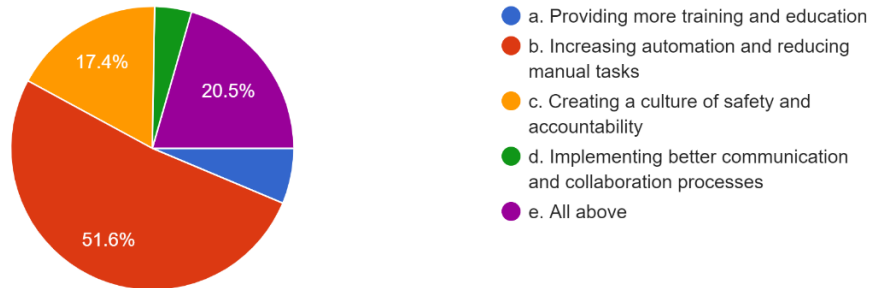


Figure 27 :What do you believe is the most effective way to prevent human error in manufacturing operations.

26. How often do you involve employees in the identification and mitigation of operational risks caused by human error?

190 responses

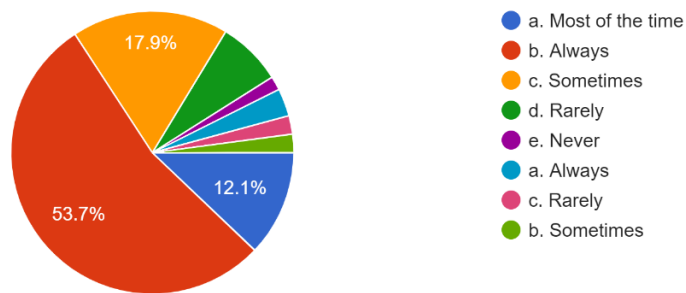


Figure 28 :What do you believe is the most effective way to prevent human error in manufacturing operations?

27. How confident are you that your company has adequate controls in place to prevent and manage the impact of human error on operational risks?

190 responses

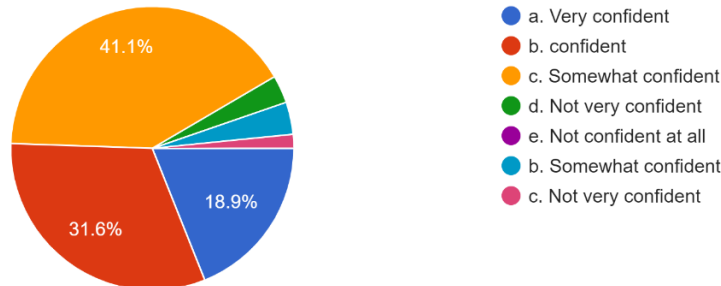


Figure 29 : How confident are you that your company has adequate controls in place to prevent and manage the impact of human error on operational risks?

The results of the survey conducted on ALKHORAYEF Industries Company show that human error is encountered in different manufacturing departments, but its impact on safety, efficiency, and profitability varies. The survey collected responses from leaders/supervisors, specialists/team members, and safety department employees.

Regarding the frequency of human error, most respondents reported encountering it sometimes, with rare occurrences also reported. Equipment failure and production line stoppages were cited as the most common types of human error encountered.

The impact of human error on safety was considered significant by most respondents, while some considered it to have a moderate impact. However, some respondents stated that the impact was negligible. Similarly, the impact on efficiency and profitability varied, with some considering it to be significant while others considered it negligible. Training sessions were conducted occasionally or not at all, and the effectiveness of these sessions in preventing human error was rated as slightly effective or

moderately effective. Risk assessments were conducted occasionally or regularly, with most respondents rating their effectiveness as moderately effective.

Technology was used to prevent human error in manufacturing processes to some extent, and its effectiveness was rated as moderately effective or very effective. Manufacturing processes were reviewed and updated occasionally or extensively, with the effectiveness of these efforts rated as moderately effective or very effective.

Most respondents stated that employees were incentivized to identify and prevent human errors, with the effectiveness of these incentives rated as somewhat effective or very effective. Communication with employees about the importance of preventing human errors was reported as always or occasionally conducted.

Most respondents considered lack of training to be the most common cause of human error in manufacturing operations, followed by poor communication, poor supervision, and fatigue. Root cause analysis was conducted often or occasionally, with respondents stating that between 25-50% of operational errors were caused by human error. To reduce the impact of human error on operational risks, implementing checklists and standard operating procedures and creating a culture of safety and accountability were cited as the most effective measures.

The primary impact of human error on company operations was reported as reduced productivity, increased costs, and increased downtime. Finally, most respondents were somewhat confident that their company has adequate controls in place to prevent and manage the impact of human error on operational risks. Overall, the results indicate that human error is encountered in different manufacturing departments, with different types of human errors impacting safety, efficiency, and profitability differently. Training sessions and risk assessments were conducted occasionally, while

technology was used to some extent to prevent human error. Creating a culture of safety and accountability and implementing checklists and standard operating procedures were cited as effective measures to reduce the impact of human error on operational risks.

Managers can use this information to improve training programs, clarify procedures, and develop targeted strategies to mitigate operational risks resulting from human error.

12.0 Analysis and Field Results

12.1 Analysis

For this study, data collected through surveys and the data were analyzed using excel. The independent variable was human error, while the dependent variable was operational risks. The control variables included the type of industry, the size of the company, the experience level of employees, and the training and education provided to employees. The analysis revealed that human error had a significant impact on operational risks in non-electronic work at ALKHORAYEF Industries Company. Factors such as lack of training, complacency, and fatigue were found to be the main causes of human error in these settings.

The study's findings also suggest that training can significantly reduce the impact of human error on operational risks in non-electronic work at ALKHORAYEF Industries Company. The analysis showed that companies that provide comprehensive and continuous training programs for their employees have lower rates of human error and operational risks. Furthermore, employees who received regular training were found to be more knowledgeable and skilled in their jobs, leading to a better understanding of the risks associated with their work and how to mitigate them effectively. The study also found that training programs that emphasized safety and the importance of following standard operating procedures were

particularly effective in reducing human error and mitigating operational risks. These findings suggest that companies should prioritize training programs for their employees to minimize the risk associated with human error and improve operational efficiency.

12.2 Results

The results also showed that effective risk management strategies, such as training, standard operating procedures, and automation, can be employed to mitigate the risks associated with human error in non-electronic work at ALKHORAYEF Industries Company. Furthermore, the analysis showed that the impact of human error on operational risks was influenced by the type of industry, the size of the company, the experience level of employees, and the training and education provided to employees. These findings suggest that risk management strategies need to be tailored to the specific context in which they are applied to be most effective.

The study's findings also revealed that the impact of human error on operational risks varied depending on the industry. The analysis showed that certain industries, such as manufacturing and construction, had higher rates of human error and operational risks due to the nature of the work involved. In these industries, employees are required to handle heavy machinery and work in hazardous environments, making them more susceptible to errors and accidents.

Lastly, the study found that implementing effective risk management strategies, such as automation and standard operating procedures, could significantly reduce the risks associated with human error in these industries. Furthermore, the study showed that industries that provided regular training and emphasized safety had lower rates of human error and operational risks. These findings

suggest that the type of industry plays a crucial role in determining the impact of human error on operational risks, and companies should tailor their risk management strategies accordingly.

13.0 Further Research and Conclusion

13.1 Further Research

Although this study provides important insights into the impact of human error on operational risks in non-electronic work at ALKHORAYEF Industries Company, we see that there is a further need for research in this area. For instance, future research could investigate the impact of other factors that may influence the relationship between human error and operational risks, such as organizational culture, communication, and leadership. Additionally, further research could explore the effectiveness of different risk management strategies in mitigating the risks associated with human error in non-electronic work at ALKHORAYEF Industries Company. Finally, future research could examine the impact of human error on other types of industries, such as electronic work, and compare the results to those found in non-electronic work. Overall, further research in this area would provide extended understanding of the impact of human error on operational risks and inform the development of more effective risk management strategies.

13.2 Conclusion

In conclusion, human error is an unintended action, decision or behavior that results in unwanted or undesirable outcomes. Human errors can be skill-based errors, rule-based errors, and knowledge-based errors. Operational risks are the damage that can occur due to inadequate or failed implementations of internal processes, systems, or external events. They can include reputational risks, strategic risks, financial risks, compliance risks, and technological risks. There are strategies that factories

can utilize to mitigate operational risks as a result of human error which includes: setting and implementing risk management policies, monitoring risks and reporting risks, risk transfer and financing risks. our study found that there was a significant relationship between the occurrence of human error and operational risks in the non-electronic work at ALKHORAYEF Industries Company. We found that the findings of this study show important implications for risk management in factories. in depth research is needed to explore the impact of different types of human error and operational risks in other industries. In manufacturing facilities, a lot of human errors have been reported to cause operational risks. There are four categories of human error which include organizational, precondition, unsafe acts and supervisory. Developing clear strategies on how to mitigate such human errors can lead to a reduction of operational risks related to non-electronic work in companies. Failure of complex systems also leads to operational risks, which can lead to accidents. Therefore, it is important for companies to be on the lookout for any kind of human error that can lead to operational risks.

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