

Research Proposal

جامعة الجميع الذكية كلية الإدارة العامة قسم إدارة المخاطر

تأثير الخطأ البشري على المخاطر التشغيلية من حيث الأعمال
الغير الإلكترونية 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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1444-2023

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 Moray). Losses due to failure of the systems, policies and processes are a definition of operational risks (Arshad et al). This study aims 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)).

I chose to carry out a research on this topic due to the impact it has at ALKHORAYEF Industries Company and 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. Through looking at the main factors that lead to human error will serve as a starting point for both managers and work force. It will impact their knowledge thus reducing human error in non-electronic work. The topic also explores the ways industries and factories can mitigate human error which makes it important to research on it. However much companies and industries use technology to aid in their work, human input has been also incorporated 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 Moray). Generally, the knowledge gained from researching this topic is of great impact to at ALKHORAYEF Industries Company and people thus helping in strategizing to reduce the consequences thereafter. (Reason, J. (2000).)(Chatzistergos, P. E., Naemi)

The problem 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 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.

Problem Statement

The purpose of this study is to analyze 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.

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 findings of this study are particularly important 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 employed 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.

Research goals

The primary goal of this study is to identify the impact of human errors on operational risks in non-electronic work environments. The study aims 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.

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?

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 (Asaad -2018). In factories with manufacturing facilities, human errors can have significant impacts on operational risks, which can ultimately affect the company's productivity and profitability.

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.(Jarrow, R. A. (2008).)

In order 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 human on operational risks.(Yeow, Jian Ai, et al)

To get the analysis, the study will draw on 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, Neumann et al. found that human error increased operational risks in a manufacturing plant in Turkey.

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)

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.

Methodology

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 100 employees from ALKHORAYEF Industries Company, which has a total of 1700 employees.

To collect data for the study, a survey questionnaire will be administered to all 1700 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.

The study will adhere to ethical guidelines, and informed consent will be obtained from all participants before data collection. Participants will be informed about the purpose of the study, the voluntary nature of their participation, the confidentiality of their responses, and their right to withdraw from the study at any time. All data will be stored securely and will be used only for the purpose of the study. 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).

Research tools

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

Initial reference list

- 1- Jarrow, R. A. (2008). Operational risk. *Journal of Banking & Finance*, 32(5), 870-879.
- 2- Cacciabue, P. C. (2004). Human error risk management for engineering systems: a methodology for design, safety assessment, accident investigation and training. *Reliability Engineering & System Safety*, 83(2), 229-240.
- 3-Reason, J. (2000). Human error: models and management. *Bmj*, 320(7237), 768-770.
- 4-Chatzistergos, P. E., Naemi, R., & Chockalingam, N. ISB1126: Non-electronic measurement of plantar pressure during weightbearing activities of daily living.
- 5-Alali, Asaad, et al. "Risk Management to Avoid Project Failure: A Comparison Study of Construction Projects in the GCC." *International Journal of Business Continuity and Risk Management*, vol. 8, no. 2, 2018, p. 87, <https://doi.org/10.1504/ijbcrm.2018.10013895>.
- 6- Amankwah-Amoah, Joseph, et al. "COVID-19 and Business Failures: The Paradoxes of Experience, Scale, and Scope for Theory and Practice." *European Management Journal*, vol. 39, no. 2, 6 Sept. 2020, pp. 179–184,
- 7- Bag, Surajit, and Jan Harm Christiaan Pretorius. "Relationships between Industry 4.0, Sustainable Manufacturing and Circular Economy: Proposal of a Research Framework." *International Journal of Organizational Analysis*, vol. ahead-of-print, no. ahead-of-print, 16 July 2020, <https://doi.org/10.1108/ijoa-04-2020-2120>
- 8- Baroroh, Dawi Karomati, et al. "Systematic Literature Review on Augmented Reality in Smart Manufacturing: Collaboration between Human and Computational Intelligence." *Journal of Manufacturing Systems*, vol. 112, no. 2, Nov. 2020, <https://doi.org/10.1016/j.jmsy.2020.10.017>.

9- Cimini, Chiara, et al. "A Human-In-The-Loop Manufacturing Control Architecture for the next Generation of Production Systems." *Journal of Manufacturing Systems*, vol. 54, Jan. 2020, pp. 258–271, <https://doi.org/10.1016/j.jmsy.2020.01.002>. Accessed 12 Dec. 2020.

10- Dominguez-Péry, Carine, et al. "Reducing Maritime Accidents in Ships by Tackling Human Error: A Bibliometric Review and Research Agenda." *Journal of Shipping and Trade*, vol. 6, no. 1, 24 Nov. 2021, <https://doi.org/10.1186/s41072-021-00098-y>.

11- Ghasemi, Fakhradin, et al. "Human and Organizational Failures Analysis in Process Industries Using FBN-HFACS Model: Learning from a Toxic Gas Leakage Accident." *Journal of Loss Prevention in the Process Industries*, vol. 78, Aug. 2022, p. 104823, <https://doi.org/10.1016/j.jlp.2022.104823>. Accessed 28 June 2022.

12- Hulme, Adam, et al. "What Do Applications of Systems Thinking Accident Analysis Methods Tell Us about Accident Causation? A Systematic Review of Applications between 1990 and 2018." *Safety Science*, vol. 117, Aug. 2019, pp. 164–183, www.sciencedirect.com/science/article/pii/S0925753518319672, <https://doi.org/10.1016/j.ssci.2019.04.016>.

13- Larouzee, Justin, and Jean-Christophe Le Coze. "Good and Bad Reasons: The Swiss Cheese Model and Its Critics." *Safety Science*, vol. 126, no. 1, June 2020, p. 104660, <https://doi.org/10.1016/j.ssci.2020.104660>.

14- Liu, Dahai, et al. "Effect of HFACS and Non-HFACS-Related Factors on Fatalities in General Aviation Accidents Using Neural Networks." *The International Journal of Aviation Psychology*, vol. 23, no. 2, Apr. 2013, pp. 153–168, <https://doi.org/10.1080/10508414.2013.772831>. Accessed 15 Apr. 2019.

15- Mohan Prasad, M., et al. "A Framework for Lean Manufacturing Implementation in Indian Textile Industry." *Materials Today: Proceedings*, vol. 51, no. 8, Mar. 2020, <https://doi.org/10.1016/j.matpr.2020.02.979>.

---. "A Framework for Lean Manufacturing Implementation in Indian Textile Industry." *Materials Today: Proceedings*, vol. 1778, no. 27, Mar. 2020, <https://doi.org/10.1016/j.matpr.2020.02.979>.

16- Neumann, W. Patrick, et al. "Industry 4.0 and the Human Factor – a Systems Framework and Analysis Methodology for Successful Development." *International Journal of Production Economics*, vol. 233, Mar. 2021, p. 107992, <https://doi.org/10.1016/j.ijpe.2020.107992>.

17- Petrillo, Antonella, et al. "Development of a Risk Analysis Model to Evaluate Human Error in Industrial Plants and in Critical Infrastructures." *International Journal of Disaster Risk Reduction*, vol. 23, no. 89, Aug. 2017, pp. 15–24,

www.sciencedirect.com/science/article/pii/S2212420917300183,
<https://doi.org/10.1016/j.ijdr.2017.03.012>. Accessed 17 Dec. 2019.

18- Sheikhalishahi, M., et al. "Multi-Objective Open Shop Scheduling by Considering Human Error and Preventive Maintenance." *Applied Mathematical Modelling*, vol. 67, no. 12, Mar. 2019, pp. 573–587, <https://doi.org/10.1016/j.apm.2018.11.015>.

19- Silvapulle, Param, and Ainura Tursunaliyeva. "Estimation of Operational Risks Using Non-Parametric Approaches with an Application to US Business Losses." *SSRN Electronic Journal*, vol. 5, no. 8, 2011, <https://doi.org/10.2139/ssrn.1911752>. Accessed 28 July 2020.

20- Yeow, Jian Ai, et al. "A REVIEW on HUMAN ERROR in MALAYSIA MANUFACTURING INDUSTRIES." *Journal of Information System and Technology Management*, vol. 5, no. 19, 1 Dec. 2020, pp. 01-13, <https://doi.org/10.35631/jistm.519001>.