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Building A Safety Driven Culture At Rr Kabel Manufacturing Facility

1Ishaben Vankar, 2Aneri Thakkar, 3Ms.Keren Millet

1Student, Parul Institute of Management and Research, 2 Student, Parul Institute of Management and Research, 3Assistant Professor, Parul Institute of Management and Research, Parul University, Vadodara, Gujarat.

ABSTRACT

In the manufacturing sector, workplace safety is a key component of operational excellence. Maintaining regulatory compliance, lowering workplace dangers, and protecting employee well-being all depend on RR Kabel cultivating a safety-driven culture. The study looks at important components like risk management, employee involvement, safety training programs, leadership commitment, and continuous improvement activities. It also emphasizes how data-driven safety monitoring and technology may help prevent accidents and foster a proactive safety culture. This study offers practical suggestions for enhancing RR Kabel's safety culture by examining the company's current safety procedures, finding obstacles, and comparing them to industry best practices. The results highlight how a strong safety-driven culture improves overall operational efficiency, employee morale, productivity, and workplace incidents. By embracing a comprehensive, employee-centered approach to safety and moving beyond compliance-driven safety measures, this research helps businesses ensure sustainable growth and a safe working environment at RR Kabel manufacturing plants.

Keywords: Safety Culture, Workplace Safety, Manufacturing Safety, Risk Management, Employee Engagement, Safety Training, Leadership Commitment, Occupational Health & Safety (OHS), Regulatory Compliance

INTRODUCTION

Manufacturing safety plays a crucial role in industrial operations, directly influencing worker satisfaction, productivity, and overall business success. A safe work environment not only protects employees from potential hazards but also enhances operational efficiency, regulatory compliance, and the company’s reputation. Understanding these benefits, RR Kabel, a leading electrical manufacturer, prioritizes the development of a safety-driven culture to minimize workplace risks, ensure compliance with legal and ethical standards, and improve overall efficiency.

A strong safety culture goes beyond merely following regulations; it involves a proactive approach where safety becomes an integral part of the organization's core values, behaviors, and daily operations. In this environment, safety is not seen as a checklist of requirements but as a fundamental principle guiding every task and decision. Employees at all levels, from factory workers to senior management, must actively contribute to fostering and maintaining this culture to ensure its success.

This study examines the essential components required to establish and reinforce a safety-first mindset within RR Kabel's manufacturing facilities. It explores the importance of hazard identification and risk assessment, where potential dangers are systematically recognized and mitigated. Comprehensive safety training programs play a key role in equipping employees with the necessary knowledge and skills to handle workplace hazards and emergencies effectively. Employee engagement is another critical factor, as a culture of safety thrives when workers actively participate in safety initiatives, report hazards, and adhere to best practices.
Leadership commitment is fundamental to building a sustainable safety culture. When management demonstrates a strong dedication to safety through policies, communication, and accountability, it fosters an environment where employees feel supported in prioritizing safety. Additionally, continuous improvement and innovation are necessary for maintaining high safety standards.

By evaluating existing safety measures, identifying key challenges, and assessing their impact on workforce well-being and productivity, this research aims to provide practical recommendations to further enhance safety performance. The ultimate objective is to ensure that safety becomes an ingrained part of the company's identity rather than just a legal necessity. In doing so, RR Kabel can establish a long-term, sustainable approach to workplace safety that contributes to both employee well-being and organizational success.

PROBLEM STATEMENT

RR Kabel's production plants struggle to continuously maintain a high level of staff safety awareness and compliance despite current safety measures and requirements.Despite the existence of safety precautions, instances of non-compliance, risky behavior, and mishaps, which suggest that a more robust safety culture is required. The main problem is that safety procedures are occasionally seen more as a collection of guidelines to be followed than as a collective duty accepted by all workers. This may result in a lack of initiative, when risks are not disclosed and safety procedures are not always properly adhered to. Furthermore, it is challenging to guarantee uniform safety standards across the facilities due to differing degrees of safety awareness among various teams and shifts. Building a safety-driven culture that incorporates safety into the company's everyday operations and mentality is crucial to addressing issue. This is establishing a workplace where all staff members, regardless of position, recognize the value of safety, feel accountable for keeping it up to date and actively contributes to workplace safety. The difficulty is in shifting the focus of safety from compliance to culture, which calls for calculated adjustments in employee involvement, communication, and training. Thus, the issue this study seeks to solve is how to successfully establish and maintain a safety-driven culture at RR Kabel's manufacturing facilities, guaranteeing that safety becomes an essential component of the workplace, resulting in fewer accidents and an improved standard of living for staff members.

Objectives of the Study

The main goal of this study is to find effective ways to create a strong safety culture at RR Kabel's manufacturing facilities. This means making safety a natural part of the daily routine for every employee, from factory workers to managers, so that everyone actively participates in keeping the workplace safe.
To achieve this, the study will focus on the following objectives:

1. Understand Current Safety Practices and Challenges:

- Assess the existing safety measures, protocols, and training programs at RR Kabel.
- Identify the main safety challenges, such as inconsistent safety awareness, lack of reporting unsafe conditions, or gaps in following safety rules.

2. Promote Safety Awareness Across All Levels:

- Develop strategies to increase safety awareness and understanding among all employees.
- Ensure that everyone, regardless of their role, knows the importance of safety and how their actions contribute to a safer work environment.

3. Encourage Proactive Safety Behavior:

- Explore ways to motivate employees to take initiative when it comes to safety, such as reporting potential hazards and following safety practices without needing constant reminders.
- Create a culture where safety is seen as a shared responsibility, and everyone feels confident to speak up about safety concerns.

4. Improve Training and Communication:

- Design better training programs that are practical, engaging, and easy to understand for all employees.
- Ensure clear communication of safety protocols, so everyone knows what to do in different situations and can access this information easily.

5. Develop Long-Term Safety Culture Strategies:

- Identify best practices and successful examples from other companies to learn what works in building a safety-driven culture.
- Create a plan for sustaining this culture over the long term, ensuring that safety remains a top priority even as the company grows and changes.

6. Leverage Technology for Enhanced Workplace Safety

- Explore the use of advanced safety technologies, such as real-time monitoring systems, wearable safety devices, and AI-driven risk assessments, to improve hazard detection and response times.
- Implement digital reporting tools to streamline safety incident tracking, ensuring quick resolution and continuous improvement in workplace safety standards.

HYPOTHESIS

Null Hypothesis (H_0): There is no significant association between employee awareness of safety protocols and their compliance with safety procedures at RR KABEL manufacturing facility.

Alternate Hypothesis (H_1): There is a significant association between employee awareness of safety protocols and their compliance with safety procedures at RR KABEL manufacturing facilities.

	Strongly Agree (C1)	**Agree (C2)**	**Neutral (C3)**	**Disagree (C4)**	**Strongly disagree (C5)**
Strongly Agree (R1)	72	37	5	0	0
Agree(R2)	40	34	3	0	0
Neutral(R3)	5	4	6	2	0
Disagree(R4)	0	1	2	1	0
Strongly Disagree(R5)	1	1	1	0	1

Elements	**Observed**	**Expected**	**Difference**	**Square of difference**	**Chi Square**
C1R1	72	62.277777	9.722222222	94.52160494	32.2438271
C1R2	40	42.0648148	-2.064814815	4.263460219	-37.8013546
C1R3	5	9.28703703	-4.287037037	18.37868656	9.09164952

C1R4	0	2.18518518	-2.185185185	4.775034294	2.58984910
C1R5	1	2.18518518	-1.185185185	1.404663923	-0.780521262
C2R1	37	40.6388888	-3.638888889	13.24151235	-27.39737654
C2R2	34	27.4490740	6.550925926	42.91463049	15.4655564
C2R3	4	6.06018518	-2.060185185	4.244362997	-1.815822188
C2R4	1	1.42592592	-0.425925926	0.181412894	-1.244513032
C2R5	1	1.42592592	-0.425925926	0.181412894	-1.244513032
C3R1	5	8.97222222	-3.972222222	15.77854938	6.80632716
C3R2	3	6.06018518	-3.060185185	9.364733368	3.30454818
C3R3	6	1.33796296	4.662037037	21.73458933	20.3966263
C3R4	2	0.31481481	1.685185185	2.839849108	2.52503429
C3R5	1	0.31481481	0.685185185	0.469478738	0.15466392
C4R1	0	1.58333333	-1.583333333	2.506944444	0.92361111
C4R2	0	1.06944444	-1.069444444	1.14371142	0.07426697
C4R3	2	0.23611111	1.763888889	3.111304012	2.87519290
C4R4	1	0.05555555	0.944444444	0.891975309	0.83641975
C4R5	0	0.05555555	-0.055555556	0.00308642	-0.052469136
C5R1	0	0.52777777	-0.527777778	0.278549383	-0.249228395
C5R2	0	0.35648148	-0.356481481	0.127079047	-0.229402435
C5R3	0	0.07870370	-0.078703704	0.006194273	-0.072509431
C5R4	0	0.01851851	-0.018518519	0.000342936	-0.018175583
C5R5	1	0.01851851	0.981481481	0.963305898	0.94478738
TOTAL					**27.326**

Calculate Chi-Square Value

1. Formula= (Observed – Expected) ^2 / Expected.

Sum up these values to get the total Chi-Square statistic: $\chi 2 = 27.326$

Determine Degrees of Freedom

Degrees of freedom (df) is calculated as:

Df = Number of Categories 5-1*5-1 = 4*4* = 16

Finding Critical Value

1. From Chi –Square table, the critical value for df = 16 at a 0.05 significance level:
    - Critical value = 26.30
2. Compare the Chi-Square statistic ($\chi 2$= 27.326) with the critical value:
    - Since 27.326 > 26.30, reject the null hypothesis and accept alternate hypothesis.

Alternative Hypothesis (H1): There is a significant association between employee awareness of safety protocols and their compliance with safety procedures at RR KABEL manufacturing facilities.

CONCLUSION

The outcome indicates that there is a significant association between employee awareness of safety protocols and their compliance with safety procedures at RR KABEL manufacturing facilities.

LITERATURE REVIEW

According to Young, B., Seidu, RD, Nganga, D, Robinson, H and Ebohon, J O (2019). There is an increasing awareness of the importance of health and safety in the construction industry. However, the extent to which this is given the appropriate attention is contested, given the divergent views among key stakeholders. The contractors view clients' as merely paying 'lips services' to health and safety, and they point to clients' obsession with 'value for money' and the failure to understand that 'value for money' concept transcends beyond tender price when selecting contractors.

According to Esteller-Cucala in 2020 Data-driven decision making is a growing trend that many businesses are now ready to embrace. However, the necessary organizational transformation is not always as simple and logical as it seems, and the comfort of old habits can slow down change efforts. The purpose of this study is to identify potential problems that can occur when transforming a real-world business from a traditional intuition driven decision-making model to a data-driven model.

RESEARCH METHODOLOGY

TITLE OF THE STUDY

"Building a Safety-Driven Culture in RR Kabel Manufacturing Facilities"

SIGNIFICANCE OF STUDY

It is impossible to overestimate the significance of workplace safety in industrial sectors since it has a direct impact on worker welfare, operational effectiveness, and long-term company viability. In addition to highlighting the vital importance of safety procedures, this study on creating a safety-driven culture at RR Kabel's production sites intends to shed light on the various ways that a proactive approach to safety may benefit the company.

A strong safety culture ensures that workers feel safe and protected while carrying out their duties, which helps to lower workplace accidents and injuries. RR Kabel can reduce the risks connected to heavy machinery, electrical components, and other industrial dangers by recognizing possible hazards and putting preventive measures in place. RR Kabel complies with national and international occupational health and safety (OHS) standards thanks to a robust safety structure that also satisfies regulatory compliance obligations. Legal repercussions, monetary fines, and harm to one's reputation may result from breaking these rules.

Additionally, a successful safety-driven culture boosts worker satisfaction and output. Employee engagement, motivation, and commitment to their work are all increased when they feel safe in their workplace. A feeling of security improves job satisfaction, lowers absenteeism, and creates a productive workplace. Furthermore, fewer workplace accidents result in decreased medical expenses, compensation claims, and lost productivity, all of which save money for the company.

The change from a reactive to a proactive safety approach is also highlighted in this study. RR Kabel can put safety measures in place that stop accidents before they happen rather of dealing with them after they happen. This includes danger identification systems, safety training programs, and staff involvement in safety committees. Since management is responsible for raising employee knowledge of safety issues, enforcing regulations, and supporting employee participation in safety activities, leadership commitment is also essential to creating a safety-driven culture.

This study offers practical suggestions that RR Kabel can implement to improve its safety culture by comparing best practices from top industrial sectors. The study also looks at how contemporary technologies, such data analytics, artificial intelligence (AI)-driven monitoring systems, and the Internet of Things (IoT), may improve safety management. These technologies allow for automatic safety compliance tracking, predictive analysis of possible risks, and real-time monitoring of workplace hazards.

SCOPE OF THE STUDY

This study focuses on building a safety-driven culture at RR Kabel's manufacturing facilities, analyzing the various aspects that contribute to creating a secure and efficient workplace. It covers multiple dimensions of safety management, including organizational policies, employee engagement, risk assessment, and technological advancements in safety monitoring. The research primarily examines the current safety practices at RR Kabel and identifies gaps that need to be addressed to enhance workplace safety. It explores the role of leadership in fostering a safety-first mindset and how management commitment influences employee behavior and adherence to safety protocols. The study also highlights the importance of training programs, safety awareness campaigns, and regulatory compliance, ensuring that employees are well-equipped to handle potential risks in the workplace. The scope extends to evaluating risk management strategies in manufacturing, including hazard identification, incident reporting, and emergency preparedness. It also considers how industry best practices and case studies from leading organizations can be leveraged to strengthen RR Kabel's safety culture. Additionally, the study looks into the impact of technological advancements, such as automation, IoT-enabled safety devices, and AI-driven predictive analytics, in enhancing safety measures and reducing workplace hazards.

Furthermore, this research assesses employee attitudes toward workplace safety, understanding how engagement, incentives, and feedback mechanisms can help build a more proactive safety culture. It also considers external factors, such as government regulations, industry standards, and economic implications, that influence workplace safety policies.

RESEARCH GAP

Despite the importance of workplace safety, many organizations, including RR Kabel, still treat safety as just a compliance requirement rather than a core part of their culture. There is limited research on how safety can be deeply integrated into daily operations and decision-making. Most studies focus on safety policies and management efforts, but there is little research on how employees actually feel about these initiatives and how engaged they are in safety programs. Training programs exist, but their long-term impact on employee behavior and awareness is not well studied. New technologies like IoT and AI can improve workplace safety, but their use in Indian manufacturing facilities is still limited. Research is needed to understand how affordable and practical these technologies are for companies like RR Kabel. Another challenge is maintaining a strong safety culture over time, especially with changes in leadership and workforce. There is also a lack of studies showing how safety investments directly benefit business performance, such as productivity and cost savings. Most companies focus only on meeting legal safety requirements rather than going beyond compliance to create a truly proactive safety culture. This study aims to address these gaps by providing insights and recommendations to help RR Kabel build a stronger, long-lasting safety culture.

RESEARCH OBJECTIVES

- To analyze the current safety culture at RR Kabel's manufacturing facilities and identify areas for improvement.
- To evaluate the role of leadership in promoting a proactive safety-driven work environment.
- To assess employee awareness, engagement, and participation in workplace safety initiatives.
- To examine the effectiveness of existing safety training programs and suggest improvements.
- To explore the impact of safety measures on productivity, employee morale, and overall business

performance.

- To identify industry best practices and benchmark them against RR Kabel's safety framework.
- To study the potential of advanced technologies like IoT and AI in enhancing workplace safety.
- To recommend strategies for building a long-term, sustainable safety culture that goes beyond regulatory compliance

RESEARCH DESIGN

This study followed a descriptive research design, focusing on collecting and analyzing primary data to understand the existing safety culture at RR Kabel's manufacturing facilities. A quantitative and qualitative approach was used to gather insights directly from employees and management. Primary data was collected through surveys, interviews, and focus group discussions with employees, supervisors, and management. Surveys assessed employee perceptions of workplace safety, their engagement in safety programs, and the effectiveness of existing safety measures. Interviews with supervisors and management provided insights into leadership commitment, safety policies, and challenges in maintaining a strong safety culture. The data collected was analyzed to identify trends, gaps, and areas for improvement in workplace safety. Based on the findings, practical recommendations were provided to enhance safety awareness, training programs, and overall safety culture at RR Kabel.

SAMPLE DESIGN

- Sampling Method: Stratified random sampling to ensure representation across job roles and departments. •
- Sample Size: Around 150–200 employees to achieve statistical reliability.

SAMPLING METHOD

A random sampling method was used in this study to ensure that every employee had an equal chance of being selected, minimizing selection bias. The total population consisted of 1,500 employees from various roles and departments within RR Kabel's manufacturing facilities. A sample size of 260 employees was determined using a 95% confidence level and a ±5% margin of error to ensure statistical reliability. Each employee was assigned a unique identifier, and participants were selected using a random number generator to maintain fairness. This approach ensured that the sample accurately represented the broader workforce, capturing diverse perspectives while maintaining simplicity in the selection process.

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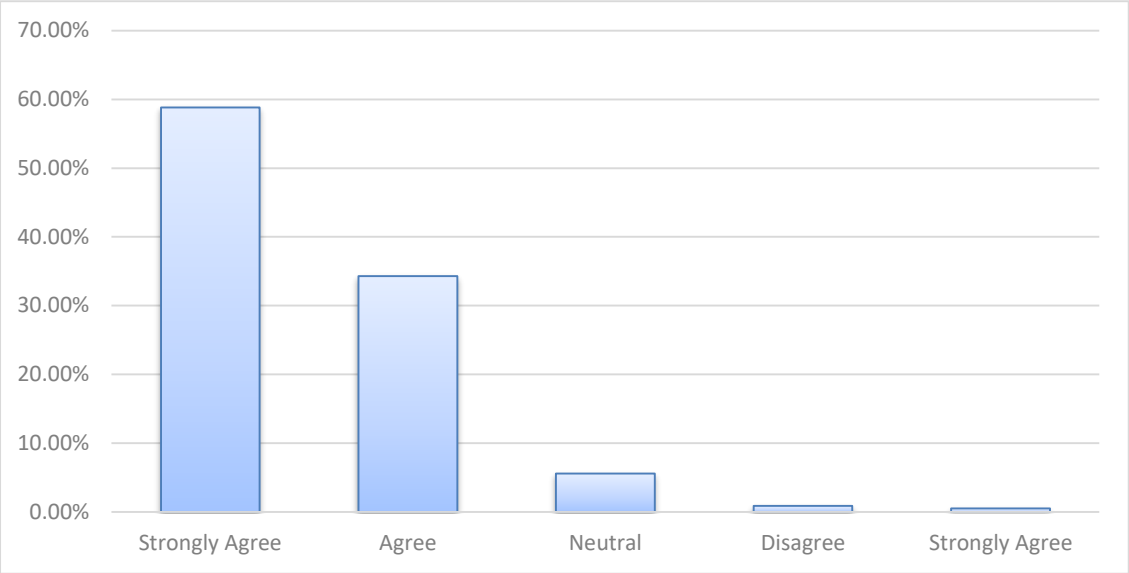
DATA ANALYSIS AND INTERPRETATION

1. **All equipment and machinery used in the facility are ISI marked or meet certified safety standards.**

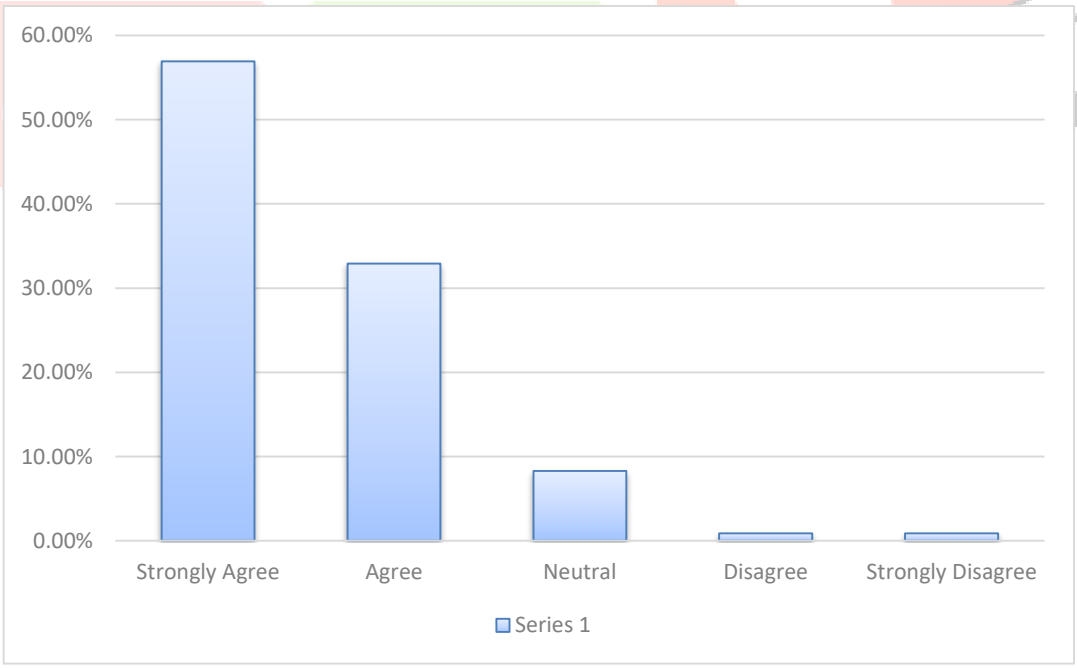
	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
No. of Respondents	127	74	12	2	1
Percentage	58.8	34.3	5.6	0.9	0.5



There were 216 responses in the sample, out of which 127 that is 58.8% which is highest strongly agreed that all the equipment and machinery used in the facility are ISI marked or meet certified safety standards.

2. Personal Protective Equipment (PPE) is always available and suitable for my tasks.

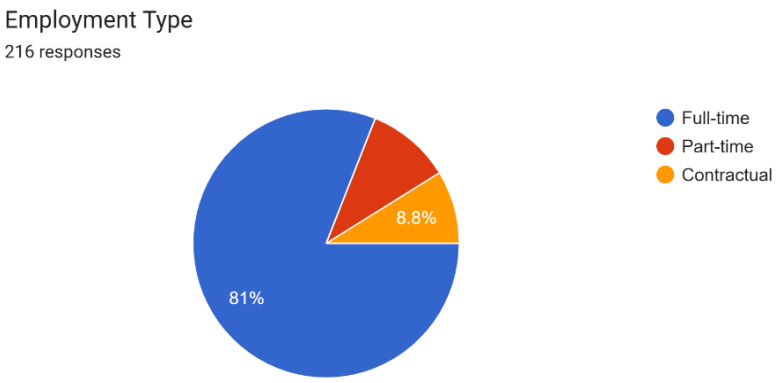
	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
No. of Respondents	123	71	18	2	2
Percentage	56.9	32.9	8.3	0.9	0.9



There were 216 responses in the sample, out of which 123 that is 56.9% which is highest strongly agreed that Personal Protective Equipment (PPE) is always available and suitable for my tasks.

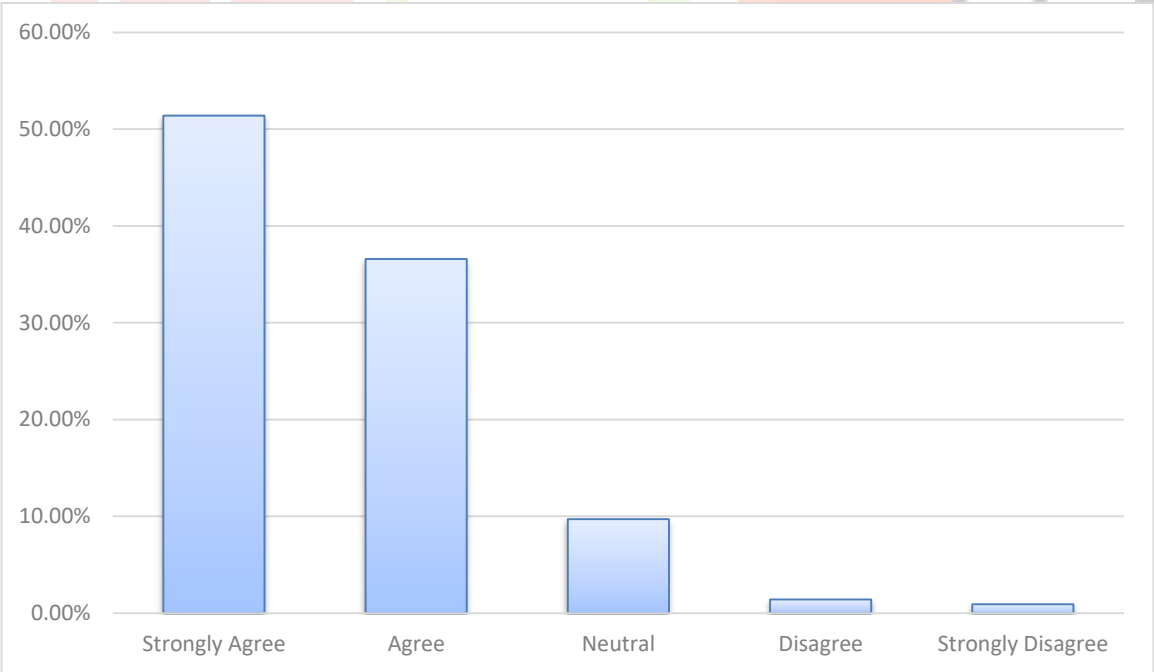
3. Employment Type

81% of population which is highest in on full-time role or employment.



4.**Safety policies and updates are communicated clearly and consistently to all employees.**

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
No. of Respondents	111	79	21	3	2
Percentage	51.4	36.6	9.7	1.4	0.9



There were 216 responses in the sample, out of which 111 that is 51.4 which is highest strongly agreed that Safety policies and updates are communicated clearly and consistently to all employees.

FINDINGS

- Many employees were aware of basic rules, but some lacked a deep understanding of safety procedures and their importance.
- Training sessions were conducted, but some employees felt they were not frequent or detailed enough to cover all workplace risks.
- Employees believed that when managers and supervisors actively promoted safety, the workplace became safer and more disciplined.

CONCLUSION

The study revealed that while safety measures were in place, there were still areas that needed improvement to build a stronger safety culture. Many employees were aware of basic safety rules, but some lacked a complete understanding of safety procedures, highlighting the need for better and more frequent training. Regular and updated safety training programs could help employees stay more informed about potential risks and encourage them to follow safety guidelines more effectively. Leadership also played a key role in promoting workplace safety, as employees felt more responsible and motivated when managers and supervisors actively supported and reinforced safety practices. However, some safety rules were not always followed, often due to work pressure, time constraints, or lack of supervision. Additionally, employees expressed the need for better safety equipment and advanced technology to further reduce risks and prevent workplace accidents. By addressing these issues through improved training, stronger leadership support, better enforcement of safety policies, and the adoption of modern safety tools, the company can create a long-lasting and effective safety-driven culture, ensuring a safer and more productive work environment for all employees.

SUGGESTIONS

- To strengthen safety training and awareness, RR Kabel should implement interactive, practical training such as hands-on drills and VR simulations. Training should shift from compliance-based to behavior-focused programs and be conducted more frequently, with quarterly refresher courses and mobile-based micro-learning modules.
- For better PPE compliance, the company should introduce ergonomically designed PPE for comfort and gather employee feedback to address usability concerns. Compliance can be improved through random audits, rewards for adherence, and AI-driven PPE monitoring systems.
- Safety reporting and communication can be enhanced by introducing a digital reporting system, allowing employees to report hazards easily, including an anonymous option. Encouraging proactive hazard identification rather than reactive reporting and recognizing employees for reporting risks can further strengthen the safety culture.
- To tackle fatigue and shift-related risks, the company should enforce rest breaks, rotate shifts, and use wearable fatigue-monitoring devices to track worker energy levels and suggest rest when needed.
- Leadership involvement should be increased by making safety a core management priority, with monthly audits, safety performance evaluations, and training supervisors as safety mentors. Appointing "Safety Champions" in each department can further encourage a culture of responsibility.
- Leveraging technology for safety enhancement, the company can use AI-driven predictive analytics to identify risks before they happen, install real-time hazard detection systems, and deploy IoT-enabled sensors to monitor workplace conditions and predict accident-prone situations.
- By implementing these improvements, RR Kabel can transition from a compliance-based to a proactive, employee-centered safety culture, leading to fewer workplace accidents, improved morale, and enhanced overall business performance.

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