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Evaluation of Saftey and Health Practices: A Case Study in Bayombong Nueva Vizcaya

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Abstract

Regarding construction activities in Bayombong, Nueva Vizcaya, particular emphasis is placed on training efficiency gaps, safety use, and the need of personal protection equipment (PPE); health and safety policies are also investigated. Including quantifiable surveys as well as qualitative interviews, the study evaluates corporate policies via a mixed-methods strategy. The survey of 60 people included 40 construction staff, 10 site engineers/safety officers, and 10 project managers/administrators. The data reveal that almost everybody has considerable industry experience; 73.3 percent have high school diploma and 28.3 percent have six to ten years of experience. Although site engineers and safety officers found health and safety training efficiency somewhat higher at 3.20, construction employees rated it a 2.93 average. Furthermore varied were views on safety communication; project managers rated it quite higher at 3.25, while construction workers gave it a neutral 3.09. Though construction workers gave it 4.23, all groups generally agreed on the efficiency of incident reporting systems. Construction workers ranked access to personal protective equipment low; therefore, they obviously noted resources inequality with a 2.40 score. While the research also stresses strong reporting systems and executive support, it mostly points to training levels and PPE distribution especially requiring of focus. Absolutely necessary is solving these problems for the building industry in the area to have better safety culture, fewer workplace risks, and adherence to occupational safety norms.

Keywords: Construction Industry, Health and Safety Practices, Mixed-Methods Research, Safety Culture, Training Effectiveness

1. INTRODUCTION

Modern society relies on the construction sector, which forms the built environment that supports both everyday existence and economic growth. It organizes significant projects, employs a large segment of the global workforce, and facilitates extensive resources. Still considered one of the most hazardous industries, construction exposes workers to numerous risks including falls from elevation, contact with harmful substances, accidents involving machinery, and collapses of structures. Although there are workplace safety and health (OSH) regulations, achieving consistent adherence to safety protocols is challenging.

The causes of accidents in construction workplaces have been empirically researched and widely reported. Research conducted by Olatoyese et al. (2022) in conjunction with Ro'I et al. (2022) indicates that around 80–85 percent of accidents can be attributed to human mistakes, driven by employee inattention, insufficient safety oversight, and inadequate training. Similarly, Ezrin et al. (2022) along with Muhammad

et al. identified falls from heights as the leading cause of fatalities, with falls, falling objects, slips, and trips ranking closely behind.

Tayado (2021) uncovered in the Philippines a gap among construction workers between safety awareness and practical implementation, highlighting issues such as ingrained work behaviors and resistance to utilizing personal protective equipment (PPE). The study sheds light on the awareness of workers in the Catanduanes construction sector regarding Occupational Safety and Health. Following a series of interviews and interactions with onsite workers, along with an assessment of their responses, the researcher ultimately concludes that while construction workers are aware of health and safety conditions, they do not adhere to or implement them. Workers recognize that discomfort, beliefs, and poor practices account for their indifference towards following health and safety regulations. From the interview results, the following recommendations were made: employees should receive training on safety and health. Workers need to be educated on the proper attitude about safety in the workplace, equipped with the correct knowledge that differs from their previous assumptions, and also foster good habits and a positive perspective regarding their safety and well-being. Training would enable them to comprehend the safety and health issues and concerns.

However, Joble and Briones (2022) emphasized the importance of close observance of safety guidelines in urban building projects. They looked at safety risk management in the meantime. Research by Lucy Fekele et al. With enforcement rated as low to medium, a 2016 review of building construction projects in Addis Ababa disclosed that health and safety issues were often inadequate. These data propose that although safety standards are in place, enforcement differs greatly depending on project kind and geographical location.

Several deficiencies exist in guaranteeing complete compliance even if awareness of construction safety is rising. Although several research stress general safety knowledge and accident causes, few delve into the effectiveness of training programs, PPE availability, or worker views of safety measures. Furthermore, although studies have been done in different areas, there is little data on the present status of health and safety policies in small urban centers including Bayombong, Nueva Vizcaya. Because safety management plays a crucial part in stopping workplace accidents and deaths, it is vital to determine if current policies indeed safeguard employees and where changes are necessary.

The study seeks to assess health and safety measures in building construction projects in Bayombong, Nueva Vizcaya, which also looks at training effectiveness gaps, safety policy implementation, and PPE distribution. The study offers a thorough analysis of how construction workers, site engineers, and project managers view and implement safety measures using a mixed-methods strategy including quantitative questionnaires and qualitative interviews. By supporting legislation initiatives and guaranteeing better worker protection, the results will help to enhance safety culture in the construction sector of the district. Improving health and safety guidelines will essentially boost project effectiveness, lower accident-related expenses, help sustainable development in the nearby building industry, and improve worker well-being.

2. Methodology

2.1 Research Design

Using a case study research design, this investigation assessed health and safety protocols in building construction in Bayombong, Nueva Vizcaya. A mixed methods strategy combined quantitative surveys with Likert-scale evaluations and interviews of management, site engineers, construction workers, safety officials, and project managers. Although interviews investigated training programs, major safety

elements, and their impact on workplace practices, surveys gauged compliance to safety norms, training efficiency, and demographic characteristics. This strategy gave a thorough knowledge of health and and safety policies and underlined strengths and deficits.

2.2 Research Locale

Because of its vibrant building industry including commercial, residential, and public infrastructure projects, Bayombong, Nueva Vizcaya, was picked. Given its many kinds of buildings, this was an ideal setting for evaluating safety and health policies.

2.3 Research Participants

Among the 60 participants in the research were 40 construction workers, 10 project managers/administrators, and 10 site engineers/safety officers. Engineers, safety officers, and managers reviewed adherence levels and execution difficulties; workers judged their compliance with safety policies. The depth and extent of the investigation benefited from this multi-perspective approach.

2.4 Research Instrument

The primary data collection instrument consisted of a semi-structured survey questionnaire that was divided into demographic information and evaluation of safety practice. It included semi-structured questions related to training, and a five-point Likert scale (1= Very Little Extent to 5 = Very Large Extent) was used to scale for compliance and safety management perception. This approach is consistent with other studies including Fekele et al. (2016) in Addis Ababa that used a similar questionnaire approach to evaluate safety management practices. Tayado (2021) also used qualitative

2.5 Data Gathering Procedure

Construction firms provided permission, and random sampling was used to select participants. The survey was handed over to the Project Stakeholders with informed consent and voluntary participation. For the quantitative responses, descriptive statistics were used to analyze the data, and mean values and frequency distributions were used to summarize Likert-scale ratings. Qualitative interview data were transcribed and thematically coded to identify salient themes. Data analysis was conducted using statistical software such as Excel for data processing. Results are shown in two tables to enhance interpretation for an actionable output.

2.6 Ethical Considerations

The research followed institutional ethical standards to protect participant confidentiality and secure data. We received informed consent from participants and anonymized their responses to ensure privacy protection. The research team gathered and reported data through transparent and ethical methods. The results were designed exclusively for scholarly and organizational use to enhance construction safety and health protocols.

3. Results and Discussion

Table 1: Respondents number of years in the construction insdustry

No. Of Years	Frequency	Percent (%)	Cummulative Percent
<1	4	6.67	6.67
1-5	14	23.33	30.00
6-10	17	28.33	58.33
11-15	13	21.67	80.00

>15	12	20.00	100
Total	60	100	

Table 1 shows the largest group among 60 respondents consists of individuals who have 6 to 10 years of experience which constitutes 28.33% of the sample demographic. The group with 1 to 5 years of experience (23.33%) and those with 11 to 15 years of experience (21.67%) follow behind the majority group with 6 to 10 years of experience. The survey reveals that 20% of participants possess more than 15 years of industry experience which demonstrates the significant presence of veteran professionals within the field. The survey shows that newcomers account for just 6.67% of respondents who possess less than a year of experience. According to the cumulative percentage data, 80% of participants hold at least 6 years of professional experience which shows that experienced professionals make up the majority of the sample.

Table 2: Educational status of respondents

Education Level	**Frequency**	**Percent (%)**	**Cummulative Percent**
Highschool Level	16	26.67	26.67
Highschool Graduate	15	25.00	51.67
College Level	9	15.00	66.67
College Graduate	20	33.33	100
Total	60	100	

Table 2 shows the respondents needed adequate education to comprehend the questionnaire properly while also learning about health and safety through their studies. A majority of the participants had completed high school education or higher with their percentage standing at 73.33%. Given the percentage of education attained by respondents it was practical to determine that they possessed sufficient knowledge to understand construction site safety and health importance. The findings matched those from Rotifa et al. 2017 where educational background affected hazard awareness and suggested that high school educated individuals understood site safety importance. The 2017 Rotifa et al. study found that higher educational levels lead to better hazard knowledge and showed that people with at least a high school education understood construction site safety importance.

Table 3: Health and Safety Training

Health and Safety Training	**Construction Workers**		**Site Engineers/Safety Officers**		**Administrators/Project Managers**	
	Mean Score	**Qualitative Rating**	**Mean Score**	**Qualitative Rating**	**Mean Score**	**Qualitative Rating**
To what extent do you receive training on health and safety practices in construction?	2.93	Neutral	3.20	Neutral	3.10	Neutral

To what extent is health and safety information provided to you?	3.15	Neutral	3.60	Large Extent	2.80	Neutral
To what extent do you consistently follow the established health and safety protocols at your construction site?	3.68	Large Extent	3.60	Large Extent	3.40	Neutral
Total	3.25	Neutral	3.47	Large Extent	3.10	Neutral

Table 3 shows the information collected reveals how different groups in the construction sector feel about health and safety training and practices. Construction workers gave an average score of 2. 93, which means they feel neutral about the training they receive. Site engineers and safety officers rated their training a bit higher, at a score of 3. 20, also neutral. Administrators and project managers rated the training at 3. 10, again neutral. This suggests that while training is provided, many people think it may not be enough for everyone in their roles. When it comes to receiving health and safety information, site engineers and safety officers gave a higher score of 3. 60, indicating they receive a lot of this information. However, construction workers and administrators think they receive less information, scoring it at 3. 15 and 2. 80, both neutrally. In terms of following health and safety guidelines, all groups generally feel positive. Construction workers gave a score of 3. 68, and site engineers and safety officers scored 3. 60, both showing they follow the rules to a large degree. Administrators and project managers scored 3. 40, which is neutral. Overall, there is an acknowledgment that health and safety practices are vital, but there are differing views about how adequate the training and information are. This points to possible areas for improvement to ensure a safer workplace for everyone in the construction industry.

Table 4: Implementation of Safety Measures

Implementation of Safety Measures	**Construction Workers**		**Site Engineers/Safety Officers**		**Administrators/Project Managers**	
	Mean Score	**Qualitative Rating**	**Mean Score**	**Qualitative Rating**	**Mean Score**	**Qualitative Rating**
To what extent does your construction company effectively communicate guidelines and updates to workers	3.78	Large Extent	3.40	Neutral	4.00	Large Extent
To what extent do you receive adequate personal protective equipment (PPE) for your work?	2.40	Little Extent	3.60	Large Extent	2.50	Little Extent
Total	3.09	Neutral	3.50	Large Extent	3.25	Neutral

Table 4 shows how people in different roles feel about safety measures in construction companies.

Construction workers gave a score of 3. 09 when it comes to communication about safety guidelines. This means they feel neutral, not really impressed or particularly dissatisfied. On the other hand, site engineers and safety officers gave it a 3. 50, showing they think communication is quite effective. Administrators and project managers gave a score of 3. 25, indicating they also feel positively about how safety information is shared. Regarding personal protective equipment (PPE), construction workers gave a low score of 2. 40, which means they are unhappy with how available PPE is. In contrast, site engineers and safety officers are more satisfied, with a score of 3. 60. However, project managers, like the construction workers, also gave low scores, only 2. 50, highlighting shared concerns about PPE. Overall, while those in managerial roles are happy with communication about safety, both construction workers and project managers have concerns about how easy it is to get PPE. This shows that there's a need to make safety measures better for everyone working on construction sites.

Table 5: Reporting and Incident Response

Implementation of Safety Measures	**Construction Workers**		**Site Engineers/Safety Officers**		**Administrators/Project Managers**	
	Mean Score	**Qualitative Rating**	**Mean Score**	**Qualitative Rating**	**Mean Score**	**Qualitative Rating**
To what extent do you believe the system for reporting safety concerns or incidents on the construction site is effective, ranging from very large extent to little extent?	4.23	Very Large Extent	4.20	Very Large Extent	4.10	Large Extent
To what extent do you feel the project management team promptly addresses safety concerns, from very large extent to little extent?	4.25	Very Large Extent	3.80	Large Extent	4.30	Very Large Extent
Total	4.24	Very Large Extent	4.00	Large Extent	4.20	Large Extent

Table 5 highlights how different roles within construction companies perceive the systems used for reporting and handling safety issues. Construction workers give a high average score of 4. 23, reflecting strong confidence in these systems for reporting any safety problems or incidents. Similarly, site engineers and safety officers feel positive, with a score of 4. 20. Administrators and project managers rate it slightly lower at 4. 10, indicating satisfaction but acknowledging room for improvement. The promptness of addressing safety issues also receives attention in the survey. Construction workers rate this aspect well with a score of 4. 25. Site engineers and safety officers provide a score of 3. 80, while project managers slightly higher at 4. 30. These figures indicate a strong commitment to safety and quick response across the company. The systems for reporting and addressing safety issues are generally well-received and seen as effective. However, the differences in scores among various roles suggest there are areas to improve.

The goal should be to create a more unified safety culture, ensuring that everyone, regardless of their role, feels equally supported when discussing safety concerns. This approach will help improve the overall safety environment in the organization.

Table 6: Factors Influencing Implementation

Implementation of Safety Measures	Construction Workers		Site Engineers/Safety Officers		Administrators/Project Managers	
	Mean Score	Qualitative Rating	Mean Score	Qualitative Rating	Mean Score	Qualitative Rating
To what extent do you believe management prioritizes and supports health and safety practices in your company?	3.93	Very Large Extent	4.00	Large Extent	3.90	Large Extent
To what extent is the communication of health and safety guidelines effective within your organization?	4.15	Very Large Extent	3.80	Large Extent	3.90	Large Extent
To what extent do time constraints influence the successful implementation of health and safety practices in construction?	3.78	Large Extent	3.80	Large Extent	3.10	Neutral
To what extent does the lack of skilled personnel influence the successful implementation of health and safety practices in construction?	3.25	Neutral	3.20	Neutral	2.70	Neutral
To what extent does the pressure to meet deadlines influence the successful implementation of health and safety practices in construction?	3.35	Neutral	3.20	Neutral	3.30	Neutral
Total	3.69	Large Extent	3.60	Large Extent	3.38	Neutral

Table 6 presents different opinions among construction workers, site engineers, safety officers, and managers about safety measures in their companies. There are mixed feelings on how well health and safety rules are prioritized and communicated. Construction workers have a strong belief in management's support for safety practices, giving it a score of 3.93 out of 5. Similarly, site engineers and safety officers

also feel positive, with a score of 4.00. Project managers rated it a bit lower at 3.90, but this still shows good support. Communication of health and safety rules is rated highly by construction workers, with a score of 4.15. This means they think these rules are communicated effectively. However, everyone is neutral about the influence of time constraints and lack of skilled workers on implementing safety measures successfully. Project managers, in particular, are concerned about the lack of skilled workers, giving it a score of 2.70. In general, everyone agrees that safety measures are important and communicated well. Yet, issues like time pressures and a shortage of skilled workers can still create significant challenges in putting these safety measures into action in the construction environment.

The next table extracted about was how much construction companies focus on safety in their leadership and management. The study wanted to find out how well safety is made a part of the company culture and their decision-making processes. It looked at whether safety is taken seriously and if it influences daily operations and overall strategies in these companies.

Table 7: The extent to which safety is prioritized within the organizational culture and decision-making processes of construction projects and companies.

	Construction Workers		**Site Engineers/Safety Officers**		**Administrators/Project Managers**	
	Mean Score	**Qualitative Rating**	**Mean Score**	**Qualitative Rating**	**Mean Score**	**Qualitative Rating**
How strongly do you believe that the leadership in your construction company demonstrates a commitment to health and safety practices?	3.95	Large Extent	3.40	Neutral	3.60	Large Extent
How adequately do you feel the construction company provides the necessary resources and support for implementing health and safety measures?	3.35	Neutral	3.40	Neutral	3.40	Neutral
To what extent do you think the decision-making processes within the construction company prioritize safety over other project considerations?	3.753	Large Extent	3.30	Neutral	3.70	Large Extent
Total	3.68	Large Extent	3.37	Neutral	3.37	Large Extent

Table 7 shows how different groups in a construction company feel about health and safety practices. The

groups are construction workers, site engineers/safety officers, and administrators/project managers. Construction workers and project managers mostly think that company leaders care about health and safety. They have average scores of 3. 95 and 3. 60, which means they generally have a positive view of safety culture. However, site engineers and safety officers aren't so sure about this commitment. Their average score is 3. 40, indicating more neutral feelings, which might mean they have some concerns or doubts. All three groups have a neutral view when it comes to having enough resources and support for implementing safety measures. With scores around 3. 40, it suggests there might be some gaps in providing the necessary tools for effective safety management. Regarding decision-making, construction workers and project managers feel that safety is given importance, with scores of 3. 75 and 3. 70. But site engineers and safety officers again show more neutral responses, with a score of 3. 30. In summary, while there's a generally positive perception of leadership's dedication to health and safety, there's still a need for improvement. This includes better resource provision and more involvement of site engineers and safety officers in decision-making processes.

Table 8. Evaluation of the Safety Training Programs Provided

Types of Safety Training	**Construction Workers**		**Site Engineers/Safety Officers**		**Administrators/Project Managers**	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
General Safety Orientation	1	2.50	2	20	1	10
Personal Protective Equipment (PPE) Training	1	2.50	2	20	1	10
First Aid Training	1	2.50	1	10	1	10
Hazardous Materials Training	5	12.50			2	20
Construction Safety Training	6	15.0			2	20
Participant's Responses	14	35	5	50	7	70
Total No. Of Respondents	40		10		10	

Participation in safety training programs shows that many construction workers are not receiving enough training. General Safety Orientation and PPE Training have low participation rates: only 2. 5% of workers, 20% of site engineers, and 10% of administrators are involved. First Aid Training also sees few attendees. On the other hand, Construction Safety Training has more participation, with 15% of workers and 20% of administrators taking part, suggesting that people view it as important. Overall, only 35% of construction workers, 50% of site engineers or safety officers, and 70% of administrators or project managers have completed safety training. This indicates a significant need for increasing participation in training, especially among workers, to prevent dangers at work sites.

This study agrees with other research on construction safety and health. Studies by Olatoyese et al. (2022) and Ro'I et al. (2022) show that most workplace accidents, about 80–85%, are due to human error like

worker negligence, insufficient safety checks, and lack of proper training. Ezrin et al. (2022) and Muhammad et al. (2023) identify falls from heights as the main cause of deaths in construction, followed by accidents involving falling objects and slips or trips. In Bayombong, Nueva Vizcaya, similar issues of safety rule failures and poor training were found. Tayado (2021) discovered that Filipino construction workers often know safety protocols but don't follow them because they find protective gear uncomfortable, resist changes, or have established habits. This study observed the same problems. These findings emphasize the importance of stricter enforcement of safety measures, improved training programs, and initiatives to promote a safety-conscious culture in the construction industry. Further research should consider how to overcome time constraints and staff shortages that affect compliance with safety rules.

4. Conclusion

Construction site health and safety remain significantly challenged by inadequate training, poor communication and insufficient resources, especially PPE. Despite the awareness of safety protocols, consistent adherence is lacking, highlighting the need for targeted interventions. This study reveals these issues and emphasizes the critical role of effective management robust reporting and strategic resource allocation in improving safety. Future research should explore staffing shortages, the long-term efficacy of safety programs and the root causes of PPE misuse. Emerging technologies, like digital monitoring and virtual training, offer promising avenues for improvement. Ultimately, a collaborative effort between construction companies, government agencies and training institutions are essential to cultivate a robust and sustainable safety culture within the industry.

5. Contributions of Authors

The main author was responsible for every stage of the research process. This included conceptualization, designing the methodology, collecting data, analyzing the results, interpreting the findings, and writing and revising the research paper. The main author takes full responsibility for the content and conclusions of the study.

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7. Conflict of Interests

The authors declare no conflicts of interest about the publication of this paper

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