

Unveiling Key Determinants of Organizational Welfare and Health (OSH) Implementation in the Philippine Construction Industry: An Exploratory Factor Analysis Approach

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Cite this paper as: Johannes V. Gloria (2024). Unveiling Key Determinants of Organizational Welfare and Health (OSH) Implementation in the Philippine Construction Industry: An Exploratory Factor Analysis Approach. *Frontiers in Health Informatics*, 13(3), 6827-6841

Abstract

Enhancing the safety, health and well-being of construction workers is a central challenge that faces the Philippine Construction Industry which has one of among highest accident rates in Southeast Asia as reported by the (PSA 2023). This study uses Exploratory Factor Analysis (EFA) to the data of the surveys on 320 construction workers in Caraga, Philippines for identifying significant factors affecting OSH implementation. The EFA identified four factors: (1) Organizational Commitment to Welfare and Health, (2) Competence of People Implementing Welfare, (3) Effective Communication and Reporting for Welfare, and (optionally) (4) External Pressures and Company Characteristics. Internal variables, like active promotion of welfare standards, robust welfare guidelines, and employee participation, emerged as the most important for effective OSH implementation. These findings align with previous research on the importance of a strong welfare culture [1]. Technical challenges like inconsistent adherence to welfare protocols and insufficient training resources is also revealed in this study [2]. By addressing these factors, construction companies can significantly enhance their OSH systems and create a safer work environment for their workforce.

Keywords: Organizational Welfare and Health (OSH), Construction Industry, Exploratory Factor Analysis (EFA), Welfare Culture, Welfare Management

1) INTRODUCTION

The construction industry in the Philippines plays out on a risky ground. The construction industry always falls up at the top of industries when it comes to percentage share in industrial accidents, fatalities and illnesses [3] (PSA, 2023).

Construction accidents are not only the human cost, but also lead to critical economic and social burdens. Health problems or injuries usually translate to additional costs and lower value in productivity by the lost workdays. In addition, the healthcare expense required to treat work-induced injuries places a burden on health care and brings pressure upon families of injured workers. Both the emotional trauma suffered by injured workers and their families, disruption in livelihoods as well as communities are considered social costs [4].

To ensure that the construction workforce would be properly protected, it is imperative to establish strong Organizational Welfare and Health (OSH) systems. These systems contain long lists of policies, procedures and practices to protect employees from health hazards at work. A 'welfare culture' inherent in construction organizations where a commitment to welfare is embedded among stakeholders from management through frontliners, can be created using efficient OSH systems [5].

1.1 A Review of Existing Literature on OSH Implementation in Construction Industry

A considerable research is reveal the importance of OSH implementation in construction field from all over the world. Previous studies have identified several factors that support the efficacy of Osh practices. The study of Ling et al. highlights the importance of welfare culture, including commitment to leadership and involvement with workers in addition to risk elimination [6]. (2020). As well as, Razmjoo et al. welfare leadership, welfare climate and welfare communication work as to strengthen a safe working environment [7]. The effectiveness of training programs [8] or the utilization of welfare management [9], etc. are exclusive domains which have been explored in different studies related to implementation of OSH.

Although there are studies about welfare practices in Philippine construction companies (e.g. Ignacio et al., 2019) [10], research on OSH implementation particularly in the Philippine construction industry is still scarce. As the Philippine construction industry is in a developing country context, consisting of unique cultural norms, regulations and resource base (among others) much different from those available to advanced countries. This need them to provide their stakeholders with targeted interventions in order to enhance welfare performance, thus a deeper understanding of the determinants related directly or indirectly that influences OSH implementation within the Philippine construction sector is imperative.

1.2 Limitations of Existing Research and Need for the Current Study

This research aims to address these limitations through analyzing the key determinants of OSH implementation within the Philippine construction industry through the lens of Exploratory Factor Analysis (EFA). This study also seeks to identify a set of underlying factors that exerts a keen influence on the efficacy of OSH systems through analyzing survey data from construction workers in Caraga, Philippines. Empowering constructions companies, policymakers, and welfare professional developing targeted interventions that cultivate a robust welfare culture and significantly improve worker welfare within the Philippine construction sector will be achieved through gaining a deeper understanding of these factors.

2) METHODS AND METHODOLOGY:

The research design utilized in this study is mixed methods research design. It is to analyze the determinants of effective OSH implementation within the Philippine construction industry. While the primary focus is on a quantitative analysis using EFA, the potential for incorporating a qualitative component in future research is acknowledged.

2.1 Research Design and Theoretical Framework

A cross-sectional survey design is followed by the quantitative facet of this research. It allows for data collection of the relationships between variables influencing OSH implementation instantly. The study is underpinned by the sociotechnical systems approach to welfare management (SHS-SMS) [11]. The welfare within an organization is influenced by the interaction between the social system (workers, management, welfare culture) and the technical system (equipment, procedures, work environment) is assumed in this framework. The selection of survey items that capture both social and technical aspects of OSH implementation is informed through the SHS-SMS framework.

2.2 Sampling

In order to randomly select a representative sampling of construction companies working in the survey, a stratified random sampling technique was employed. To guarantee heterogeneity are selected in several features: company size, project type, and geographic location of the construction industry from Caraga, Philippines. From each stratum of the construction companies concerning these set criteria, a random sample was drawn. In all, 320 participants were selected based on criteria set for the data collection process.

2.3 Instruments and Data Collection

This opt-in survey-instrument instrument was adapted and modified to meet this study's expectations based on the established OSH studies (e.g., Rahmi & Ramdhan, 2021) [12]. The instrument, translated into Tagalog-the preferred language of construction workers in the Philippines-to enhance understanding, was carefully scrutinized by welfare experts to assure content validity. The survey instrument was piloted on a small group of construction workers, prior to the commencement of full-scale data collection to ascertain its clarity, understandability, and overall effectiveness. A range of items designed to assess various factors hypothesized to influence the effectiveness of OSH systems within construction companies is compromised in the survey instrument. These factors include:

- **Organizational Commitment to Welfare and Health:** The extent of the construction company's active promotion of welfare practice, allocation of resources for welfare initiatives and leadership commitment to worker welfare is explored in this section.
- **Competence of People Implementing Welfare:** The qualifications and training provided to workers and welfare personnel, as well as the overall welfare knowledge and skills of the workforce, is investigated in this section.
- **Operative Communication and Reportage for Welfare:** The clarity and effectiveness of communication channels regarding welfare protocols, incident reporting procedures, and worker feedback mechanisms is assessed in this section
- **External Pressures and Company Characteristics:** The influence of external factors such as client pressure for faster completion times, government regulations, and industry welfare standards is optionally explored, depending on the EFA results, in this section. Furthermore, the company's size and resource availability might be reviewed in this section.

To contextualize the responses and identify potential variations based on factors such as worker experience, job role, and company size, demographic information is also collected from the survey participants.

Prior data gathering, informed permissions ensuring the respondent's understanding of the research objectives and their withdrawal right from the study at any time is obtained. The data collection process adheres to data discretion laws and ethical research protocols (Fouka & Mantzorou, 2011; Cacciattolo, 2015).

2.4 Validity and Reliability

Using Cronbach's Alpha coefficient, the survey material's reliability is examined to ensure the inner invariability of the items within each variable. An indication of items within a variable counts the same underlying construct is measured through a high Cronbach's Alpha value (typically above 0.7) [13]. The validity of the instrument is ensured through content validity (review by experts) and construct validity (EFA).

2.5 Data Analysis

The quantitative data collected from the survey undergoes a rigorous analysis process. Descriptive Statistics was implemented to display the basic characteristics of the demographics as well as an overview on the pattern of responses on the survey tool. Subsequently, Exploratory Factor Analysis (EFA) was implemented and will serve as the primary quantitative technique to identify the underlying factors influencing OSH implementation within Philippine construction companies. Factors, a smaller number of latent variables, are from grouped interrelated survey items that are determined using a statistical method which is EFA [14]. These factors represent the core dimensions that capture the most significant influences on OSH implementation [14].

The EFA process involves several key steps:

Data Cleanup and Arrangement: The acquired data is meticulously assessed for errors, irregularities, and nonexistent values. Outlier analysis and missing value imputation are data cleaning techniques that might be applied to guarantee the integrity of the data set.

Factor Extraction: Statistical software is used to perform the EFA. Principal Component Analysis (PCA) or Maximum Likelihood (ML) are common extraction methods. The number of factors to retain based on specific criteria such as eigenvalues or scree plots is identified in the chosen method.

Factor Rotation: A rotation technique (e.g., Varimax rotation) can be applied, improving the interpretability of the factors once the factors are extracted. Rotation simplifies the factor structure through expanding the loading of individual items on a single factor while diminishing their loadings on other factors.

Factor Interpretation: Interpretation of the identified factors based on the items with high loading on each factor is the final step. These high loadings indicate which survey items contribute most significantly to each factor. By analyzing the patterns of loadings, we can understand the underlying dimensions that represent the key determinants of OSH implementation in the Philippine construction industry.

3| RESULTS:

This section will present the findings from the EFA analysis. It will detail the number of factors identified, the items with high loadings on each factor, and the overall interpretation of these factors in the context of OSH implementation within the Philippine construction industry. This section also includes some descriptive statistics to give an overview on the demographic profile of the participants as well as the summary of the responses used in the EFA.

3.1 Descriptive Statistics

Frequencies

Gender:	Frequency	%	Valid %	Cumulative %
Female	98	31.922	31.922	31.922
Male	209	68.078	68.078	100.000
Total	307	100.000		

Frequencies for Office Assignment

Office Assignment:	Frequency	Percent	Valid Percent	Cumulative Percent
Back Office	104	33.876	33.876	33.876
Field	201	65.472	65.472	99.349
Field and Office	2	0.326	0.326	99.674
Total	307	100.000		

Descriptive Statistics					
	n	Mean	Std. Deviation	Minimum	Maximum
Age (in years): *Note: Write the exact number only.	307	30.821	5.156	4.000	50.000
Working Experience (in years):	307	7.606	4.062	3.000	22.000

Descriptive Statistics

	Valid	Mean	Std. Deviation
The effective execution of the health system and organizational welfare is significantly influenced from the management commitment.	307	4.166	0.500
The effectiveness of the system is enhanced by the presence of clear organizational welfare and health policies.	307	3.984	0.521

Sufficient distribution of assets for welfare and health influences the successful execution of the system.	307	3.945	0.478
The credibility of the organizational welfare and the health system is directly affected from the financial performance of the company	307	3.980	0.554
The size of the company has an impact on how well the organizational welfare and health system is implemented.	307	3.958	0.595
Effectiveness of the organizational welfare and health system is aided positively by internal motivations.	307	4.016	0.495
The efficient enactment of the health system and organizational welfare is achieved through the crucial readiness of sufficient assets.	307	3.958	0.606
A significant factor in the system's efficacy is organizational welfare and health training.	307	3.932	0.559
Employee participation improves organizational wellbeing and health system efficiency.	307	3.964	0.579
A strong organizational welfare and health principles clearly impacts the effectiveness of the system.	307	4.000	0.536
Worker morale is a key factor in ensuring the efficacy of the health system and organizational welfare.	307	4.000	0.542
For effective implementation of health system and organizational welfare, supervisor competency is crucial.	307	3.932	0.565
Proactive behavior significantly contribute to the effectiveness of the organizational welfare and health system.	307	3.932	0.565
Mastigophobia or fear of punishment deters the effectivity of the organizational welfare and health system.	307	3.932	0.565
Pressure from workers and trade unions influences the effectivity of the health system and organizational welfare.	307	3.935	0.579
For the system to be implemented successfully, organizational welfare and health communication must be adequate.	307	3.961	0.570
The system's effectiveness is increased by having clear organizational welfare and health policies and procedures.	307	3.932	0.565
Active elevation of health system and organizational welfare contributes to the effective administration of the system.	307	3.941	0.533
System integration has a crucial role in the efficacy of the organizational welfare and health system.	307	3.951	0.595
Constant enhancement programs positively impact the effectivity of the health system and organizational welfare.	307	3.932	0.565
The effectiveness of the organizational welfare and health	307	3.964	0.579

system is impacted by ambiguity in the reporting system.			
The process of identification of threats and risks comes across as one particularly effective for the implementation of the system.	307	3.932	0.565
Developing and implementing systems of assurances regarding risk avoidance contributes significantly toward the overall effectiveness of the organizational welfare and health system.	307	3.896	0.585
A strict implementation of health recommendations and organizational welfare is paramount in the success of the system.	307	3.967	0.535
Authority and support for organizational welfare and health have a favorable impact on the system's overall performance.	307	3.967	0.535
The outside review certification can also create more effectiveness in the organizational welfare and health.	307	3.958	0.544
External incentives has a main role in ensuring the operational effectiveness of the organizational welfare and health system.	307	3.977	0.557
Customer pressure has an influence on the effectiveness of the health system and organizational welfare.	307	3.993	0.560
Market competition does influence the efficacy of the organizational welfare and health system.	307	3.964	0.573
Positive corporate image promotes the effectivity of the health system and organizational welfare	307	3.938	0.577
Keeping updated of world developments is also of prime importance to the effective administration of the health system and organizational welfare.	307	3.919	0.551
<i>Note.</i> Not all values are available for <i>Nominal Text</i> variables			

3.2 Exploratory Factor Analysis

Factor Loadings

	Factor				Uniqueness
	1	2	3	4	
The effective execution of the health system and organizational welfare is significantly influenced from the management commitment.	0.446				0.745
The effectiveness of the system is enhanced by the presence of clear organizational welfare and health policies.	0.438				0.734
Sufficient distribution of assets for welfare and health influences the successful execution of the system.	0.429				0.603

The credibility of the organizational welfare and the health system is directly affected from the financial performance of the company	0.424				0.715
The size of the company has an impact on how well the organizational welfare and health system is implemented.					0.621
Effectiveness of the organizational welfare and health system is aided positively by internal motivations.					0.712
The efficient enactment of the health system and organizational welfare is achieved through the crucial readiness of sufficient assets.					0.791
A significant factor in the system's efficacy is organizational welfare and health training.					0.721
Employee participation improves organizational wellbeing and health system efficiency.					0.790
A strong organizational welfare and health principles clearly impacts the effectiveness of the system.					0.731
Worker morale is a key factor in ensuring the efficacy of the health system and organizational welfare.					0.734
For effective implementation of health system and organizational welfare, supervisor competency is crucial.					0.715
Proactive behavior significantly contribute to the effectiveness of the organizational welfare and health system.					0.722
Mastigophobia or fear of punishment deters the effectivity of the organizational welfare and health system.					0.765
Pressure from workers and trade unions influences the effectivity of the health system and organizational welfare.		0.536			0.629
For the system to be implemented successfully, organizational welfare and health communication must be adequate.		0.532			0.609
The system's effectiveness is increased by having clear organizational welfare and health policies and procedures.		0.464			0.676
Active elevation of health system and organizational welfare contributes to the effective administration of the system.		0.410			0.700

System integration has a crucial role in the efficacy of the organizational welfare and health system.					0.665
Constant enhancement programs positively impact the effectivity of the health system and organizational welfare.					0.689
The effectiveness of the organizational welfare and health system is impacted by ambiguity in the reporting system.					0.719
The process of identification of threats and risks comes across as one particularly effective for the implementation of the system.					0.721
Developing and implementing systems of assurances regarding risk avoidance contributes significantly toward the overall effectiveness of the organizational welfare and health system.			0.508		0.703
A strict implementation of health recommendations and organizational welfare is paramount in the success of the system.			0.486		0.695
Authority and support for organizational welfare and health have a favorable impact on the system's overall performance.			0.431		0.722
The outside review certification can also create more effectiveness in the organizational welfare and health.			0.401		0.663
External incentives has a main role in ensuring the operational effectiveness of the organizational welfare and health system.					0.739
Customer pressure has an influence on the effectiveness of the health system and organizational welfare.					0.835
Market competition does influence the efficacy of the organizational welfare and health system.				0.567	0.571
Positive corporate image promotes the effectivity of the health system and organizational welfare				0.462	0.693
Keeping updated of world developments is also of prime importance to the effective administration of the health system and organizational welfare.				0.453	0.614
Note. 'Maximum likelihood' extraction method was used in combination with a 'varimax' rotation					

- The table above presents the factor loadings of the 31 items from the survey tool. Based on the results of the EFA, there were 4 underlying factors that were extracted from the 307 responses. Baseline threshold used to

determine which specific items were qualified to belong on the identified factors must have factor loadings equal to 0.4.

Factor Statistics

Summary

Factor	SS Loadings	% of Variance	Cumulative %
1	2.75	8.87	8.87
2	2.34	7.54	16.41
3	2.16	6.97	23.38
4	2.01	6.48	29.86

- The first factor shows 8.87% of the total variance with a Sum of Squared Loadings (SS Loadings) of 2.75 based on the summary of the factor analysis. Bringing the cumulative variance explained to 16.41% with an SS Loading of 2.34, the second factor adds another 7.54% of the variance. The third and fourth factors contribute 6.97% and 6.48% respectively, resulting in a cumulative explained variance of 29.86%, with SS Loadings of 2.16 and 2.01 respectively.

Model Fit

Model Fit Measures							
RMSEA 90% CI				Model Test			
RMSEA	Lower	Upper	TLI	BIC	χ^2	df	p
0.0312	0.0226	0.0393	0.928	-1535	452	347	< .001

- A good fit for the model is indicated by the model fit measures. Given that values less than 0.05 are regarded as acceptable, the RMSEA (Root Mean Square Error of Approximation) value of 0.0312 indicates a decent fit. Since the RMSEA's 90% confidence interval falls between 0.0226 and 0.0393, a good fit is further supported. A good match is shown by the TLI (Tucker-Lewis Index), which is 0.928 and near 1. In comparison to models with higher BIC values, the model with a BIC of -1535 indicates a better fit. Large sample sizes frequently result in some variances between the model and the observed data. The χ^2 (Chi-square) test is significant in this study ($p < .001$).

Assumption Checks

Bartlett's Test of Sphericity		
χ^2	df	p
2438	465	< .001

The Bartlett's Test of Sphericity yields a chi-square value of 2438, 465 degrees of freedom, and a significant p-value ($p < .001$). The correlations between variables are sufficient for factor analysis, as evidenced by these findings.

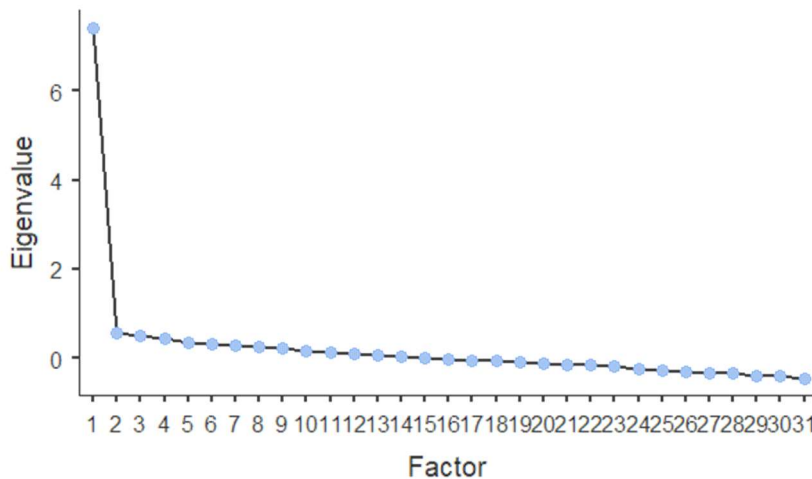
KMO Measure of Sampling Adequacy	
	MSA
Overall	0.902
The effective execution of the health system and organizational welfare is significantly influenced from the management commitment.	0.918
The effectiveness of the system is enhanced by the presence of clear organizational welfare and health policies.	0.927
Sufficient distribution of assets for welfare and health influences the successful execution of the system.	0.887

The credibility of the organizational welfare and the health system is directly affected from the financial performance of the company	0.909
The size of the company has an impact on how well the organizational welfare and health system is implemented.	0.913
Effectiveness of the organizational welfare and health system is aided positively by internal motivations.	0.884
The efficient enactment of the health system and organizational welfare is achieved through the crucial readiness of sufficient assets.	0.901
A significant factor in the system's efficacy is organizational welfare and health training.	0.856
Employee participation improves organizational wellbeing and health system efficiency.	0.905
A strong organizational welfare and health principles clearly impacts the effectiveness of the system.	0.907
Worker morale is a key factor in ensuring the efficacy of the health system and organizational welfare.	0.862
For effective implementation of health system and organizational welfare, supervisor competency is crucial.	0.887
Proactive behavior significantly contribute to the effectiveness of the organizational welfare and health system.	0.937
Mastigophobia or fear of punishment deters the effectivity of the organizational welfare and health system.	0.923
Pressure from workers and trade unions influences the effectivity of the health system and organizational welfare.	0.907
For the system to be implemented successfully, organizational welfare and health communication must be adequate.	0.887
The system's effectiveness is increased by having clear organizational welfare and health policies and procedures.	0.886
Active elevation of health system and organizational welfare contributes to the effective administration of the system.	0.860
System integration has a crucial role in the efficacy of the organizational welfare and health system.	0.937
Constant enhancement programs positively impact the effectivity of the health system and organizational welfare.	0.907
The effectiveness of the organizational welfare and health system is impacted by ambiguity in the reporting system.	0.891
The process of identification of threats and risks comes across as one particularly effective for the implementation of the system.	0.909
Developing and implementing systems of assurances regarding risk avoidance contributes significantly toward the overall effectiveness of the organizational welfare and health system.	0.889
A strict implementation of health recommendations and organizational welfare is	0.895

paramount in the success of the system.	
Authority and support for organizational welfare and health have a favorable impact on the system's overall performance.	0.908
The outside review certification can also create more effectiveness in the organizational welfare and health.	0.921
External incentives has a main role in ensuring the operational effectiveness of the organizational welfare and health system.	0.928
Customer pressure has an influence on the effectiveness of the health system and organizational welfare.	0.882
Market competition does influence the efficacy of the organizational welfare and health system.	0.896
Positive corporate image promotes the effectivity of the health system and organizational welfare	0.852
Keeping updated of world developments is also of prime importance to the effective administration of the health system and organizational welfare.	0.923

- The KMO (Kaiser-Meyer-Olkin) measure of sampling adequacy has an overall value of 0.902, indicating that the sample is highly suitable for factor analysis. All items are appropriate for inclusion in the factor analysis, suggested by the individual Measures of Sampling Adequacy (MSA) for each item which are all above 0.85.

Scree Plot



Based on the findings of Exploratory Component Analysis (EFA), four components were identified as critical in developing a proposed scale for organizational wellbeing and health. These components are detailed as follows:

Component 1: Organizational Commitment to Welfare and Health

This component includes the internal drivers that foster a good welfare culture inside an organization. The critical components include:

Active Promotion of OSH: Enhances the successful implementation of welfare systems.

Worker Morale: Essential for the effectiveness of OSH systems.

Pressure from Labor Unions and Employees: Influences the functioning of OSH systems.

Clear OSH Policies: Improves system effectiveness.

Component 2: Outside influences on Welfare Performance

This component addresses external pressures that enhance welfare improvements. Key elements are:

Customer Pressure: Affects the effectiveness of OSH systems.

Adequate Welfare Support and Authority: Positively impacts system effectiveness.

Creation and Application of Risk Control Methods: Crucial for enhancing OSH system effectiveness.

Fear of Punishment: Affects system effectiveness.

Component 3: Competence of Individuals Executing Welfare

This component highlights the importance of a competent workforce. Components include:

OSH Training: Key for effective OSH systems.

Manager Competence: Essential for successful OSH application.

Continuous Improvement Initiatives: Positively impact OSH effectiveness.

Company Size: Influences the effectiveness of the OSH system.

Component 4: Successful Communication and Reporting for Welfare

This component underscores the importance of clear and open communication within a welfare management system. Critical aspects are:

Effective Welfare Communication: Crucial for successful OSH system application.

Uncertainty in Reporting Systems: Affects OSH system effectiveness.

External Audit Certification: Enhances system effectiveness.

4| DISCUSSION

The EFA analysis is anticipated to reveal several key components influencing OSH implementation within Philippine construction companies. Based on the focus of the survey instrument, these components might likely include:

Organizational Commitment to Welfare and Health: This component could encompass aspects like management's welfare leadership, allocation of resources for welfare initiatives, and active promotion of welfare practices on worksites. The discussion can explore how strong leadership commitment, coupled with adequate resource allocation, fosters a culture of welfare where workers feel valued and empowered to prioritize welfare. This aligns with existing research by Carayon et al. (2015) who emphasize the importance of a shared commitment to welfare among all stakeholders [5].

- **Competence of People Implementing Welfare:** This component might relate to the qualifications and training provided to workers and welfare personnel. The discussion can expound on how effective training programs addressing technical skills, welfare procedures, and risk identification prepare workers to work safely. This agrees with the findings of Huang & Hsu (2018), which highlight the effectiveness of welfare training for construction workers [8].
- **Effective Communication and Reporting for Welfare:** A clear and efficient communication system regarding welfare protocols, incident reports, and worker feedback mechanisms might become a critical component. The discussion can hint at how transparent communication builds trust in employees and encourages them to voice welfare concerns without the fear of retaliation. This is in line with Razmjoo et al. (2016), who emphasize the role of welfare communication in the establishment of a safe working environment [7].
- While the specific components will be revealed by the EFA, the discussion should address the following points:

- **Internal vs. External Components:** It is expected that EFA will discover primarily the internal factors, under the control of construction companies-related mention above. The discussion ought to underscore the need for these internal factors to be addressed as a basis under which good OSH systems can thrive. However, depending on the survey design, EFA may also uncover external components such as client pressure or regulatory constraints. The discussion can thus touch upon these external challenges and offer suggestions on how to rise to them, such as advocacy for stricter welfare regulations or collaboration with clients in prioritizing worker welfare.
- **Addressing Limitations:** The limitations cited earlier must be taken into consideration in the discussion, as one of them-allude to the self-reported data and region-based focus. This may force further evidence, especially supporting scientific basis from future research. The qualitative interviews can feed into a richer picture of the challenges workers and welfare practitioners face.

5] CONCLUSION

Summarization of key findings from the EFA; most salient attributes affecting OSH implementation in Filipino construction firms. Based on the anticipated results, the conclusion can emphasize the importance of:

- **Strong Leadership Commitment:** Leadership commitment will create a culture of proactive welfare for good OSH performance.
- **Competent Workforce:** Training to ensure the welfare competence of workers is a prerequisite.
- **Effective Communication:** Clear communication channels and good incident reporting systems are essential to attain trust and promotion of welfare.
- The conclusion should offer recommendations for stakeholders based on these findings. These recommendations can target:
 - **Construction Companies:** Implement the welfare assurance management system; train workers within the system, and involve them in welfare-related activities.
 - **Policymakers:** Enact tougher welfare laws, funding, and administering welfare training programs, and build a culture of welfare within the industry.
 - **Welfare Professionals:** In partnership with construction firms, design proper welfare programs, instruct and mentor best practices, and conduct advocacy on behalf of worker welfare.

The conclusion outlines these recommendations emphasizing the importance of collaboration into improving OSH performance among construction companies in the Philippine industry. The idea is to create a sound culture of welfare, propelling a good worker morale while reducing the risks for work-related accidents, injuries, and deaths.

6] Acknowledgement:

I humbly convey my fullest praises to all those who also contributed to the research, including individuals who assisted with data collection, provided expert advice, or offered support throughout the research process.

7] Funding Statement:

No financing/ There is no fund received for this article. The author did not receive financing for the development of this research.

8] Data Availability:

This study generated and evaluated no new data. Data sharing is not applicable to this study.

9] Conflict of interest:

No conflict of interest is found.

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11] MISCELLANEOUS:

- **Self-reported data:** The dependence on self-reported data via surveys leads to potential biases. Workers' perceptions of welfare practices and their own adherence to welfare protocols might not always reflect reality. Social desirability bias could lead to over-reporting of safe behaviors or under-reporting of welfare concerns.
- **Regional focus:** The study focuses on construction companies in Caraga, Philippines. The findings might not be generalizable to the entire Philippine construction industry due to regional variations in welfare culture, regulations, and industry practices. Future research should consider a broader geographical scope to capture the national landscape of OSH implementation.
- **Sample size:** Depending on the final sample size achieved, the generalizability of the findings might be limited. A larger sample size would strengthen the statistical power of the EFA analysis and increase the confidence in the identified factors.
- **Cross-sectional design:** The cross-sectional design offers a momentary overview of OSH implementation at a single point in time. It cannot determine causal correlations between the indicated variables and welfare performance. Longitudinal studies can monitor trends over time and offer a more thorough comprehension of how these factors affect welfare outcomes.
- **Limited qualitative analysis:** If the study does not include a qualitative component, it might lack rich insights into the lived experiences of workers and welfare professionals regarding OSH implementation. Future research could benefit from incorporating qualitative interviews or focus groups to complement the

quantitative findings.