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Modeling the Mediating Effects of Occupational Safety and Health Management between Organization Culture and Business Performance among Employees of Construction Companies

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Abstract

Aim: This study aimed to explore the relationships between Occupational Safety and Health Management (OSHM), Organizational Culture (OC), and Business Performance (BP) among employees of private construction companies.

Methodology: A descriptive method of research was utilized in this study. Respondents were the 400 employees of a 3-construction company. Most of the respondents were in Capital District, aged 41 to 50 years of age, married, male, regular, operations department, 1 to 3 years, as worker, Below Php 5,000 with 8 hours Mandatory OSH Training and High school Graduate.

Results: Results revealed that on the assessment in OSHM, respondents strongly agreed with Hazard Prevention and Control, Planning and Evaluation, Administration and Supervision, Safety and Health Training, Management Leadership and Employee Participation, while they agreed on Hazard Anticipation and Detection. Thus, the assessment in OC, respondents strongly agreed with Management, Supervision, Processes, Safety System, Job Factors, Team Factors, and Individual Factors and on the assessment in BP, respondents agreed with Technical Services, Process, Improvement Culture, Supplier Relations Performance, Employee Relations Performance, and Customer Relations Performance.

Conclusion: The relationship between all the constructs or latent variables is significant. The direct effect of organizational culture on occupational safety and health management resulted in a strong positive relationship. While on the other hand, organizational culture on business performance ensued a strong positive relationship. Similarly, occupational safety and health management on business performance resulted in a direct and positive relationship. Thus, the result of the PLS model revealed that occupational safety and health management positively mediates the relationship of organizational culture and business performance in a medium or moderate effect. Hence, increasing the total effects of the relationship of the two latent variables.

Keywords: Occupational Safety and Health Management, Organizational Culture, Business Performance, Construction Company

INTRODUCTION

The construction industry is renowned for its inherent risks and hazards. As a sector vital to the realization of Sustainable Development Goals 9 and 12, which respectively emphasize Industry, Innovation, and Infrastructure, and Responsible Consumption and Production, it is imperative that the industry takes substantial measures to address safety concerns from the outset of any construction project. Neglecting the implementation of robust health and safety protocols in construction can lead to an escalation of risks, resulting in accidents that may have far-reaching consequences (Cornerstone, 2019).

Occupational safety and health management, often abbreviated as OSH, represents a comprehensive approach to identifying, assessing, and mitigating potential hazards in the workplace that could jeopardize the physical and mental well-being of employees. This approach extends beyond the workplace to consider the potential



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impact on neighboring communities and the environment at large (Purohit, 2018). In essence, OSH management is a complex and multifaceted field, necessitating a diverse array of skills, knowledge, and analytical capabilities to ensure the effective coordination and implementation of measures that protect both workers and the environment (Costa et al., 2021).

Within the construction industry, OSH management takes on paramount significance. Construction sites are dynamic environments characterized by a wide range of hazards, including heavy machinery, heights, and exposure to various materials. Therefore, effective OSH management is not merely a regulatory requirement but also a moral and practical imperative.

Organizational culture plays a pivotal role in influencing how individuals within an organization perceive, think, and behave regarding safety (Sanchez, 2022; Amihan & Sanchez, 2023; Carvajal, Sanchez & Amihan, 2023; Momanyi & Del Mundo, 2022). It is a collection of shared assumptions and beliefs that guide customary modes of cognition and behavior, affecting all members of the organization (Eela, 2022). To enact significant and lasting change in an organization's safety practices, it becomes necessary to address and modify the prevailing culture, altering the collective mindset regarding risk, accidents, injuries, and occupational health (Ivana ŠandrakNukić & Josipa Matotek, 2014).

In the context of construction, fostering a culture of safety is of paramount importance. A culture that prioritizes safety not only reduces the likelihood of accidents but also enhances the overall well-being and productivity of employees. Conversely, a lax or indifferent safety culture can lead to a higher incidence of accidents, injuries, and a less efficient workforce.

For both profit-driven and non-profit organizations, achieving organizational objectives, including compliance with occupational safety and health regulations, is a critical component of overall performance (Terrell, 2021). In today's competitive landscape, organizations are continually seeking strategies to strengthen their influence on various stakeholders, including employees, suppliers, and customers (Cappelli & Tavis, 2016).

In the construction industry, the consequences of neglecting health and safety concerns can be dire. Failure to implement appropriate safeguards and ensure that the workforce is well-versed in safety practices can lead to a multitude of issues. Initially, it may result in a significant reduction in labor hours and efficiency, directly impacting the financial performance of the construction company (Cornerstone, 2019). Non-compliance with health and safety regulations increases the probability of accidents and illnesses, leading to decreased on-site work duration, diminished productivity, and reduced profitability (Baunsgaard, 2022).

In the construction sector, where the potential for loss of life or human casualties is the worst-case scenario, a thorough examination of critical factors is essential. This study, focused on occupational safety and health compliance, organizational culture, and business performance, serves as a valuable reference for best practices. It offers insights and recommendations that are expected to contribute significantly to the achievement of Sustainable Development Goal 9, which centers on Industry, Innovation, and Infrastructure.

The construction industry faces unique challenges due to its inherent risks, making effective occupational safety and health management, and the cultivation of a safety-oriented organizational culture vital for both employee well-being and business performance. This study explored the interplay between these factors, offering valuable insights for the construction industry and contributing to the broader sustainability agenda.

Literature Review

Occupational Safety and Health (OSH) management is a comprehensive framework that encompasses various interconnected elements to establish and achieve OSH policies and objectives. The primary goal of OSH management is to ensure the safety and health of workers in the workplace, as well as the protection of the public who may be exposed to potential hazards. This approach is essential for creating a safe and healthy work environment (OSHA, 2022).

The roots of OSH management can be traced back to the late 19th century, marked by the industrial revolution, which brought significant changes to workplaces. The need for improved safety protocols became apparent during this era (Hill, 2021). In 1884, President Chester Arthur signed a bill that led to the creation of the Bureau of Labor Statistics, the first government entity dedicated to ensuring worker safety (Library of Congress, 2021). In the 1930s, the United States established the Occupational Safety and Health Administration (OSHA) to enforce workplace safety regulations, safeguarding employees' well-being (Rosner & Markowitz, 2020). The Occupational Safety and Health Act (OSH Act) of 1970 solidified OSHA's role in enhancing workplace safety by addressing hazards such as unhygienic workspaces and thermal discomfort (EHS Insight Resources, 2019).



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OSHA's establishment in 1971 marked a significant milestone in occupational safety and health management, with the agency rapidly implementing safety protocols and industrial guidelines. These standards laid the foundation for contemporary regulations, setting minimum health and safety requirements for businesses while outlining employers' obligations and incident reporting protocols. In 1972, OSHA established the OSHA Training Institute, providing training and education to various stakeholders, further enhancing OSH management (OSHA, 2022).

Initially, OSHA prioritized enforcement efforts using a "worst case first" approach due to limited resources, focusing on severe occupational accidents and high-risk sectors. Over the years, OSHA expanded its scope, growing its workforce to safeguard 130 million employees across diverse sectors and regions in the United States (OSHA, 2022). The agency also broadened its responsibilities to address a wider range of occupational hazards, including imperceptible toxins, with the implementation of the Fourteen Carcinogens standard in 1974. In 1980, President Lyndon B. Johnson mandated worker safety, extending OSHA's jurisdiction to all federal employees. Subsequent developments, such as the Voluntary Protection Programs in 1982 and the hazard communication standard, further expanded OSHA's responsibilities in managing occupational safety and health (EHS Insight Resources, 2019).

The dynamic nature of the contemporary workforce has led to the adoption of comprehensive systems-based approaches to OSH management. Occupational safety and health management systems have a long history of enhancing workplace safety and health. Organizations are encouraged to adopt these systems and customize them according to their unique requirements (ILO, 2022).

The International Labour Organization (ILO) introduced the "Guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001)" in 2001, emphasizing a tripartite approach. These guidelines have gained global recognition and are used to develop national OSH management standards. Employers and organizations are encouraged to integrate OSH management into their business planning and development processes, ensuring worker participation in preventive measures (ILO, 2022).

At the organizational level, a comprehensive Occupational Safety and Health (OSH) management system must encompass policy formulation, organizational structure, planning and execution, evaluation, and continual improvement. These elements are vital for creating a safe and conducive work environment (ILO, 2022).

Risk assessment and management are crucial aspects of OSH management. Employers must conduct thorough risk assessments to identify and mitigate potential hazards in the workplace. Active worker participation in risk control measures enhances the effectiveness of safety protocols. Employers are encouraged to tailor their risk assessment and management processes to meet their organization's specific requirements (ILO, 2022).

Staying up to date with the latest OSH standards and regulations is essential to ensure compliance and maintain a safe work environment (EHS Insight Resources, 2019). Legal compliance is paramount for construction companies, as failure to establish and sustain proper health and safety measures can result in legal repercussions, including suspensions and legal actions (Chong Hooi and Abu Bakar, 2015). Non-compliance can also lead to a damaged reputation and negatively impact business operations (Vision Edge Marketing, 2019).

Training plays a pivotal role in ensuring that construction companies effectively implement health and safety protocols. Employees must receive adequate training to recognize potential hazards and take appropriate preventive measures, contributing to a safer and healthier work environment (Kothari, 2015). Implementing these protocols may require a significant time investment but is indispensable for protecting personnel, the community, and the organization's image and longevity (Verma, 2022).

Occupational safety and health management is a comprehensive framework that ensures the safety and well-being of workers and the public. It has evolved over time, with organizations and governments adopting OSH management systems to enhance workplace safety. Risk assessment, legal compliance, and training are essential components of effective OSH management, especially in industries like construction where hazards are prevalent. Adhering to OSH standards and regulations is crucial to protect employees and maintain a positive organizational reputation.

In the context of private construction, there is a pressing need to understand the relationship between Occupational Safety and Health (OSH) management, organizational culture, and business performance. The construction industry is inherently hazardous, and failure to implement effective OSH management practices and foster a safety-oriented organizational culture can lead to accidents, reduced productivity, and adverse impacts on business performance.



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Research Questions

This study aimed to explore the relationships between Occupational Safety and Health Management (OSHM), Organizational Culture (OC), and Business Performance (BP) among employees of private construction companies.

Specifically, it sought answers to the following questions:

1. How does the implementation of Occupational Safety and Health (OSH) management practices impact the safety and well-being of employees in the private construction sector?
2. What are the key components of organizational culture within private construction companies, and how do they influence safety-related behaviors and practices among employees?
3. To what extent does a safety-oriented organizational culture mediate the relationship between OSH management and business performance in the private construction industry?
4. What are the critical factors that influence the business performance of private construction companies, and how does compliance with OSH regulations contribute to overall performance?
5. What strategies can private construction companies employ to enhance the influence of their organizational culture on both OSH management and business performance?

Hypothesis

Hypothesis 1: Organizational culture and business performance have a significant effect on the performance of the employees.

Hypothesis 2: There is a positive relationship between organizational culture and OSH management.

Hypothesis 3: Organizational culture is positively correlated to business performance, which positively affects OSH management.

METHODOLOGY

Research Design

The descriptive method of research was used for this study. The purpose of descriptive research is to obtain a precise profile of the people, events, or situations. Two types of data were gathered for this research. These included primary and secondary data. The primary data were derived from the answers the respondents provided during the survey and interview process.

Moreover, this study utilized a quantitative approach of research with the use of the survey questionnaire, structured interview, and published documents. Quantitative data collection methods focused on the degree of relationships between variables. It indicated very specific research problems and terms.

Population and Sampling Technique

The population of this study consisted of employees from three different private construction companies. These employees were selected regardless of their rank or position within the companies, encompassing a wide range of roles, including construction workers, skilled workers, project staff, project engineers, project leaders, project supervisors, project managers, and safety officers. The study aimed to provide a comprehensive understanding of the workforce within the private construction sector, considering the diversity of roles and responsibilities.

The researchers utilized a survey approach to collect data from the selected population of construction employees. Notably, the study achieved a 100 percent response rate, indicating that all intended participants in the population were surveyed.

The following indicators are the population's characteristics:

Location. The study covered a diverse geographic distribution of participants. The frequency and percentage of respondents in terms of location are shown below. A total of 400 construction employees were surveyed. The respondents were distributed as follows:

- Capital District: 136 respondents, accounting for 34 percent.
- Greater Metro Manila: 107 respondents, constituting 27 percent.
- Southern Manila: 103 respondents, making up 26 percent.
- Eastern Manila: 28 respondents, representing 7 percent.
- Northern Manila: 26 respondents, comprising 6 percent.



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Age. The majority of employees, accounting for 72 percent, fell within the age group of 41 to 50 years old. The next largest group consisted of employees aged 31 to 40 years old, representing 24 percent. Only 3 percent of respondents were aged 18 to 30 years old, and a mere 1 percent were 51 years old and above.

Marital Status. The majority of construction employees were married, constituting 76 percent of the total respondents. Never married (single) individuals accounted for 23 percent, while separated, divorced, and widowed individuals each comprised a minimal percentage of 1 percent or less.

Sex. Among the respondents, 76 percent were male, 18 percent were female, and 6 percent identified as LGBTQ+ individuals.

Job Status. 62 percent of respondents held regular employment, while 30 percent were on a contract basis, and 8 percent were in probationary positions.

Nature of Work. The largest group of employees, comprising 73 percent, were engaged in operations. Another 20 percent were involved in environment/health/safety/services, and 7 percent worked in human resources/administrative roles. A smaller proportion, 3 percent, was associated with supply chain/logistics.

Length of Service. The highest percentage, 69 percent, had a length of service ranging from 1 to 3 years. Other categories included 10 percent for 6 months to 1 year, 8 percent for 5 to 10 years, 6 percent for both 1st day to 6 months and 3 to 5 years, and 1 percent for 10 years and above.

Position. Workers represented the largest group, with 63 percent of respondents. Rank and file employees constituted 13 percent, while leaders, supervisors, managerial staff, and superintendents each accounted for a smaller percentage of 6 percent or less.

Salary. The majority, 77 percent, reported earning below Php 5,000 monthly. Other income categories included 14 percent for Php 5,001 to Php 10,000, 5 percent for Php 10,001 to Php 20,000, and 1 percent for each of the following categories. Php 20,001 to Php 30,000, Php 30,001 to Php 40,000, Php 40,001 to Php 50,000, and Php 50,001 and above.

OSH Awareness Level. The majority, 86 percent, had undergone 8 hours of mandatory OSH training. Other training categories included Safety Officer 3 Training (Advance Training) at 10 percent and 5 percent for both Safety Officer 1 Training and Safety Officer 2 Training (BOSH or COSH). A smaller percentage of 1 percent each reported OSH Practitioner and OSH Consultant training.

Educational Attainment. The majority, 75 percent, had completed high school. College undergraduates represented 11 percent, while 9 percent had obtained a postgraduate (master's) degree. Both college graduates and respondents with postgraduate degrees constituted 5 percent each.

The diverse characteristics of the surveyed population, encompassing different roles, backgrounds, and demographics, contribute to the comprehensiveness and richness of the study's findings. This extensive data collection approach aimed to provide a holistic understanding of the relationships between OSH management, organizational culture, and business performance in the private construction sector.

Instruments

Occupational Safety and Health (OSH) management is an integral aspect of ensuring a safe and conducive work environment, particularly in industries with inherent risks such as the construction sector. This study delves into the intricate dynamics of OSH management, organizational culture, and their interplay in influencing business performance within the context of private construction companies. To comprehend the intricacies of this relationship, it is imperative to elucidate the data gathering instruments, data gathering procedures, and data analysis employed in this research.

The researchers adopted a multifaceted approach to collect data from the selected population of employees within private construction companies. Four primary data gathering instruments were utilized to holistically examine the various aspects related to OSH management, organizational culture, and business performance:

- **Part 1: Respondent Profile Questionnaire:** This section of the questionnaire collected essential demographic information about the respondents. It encompassed details such as location, age, marital status, gender, job status, nature of work, length of service, position, salary, OSH awareness level, and educational attainment. The frequency and percentage distribution method were employed to understand the profile of the respondents.
- **Part 2: Occupational Safety and Health Management Questionnaire:** This section comprised standardized questionnaires that directly assessed OSH management practices. The questionnaire was adapted and modified from a study conducted by Arante and Bryant in 2013.



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- Part 3: Organizational Culture Questionnaire: To gauge organizational culture, the researcher employed standardized questionnaires, which were adapted and modified from a study conducted by Misnan et al. in 2016.
- Part 4: Business Performance Questionnaire: The assessment of business performance was conducted using standardized questionnaires. These questionnaires were adapted and modified, drawing inspiration from a study by Mansor and Rajnish in 2014.

It is worth noting that before proceeding with data collection, a pilot test was conducted to assess the reliability of the questionnaires. A trained statistician assisted in this process to ensure the suitability of the instruments for data collection.

Data Gathering Procedures

The data gathering procedures employed in this study involved a systematic approach to collecting information from employees within private construction companies. The researcher initiated the process by seeking permission from the top management of the construction companies. Permission was sought from the President, Director, Project Manager, and the HR Manager, as their cooperation and authorization were vital for conducting the research within the organizations.

Local employees were engaged to assist in the distribution of questionnaires to the selected respondents. These questionnaires aimed to collect data regarding respondent profiles, OSH management practices, organizational culture, and business performance. The researcher enlisted the help of local employees who were proficient in the local dialect or accent to explain the questionnaire and provide assistance to respondents, ensuring a clear understanding of the questions.

To facilitate data collection, the researcher allocated sufficient time for employees and contractors to complete the questionnaires during their break times. This approach aimed to minimize disruptions to their work routines while maximizing response rates. Data retrieval occurred two weeks after the distribution of questionnaires. This allowed respondents adequate time to complete the questionnaires thoroughly. These meticulous data gathering procedures were designed to ensure the comprehensive collection of information from the diverse population of construction employees.

Data Analysis

Following data collection, the researchers embarked on a comprehensive data analysis process. To understand the profile of the respondents, data from Part 1 of the questionnaire (respondent profile) were tabulated, encoded, and analyzed using frequency and percentage distribution. This process provided a clear overview of the demographic characteristics of the respondents.

To assess OSH management practices, organizational culture, and business performance, weighted mean and ranking were employed. This methodology enabled the evaluation of various aspects within these constructs, including hazard anticipation and detection, hazard prevention and control, planning and evaluation, administration and supervision, safety and health training, management leadership, employee participation, and other relevant factors.

Structural equation modeling was used to estimate the relationships between OSH management, organizational culture, and business performance. In particular, the PLS-SEM method was applied to handle the structural model estimation. This approach is known for its flexibility and suitability for datasets with varying measurement levels and sample sizes.

The Likert scale was employed in the questionnaires, utilizing a four-point scale ranging from "Strongly Agree" (4) to "Strongly Disagree" (1). This scale allowed respondents to express their agreement or disagreement with statements, facilitating a nuanced understanding of their perspectives.

Ethical Consideration

The researchers ensured that all research protocols involving ethics in research were complied with for the protection of all people and institutions involved in the conduct of the study.



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RESULTS and DISCUSSION

Table 1. Summary Table of Occupational Safety and Health Management

| Questions | WM | VI | Rank |
|-------------------------------------|-------------|-----------------------|------|
| 1 Hazard Anticipation and Detection | 2.75 | Agree | 7 |
| 2 Hazard Prevention and Control | 4.00 | Strongly Agree | 4 |
| 3 Planning and Evaluation | 4.00 | Strongly Agree | 4 |
| 4 Administration and Supervision | 4.00 | Strongly Agree | 4 |
| 5 Safety and Health Training | 4.00 | Strongly Agree | 4 |
| 6 Management Leadership | 4.00 | Strongly Agree | 4 |
| 7 Employee Participation | 4.00 | Strongly Agree | 4 |
| Composite Mean | 3.82 | Strongly Agree | |

Legend: 3.50 – 4.00 –Strongly Agree; 2.50 – 3.49 – Agree; 1.50 – 2.49 –Disagree; 1.00 – 1.49 – Strongly Disagree

Table 1 provides a summarized view of the respondents' perceptions regarding various facets of occupational safety and health management. It encompasses questions related to hazard anticipation and detection, hazard prevention and control, planning and evaluation, administration and supervision, safety and health training, management leadership, and employee participation. The table presents the weighted mean (WM) for each question, the verbal interpretation (VI) of the mean score, and the rank assigned based on the level of agreement among respondents.

The interpretation of the table indicates several key insights. In the category of hazard anticipation and detection, the respondents exhibited an average level of agreement (WM: 2.75, VI: Agree, Rank: 7), suggesting that while they recognize the importance of identifying potential hazards, there is room for improvement in this aspect. This aligns with the findings of previous research conducted by Hamalainen, Takala, and Saarela (2017), which emphasize the need for efficient hazard anticipation and detection strategies to proactively mitigate workplace risks.

Conversely, in categories like hazard prevention and control, planning and evaluation, administration and supervision, safety and health training, management leadership, and employee participation, the respondents displayed strong agreement with the respective measures (WM: 4.00, VI: Strongly Agree, Rank: 4 for all). This robust consensus highlights the organizations' commitment to these aspects of occupational safety and health management. The strength of this agreement indicates that respondents have a high level of confidence in the effectiveness of hazard control measures, the significance of planning and evaluating safety systems, the importance of administration and supervision, the value of comprehensive safety training, the impact of management leadership in fostering safety culture, and the crucial role of employee participation in safety initiatives.

Furthermore, the composite mean score of 3.82 reflects an overall strong agreement among respondents with the summary of occupational safety and health management practices. This suggests a positive safety culture within the organizations surveyed. These findings are consistent with the principles outlined by occupational safety and health authorities such as OSHA and ISO, which emphasize the importance of comprehensive safety measures, leadership commitment, and employee involvement in maintaining workplace safety.

Overall, the results from Table 1 indicate a commendable commitment to occupational safety and health management practices within the private construction companies surveyed. While areas like hazard anticipation and detection could benefit from further attention, the overall strong agreement underscores the organizations' dedication to ensuring the safety and well-being of their workforce. To maintain and enhance workplace safety, addressing these areas of improvement and adhering to robust safety measures, accident investigations, and safety personnel are essential (Demba, 2013). Building a positive safety image and prioritizing safety are integral to preserving a productive workforce (Nyakang'o, 2016). Moreover, ongoing training, control measures, and the presence of safety personnel are crucial for maintaining secure construction sites (DO 198-18, 2018). This comprehensive evaluation of safety practices is indispensable for construction sites, given the inherent daily hazards and risks involved (Cheverie, 2017). Ultimately, a steadfast commitment to safety measures not only ensures the safety of workers and the public but also enhances employee morale, productivity, and overall profitability (International Labour Organization, 2022).



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Table 2. Summary Table of Organizational Culture

| Questions | WM | VI | Rank |
|----------------------|-------------|-----------------------|------|
| 1 Management | 4.00 | Strongly Agree | 2 |
| 2 Supervision | 4.00 | Strongly Agree | 2 |
| 3 Processes | 4.00 | Strongly Agree | 2 |
| 4 Safety System | 3.81 | Strongly Agree | 5 |
| 5 Job Factors | 3.39 | Agree | 7 |
| 6 Team Factors | 3.67 | Strongly Agree | 6 |
| 7 Individual Factors | 3.90 | Strongly Agree | 4 |
| Over-all Mean | 3.82 | Strongly Agree | |

Legend: 3.50 – 4.00 –Strongly Agree; 2.50 – 3.49 – Agree; 1.50 – 2.49 –Disagree; 1.00 – 1.49 – Strongly Disagree

Table 2 presents a comprehensive summary of the organizational culture within the surveyed companies, as perceived by the respondents. The table displays the weighted mean (WM), verbal interpretation (VI), and rank for various aspects of organizational culture, including management, supervision, processes, safety system, job factors, team factors, and individual factors.

Overall, the data in Table 3.8 suggests a strong level of agreement and alignment among the respondents regarding the organizational culture within their respective companies. The combined mean score of 3.82 indicates a consensus among the employees, with a strong inclination towards a positive perception of their organization's culture.

Starting with "Management," which received a WM of 4.00 (Strongly Agree) and ranked second, it is evident that the respondents hold a highly favorable view of their organization's management. This underscores the importance of strong leadership and management commitment in occupational safety and health management systems, as supported by Cigularov et al. (2018). The high rating suggests that the management is actively involved in promoting safety and fostering a positive safety culture.

Similarly, "Supervision" received a WM of 4.00 (Strongly Agree) and ranked second. This indicates that the supervisors or team leaders within these organizations are perceived as effective in providing oversight, enforcing safety protocols, and guiding employees in safe work practices. Clarke's (2017) findings are in alignment with this observation, emphasizing the importance of proficient supervision in ensuring safety compliance.

"Processes" also received a WM of 4.00 (Strongly Agree) and ranked second. This highlights the significance of well-defined processes and workflows in occupational safety and health management. The presence of efficient processes can promote consistency, streamline communication, and enhance hazard prevention and control, which is consistent with Ghahramani et al.'s (2018) research.

The "Safety System" received a WM of 3.81 (Strongly Agree) and ranked fifth. While still indicating a strong level of agreement, this suggests that there is room for further improvement in the comprehensive safety system within these organizations. Neal et al. (2016) emphasize the importance of a robust safety system in fostering a safety-oriented culture and ensuring regulatory compliance.

"Job Factors" received a WM of 3.39 (Agree) and ranked seventh. While it is not as strongly endorsed as the other aspects, it still reflects a general agreement among respondents. The factors related to job roles, workload, physical demands, and time constraints are essential considerations in occupational safety and health, as highlighted by Alfes et al. (2014). This aspect may benefit from additional attention and improvements.

"Team Factors" received a WM of 3.67 (Strongly Agree) and ranked sixth. This reflects a positive perception of teamwork, collaboration, and communication within these organizations. Hofmann et al.'s (2017) research underscores the importance of favorable team dynamics in promoting a safety-conscious work environment.

"Individual Factors" received a WM of 3.90 (Strongly Agree) and ranked fourth. This indicates a strong agreement among respondents regarding individual behaviors, attitudes, and commitments to safety. Fostering positive individual factors, as recommended by Clarke (2017), can lead to increased employee engagement and motivation in safety initiatives.

The data presented in Table 2 provides valuable insights into the organizational culture within the surveyed companies. It highlights the strengths in management, supervision, processes, and individual factors, all of which contribute to a positive safety culture. However, areas such as the safety system and job factors may require further attention and enhancements to ensure a holistic approach to occupational safety and health management. These



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findings align with the principles of occupational safety and health management outlined in relevant literature, emphasizing the critical role of leadership, supervision, processes, and individual behaviors in creating a safe and healthy workplace environment.

Table 3. Summary Table of Business Performance

| Questions | WM | VI | Rank |
|----------------------------------|-------------|--------------|------|
| 1 Technical Services | 3.40 | Agree | 1 |
| 2 Process | 3.00 | Agree | 4 |
| 3 Improvement Culture | 3.00 | Agree | 4 |
| 4 Supplier Relations Performance | 3.00 | Agree | 4 |
| 5 Employee Relations Performance | 3.00 | Agree | 4 |
| 6 Customer Relations Performance | 3.00 | Agree | 4 |
| Over-all Mean | 3.07 | Agree | |

Legend: 3.50 – 4.00 –Strongly Agree; 2.50 – 3.49 – Agree; 1.50 – 2.49 –Disagree; 1.00 – 1.49 – Strongly Disagree

Table 3 provides a comprehensive summary of the organization's business performance, offering insights into how respondents perceive various dimensions of its operations. The table includes rankings and mean scores, reflecting the consensus among respondents regarding these aspects of business performance.

The overall mean score of 3.07 falls within the "Agree" range, indicating a general agreement among respondents regarding the organization's business performance. This consensus suggests a positive sentiment towards the organization's overall effectiveness.

Respondents have given the highest rating to "Technical Services," ranking it first with a mean score of 3.40, signifying strong agreement. This suggests that the organization excels in delivering technical support, potentially providing a significant competitive advantage in its industry.

While several aspects of business performance are rated as "Agree," including "Process," "Improvement Culture," "Supplier Relations Performance," "Employee Relations Performance," and "Customer Relations Performance," they share the same mean score of 3.00. This suggests that respondents see room for improvement in these areas. While the organization effectively manages its processes and relationships with suppliers, employees, and customers, there may be opportunities for further refinement and enhancement of these aspects.

In summary, Table 3 reflects a positive overall assessment of the organization's business performance. It highlights strengths in technical services and generally positive views on various dimensions of business operations. However, it also indicates that there is potential for improvement in fostering a stronger culture of continuous improvement and further optimizing internal processes.

Table 4
Square Roots of AVE Coefficients and Correlation Coefficients

| Construct | Org. Culture | OSHM | Bus. Perf |
|------------------------|----------------|----------------|----------------|
| Organizational Culture | (0.966) | | |
| OSH Management | 0.871 | (0.958) | |
| Business Performance | 0.950 | 0.846 | (0.958) |

Note: Diagonal elements are the square of AVE of constructs & dimensions, while the off-diagonal elements are correlational between constructs.

It can be seen from the result that organizational culture has a strong positive relationship to occupational safety and health management. Likewise, the organization's existing culture can directly affect the occupational safety and health in the organization. This is also true among previous studies; like the study by An, Sung-Hoon & Bitamba, Bauma Frigeant (2015) on the Influence of Organizational Culture on Performance of Building Construction Project reveals the increased safety and health towards change and that there is a positive relationship of the culture with employee commitment towards change. However, according to Bulent and Adrian (2017), in order to run



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organizational change processes smoothly, a university needs a specific type of organizational culture consistent with assumptions and process changes.

The study of Zhou, Goh and Li (2015) in the overview and analysis of safety management studies in the construction shows a strong relationship between organizational culture features and the perceptions and implementation of safety management. Furthermore, the study results by Rotich and Kwasira (2015) reveal that features of organizational culture affect business performance by motivating the employees through participation and commitment of the top management.

While on the other hand, Nyakang'o (2016) concludes that occupational safety and health affects organizations in their culture and organizational performance through their leadership commitment.

The relationship of organizational culture to business performance has been one of that favorite research in management. There's a lot of studies showing a strong and positive relation between culture and performance, similar to the result of the current study. The study by Sakarina (2019) states that the better the organizational culture, the better the organizational performance. Similarly, Kassem, et al. (2019) advocate that organizational culture is significantly related to business excellence. At the same time, the result of the study by Habtoor et al. (2019) indicates a significantly positive effect of the construction organization on the performance of process.

The results of correlation analysis between variables by Hussein et al. (2016) indicate that all learning organization culture dimensions were significantly associated with both dependent variables, namely organizational performance, and organizational improvement culture. This further signifies that all construction organization dimensions are equally important for higher organizational performance. In addition, the results of the study by Nikpour (2017) indicate that the organizational culture has a direct positive impact on organizational performance and indirectly affects organizational performance using employees' organizational commitment and the indirect impact is more than the direct impact. Finally, the results of this study Cheah Albert Chong Hooi and Abu Hassan Abu Bakar. (2015) reveal that the organizational culture at construction industry is in a strong category, Relations Performance is in the High category, which includes Supplier, Customer and Employee is above the target. Furthermore, organizational culture and business performance have a positive and significant effect on the performance of construction employees.

Table 5
Direct and Indirect Effects of the PLS Path Model

| | β | SE | p-value | f ² |
|--|---------|-------|---------|----------------|
| Org Cul→OSHM | 0.878 | 0.044 | <0.001 | 0.771 |
| Org Cul→Bus Perf | 0.761 | 0.045 | <0.001 | 0.725 |
| OSHM→Bus Perf | 0.215 | 0.049 | <0.001 | 0.192 |
| Indirect Effects of the PLS Path Model | | | | |
| Total effect(c1) | 0.681 | 0.051 | <0.001 | 0.183 |
| Direct Effect (c1'): Org Cul→Bus Perf | 0.761 | 0.053 | <0.001 | 0.205 |
| Path a: Org Cul→OSHM | 0.878 | 0.051 | <0.001 | 0.247 |
| Path b: OSHM→Bus Perf | 0.215 | 0.047 | <0.001 | 0.727 |
| Indirect Effect (a*b): Org Cul→OSHM→Bus Perf | 0.189 | 0.036 | <0.001 | 0.022 |

Note: The effect sizes (f²) were measured using the following: 0.02 = small, 0.15 = medium, 0.35 = large; SE = standard error (Cohen, 1988), β = standardized path coefficient. Total effect c is equal to the sum of direct effect c' and indirect effects, i.e., $c = c' + (a*b)$

The direct effects of the PLS path model are shown in Table 5.3. All direct effects from occupational safety and health management to organizational culture are significant with a p-value of <0.001. Correspondingly, the direct effects from organizational culture to business performance are also significant in the p-value of <0.001. Likewise, the direct effect of business performance on occupational safety and health management is significant at a p-value of <0.001.



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Moreover, the largest effect size was recorded at $f^2=0.771$ from organizational culture to occupational safety and health management; thus, it implies that organizational culture strongly affects occupational safety and health management. While the second was $f^2=0.725$ from organizational culture to business performance strongly affects service performance. The remaining have medium or moderate effects from their exogenous latent construct from occupational safety and health management to business performance ($f^2=0.192$).

Table 5 shows the Indirect effects of the PLS path model. An alternative approach to the analysis of mediating effects would be to rely on the estimation of indirect effects. These indirect effects and related P values allow the test of multiple mediating effects at once, including effects with more than one mediating variable (Kock, 2019). The indirect effect of occupational safety and health management on the relationship between organizational culture and business performances are all statistically significant at a p-value of <0.001 .

The total effect from organizational culture to occupational safety and health management to organizational culture is ($f^2=0.183$), while the indirect effect is ($f^2=0.247$). The total effect from organizational culture to business performance is ($f^2=0.205$), and the indirect effect is ($f^2=0.727$). The result suggests that occupational safety and health management mediates the relationship between organizational culture and business performance with a medium or moderate mediation effect. Organizational culture is positively related to business performance, which positively affects occupational safety and health management.

Table 6
Collinearity, Coefficient of Determination, and Predictive Relevance

| Construct | Full collinearity VIF | R ² | Q ² |
|------------------------|-----------------------|----------------|----------------|
| Organizational Culture | 4.225 | | |
| OSH Management | 4.218 | 0.771 | 0.713 |
| Business Performance | 4.361 | 0.917 | 0.817 |

Note: For R²: 0.19-weak, 0.33-moderate, 0.67-substantial (Lacap, 2021). For Q²: The values measured must be greater than zero to recommend that the conceptual model can predict the endogenous latent constructs. For FCVIF: <5 is acceptable (Hair et al. & Kock).

The full collinearity VIF, predictive relevance (Q²), and coefficient of determination are shown in Table 5.4. The full collinearity variance inflation factor of the path model of the latent variables, organizational culture (4.225), occupational safety and health management (4.218), and business performance (4.361), all are within the acceptable range (5 or less according to Hair, Ringle, & Sarstedt, 2013; Sarstedt, Ringle, & Hair, 2017; Armenta-Hernández et al., 2018; Suharto et al., 2020). The R² coefficients of 0.771 for occupational safety and health management, and 0.917 in finance performance reflect the predictive accuracy of the exogenous variable on endogenous variable/s. Therefore, the R² generated from the model was substantial.

Finally, predictive relevance was also evaluated using the Stone-Geisser test or simply Q² (J. F. Hair et al., 2013). To say that the measurement model has predictive validity, the values of Q² should be higher than 0 (Kock, 2015). The predictive relevance for occupational safety and health management is 0.713, and business performance (0.817). Hence, the Q² values are all greater than 0, which means that the model has the capability to predict.

Conclusions

The present study presented aimed to explore the relationships between Occupational Safety and Health Management (OSHM), Organizational Culture (OC), and Business Performance (BP) within a specific organizational context. Through a comprehensive analysis of survey data and structural modeling, this research has yielded valuable insights that contribute to our understanding of how these constructs interrelate and impact one another. In this concluding section, the study summarize the key findings, discuss their implications, and provide suggestions for future research.

Demographic Characteristics of Respondents

The study commenced by profiling the respondents, shedding light on their demographic characteristics. The majority of respondents were located in the Capital District (Manila), and their ages predominantly fell within the range of 41 to 50 years. Moreover, they were mainly married males, working in the operations department, with 1 to 3 years of work experience, occupying worker roles, earning below Php 5,000, and having undergone 8 hours of



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Mandatory OSH Training with a high school educational background. This demographic overview provides important context for interpreting the study's findings.

Perceptions of OSHM, OC, and BP

The study evaluated the respondents' perceptions of OSHM, OC, and BP. Notably, respondents strongly agreed on several dimensions of OSHM, including Hazard Prevention and Control, Planning and Evaluation, Administration and Supervision, Safety and Health Training, Management Leadership, and Employee Participation. However, they only agreed, rather than strongly agreed, on Hazard Anticipation and Detection within OSHM. This suggests that while OSHM is generally positively perceived, there may be room for further improvement in anticipating and detecting hazards.

Similarly, respondents strongly agreed on multiple aspects of OC, encompassing Management, Supervision, Processes, Safety System, Job Factors, Team Factors, and Individual Factors. These findings underscore the presence of a positive organizational culture within the studied organization, spanning various facets of its operations.

Concerning BP, respondents agreed on several dimensions, including Technical Services, Process, Improvement Culture, Supplier Relations Performance, Employee Relations Performance, and Customer Relations Performance. This suggests a generally favorable perception of business performance within the organization, though it is essential to note that respondents did not strongly agree on any aspect of BP. Consequently, there may be opportunities for enhancing specific aspects of business performance.

Relationships Between Constructs

The study's primary objective was to examine the relationships between OSHM, OC, and BP. The results revealed significant and meaningful associations between these constructs.

Firstly, the direct effect of organizational culture on occupational safety and health management was established, demonstrating a strong positive relationship. This finding underscores the pivotal role of organizational culture in shaping and influencing safety and health management practices within the organization. A positive organizational culture can contribute to a safer work environment by fostering a culture of safety, encouraging employee participation, and promoting management leadership in occupational safety and health.

Secondly, the direct effect of organizational culture on business performance was also confirmed, revealing a strong positive relationship. This highlights the critical role of organizational culture in shaping overall business performance. A positive and supportive culture can enhance employee morale, innovation, and customer relations, ultimately contributing to improved business outcomes.

Lastly, the direct effect of occupational safety and health management on business performance was established, indicating a direct and positive relationship between these constructs. This result suggests that effective safety and health management practices can positively impact business performance, potentially by reducing workplace accidents, enhancing employee well-being, and optimizing resource utilization.

Mediating Role of OSHM

One of the central findings of this study is the mediating role of occupational safety and health management in the relationship between organizational culture and business performance. Occupational safety and health management were found to mediate the relationship between organizational culture and business performance, with a medium or moderate effect. This implies that a positive organizational culture not only directly influences business performance but also indirectly through its impact on safety and health management practices. This finding underscores the importance of prioritizing safety and health management within organizations, as it can enhance overall business performance.

Proposed Mediating Model

The study's findings culminate in a proposed Mediating Model that illustrates the interconnectedness of organizational culture, occupational safety and health management, and business performance. This model highlights the pivotal role of organizational culture as a driver of both safety and health management and business performance. It also emphasizes the mediating role of safety and health management in enhancing business performance within the organization.



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Limitations and Future Research

This study is not without limitations. The research was conducted in a specific organizational context, limiting the generalizability of the findings. Future research should explore these relationships in diverse organizational settings to enhance the external validity of the results.

Additionally, the study employed self-reported data from respondents, which may be subject to response bias. Future research could incorporate objective performance metrics and observational data to complement self-reported measures.

Further investigations could also explore the specific mechanisms through which organizational culture influences safety and health management and, subsequently, business performance. Qualitative research approaches, such as interviews and focus groups, could provide deeper insights into these mechanisms.

In conclusion, this study advances our understanding of the relationships between organizational culture, occupational safety and health management, and business performance. The findings underscore the importance of fostering a positive organizational culture, investing in safety and health management, and recognizing the mediating role of safety and health practices in enhancing business performance. These insights can inform organizational strategies aimed at creating safer, more productive, and culturally aligned workplaces.

Recommendations

Based on the findings of this study and the existing literature, several recommendations emerge for organizations seeking to enhance their performance in terms of Occupational Safety and Health Management (OSHM), Organizational Culture (OC), and Business Performance (BP).

First and foremost, organizations should prioritize the cultivation of a positive organizational culture. This culture should emphasize values such as safety, teamwork, innovation, and employee well-being. Leadership plays a crucial role in shaping and sustaining this culture, and leaders should actively promote the desired cultural values and set an example for employees. Leadership training and development programs can enhance leaders' ability to create and maintain a positive culture.

Investing in OSHM initiatives is essential for organizations aiming to improve safety and health outcomes. These initiatives should encompass comprehensive training programs, hazard identification, prevention measures, and control measures. Employee participation in safety and health programs should be encouraged, as engaged employees are more likely to identify hazards and contribute to safety improvements. Organizations should also establish clear lines of responsibility for safety and health management, designating safety officers or teams responsible for monitoring and enforcing safety practices.

Recognizing the interdependence of OSHM and BP is crucial. Organizations should integrate safety and health considerations into their overall business strategies, acknowledging that a safer workplace often translates to improved business performance. This integration can be facilitated by measuring safety and health performance as an integral part of overall organizational performance, using metrics such as injury rates, near misses, and safety culture assessments. Developing Key Performance Indicators (KPIs) that reflect both safety and business goals and regularly tracking and reporting on these KPIs is essential.

Periodic safety culture assessments can provide organizations with valuable insights into areas for improvement. These assessments should involve employees through surveys or focus groups to gain a comprehensive understanding of the organizational culture's strengths and weaknesses. The results of these assessments should guide the implementation of targeted interventions to address specific cultural issues and contribute to overall safety improvement.

Leveraging technology can significantly enhance safety and health management practices. Organizations should consider implementing digital tools and platforms for incident reporting, safety inspections, and data tracking. Additionally, wearable devices and sensors can be utilized to monitor employee health and safety in real-time, providing early warnings of potential hazards. Promoting a culture of innovation by soliciting employee ideas and suggestions for safety improvements and recognizing and rewarding innovative safety solutions is also crucial.

Promoting employee well-being is intrinsically linked to safety. Organizations should prioritize initiatives that support the physical and mental health of their workforce. This includes offering employee assistance programs (EAPs) and mental health support services. Furthermore, promoting work-life balance and flexible work arrangements can help reduce employee fatigue and stress, contributing to a safer workplace.

A culture of continuous learning and improvement is essential. Organizations should encourage employees to participate in training programs, workshops, and safety seminars to enhance their knowledge and skills. Establishing a system for regular safety audits and reviews, learning from past incidents and near misses, and



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benchmarking safety and health practices against industry best practices can further contribute to ongoing improvement efforts.

Collaboration and knowledge sharing among departments and teams within the organization should be fostered. Cross-functional teams can work together to identify safety and health improvement opportunities, while sharing best practices and lessons learned with other organizations in the industry can lead to collective improvements in safety and health performance. Participating in industry-specific safety initiatives and forums is another effective way to stay informed about emerging safety trends and challenges.

Finally, future research in this field should continue to explore these relationships in diverse organizational contexts to enhance the external validity of the findings. Incorporating objective performance metrics and observational data alongside self-reported measures can provide a more comprehensive understanding of safety and health outcomes. Additionally, further investigation is needed to uncover the specific mechanisms through which OC influences safety and health management and, subsequently, BP. Qualitative research approaches, such as interviews and focus groups, can provide deeper insights into these complex relationships.

These recommendations emphasize the critical role of a positive organizational culture, investment in OSHM, and the integration of safety and health with business performance. By implementing these recommendations, organizations can create safer, more productive, and culturally aligned workplaces, ultimately leading to improved overall performance. Additionally, future research should continue to explore these relationships and mechanisms to advance our understanding of how safety and health practices impact organizational outcomes.

Implications

The findings of this study have significant implications for organizations, policymakers, and researchers in the domains of Occupational Safety and Health Management (OSHM), Organizational Culture (OC), and Business Performance (BP).

Firstly, organizations should prioritize safety and health as integral components of their strategic initiatives, recognizing that a safer workplace not only reduces injuries and incidents but also contributes to improved productivity, employee morale, and stakeholder trust. This entails comprehensive training programs, active employee participation in safety-related activities, and leadership commitment to safety and health principles.

Secondly, fostering a positive and safety-oriented organizational culture is crucial. Leadership development programs should equip leaders with the skills to promote desired cultural values, while regular safety culture assessments should inform targeted interventions. Mechanisms for employee feedback on culture should also be established.

Thirdly, organizations should integrate safety and health considerations into overall business strategies, recognizing their interdependence. Establishing Key Performance Indicators (KPIs) reflecting safety and business goals, leveraging technology for safety management, and encouraging innovation in safety solutions are essential steps.

Additionally, promoting employee well-being and work-life balance indirectly contributes to safety and health. Employee assistance programs (EAPs), mental health support services, and flexible work arrangements should be prioritized.

Technological advancements can significantly enhance safety and health management practices. Digital tools and wearable devices can improve incident reporting, safety inspections, and real-time monitoring of employee health and safety.

Promoting a culture of innovation within the organization can lead to the development of novel safety solutions. Recognizing and rewarding innovative safety solutions can incentivize employees to actively contribute to safety improvements.

Lastly, fostering a culture of continuous learning and collaboration is essential for organizations to thrive. This entails ongoing training and development, knowledge sharing, and collaboration among employees, departments, and external partners.

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