

Significant Impact of Occupational Safety and Health Standards for Project Implementation in DPWH Aurora, Philippines

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Abstract: - This study aimed to determine the Significant Impact of Occupational Safety and Health Standards on Project Implementation in DPWH Aurora, Philippines. Specifically, it was done to gather information on the: (a) assessment of the project implementation of the DPWH-Aurora; (b) significance of Occupational Safety and Health Standards in the project implementation; and to test the significant relationship between the assessment of project implementation and the significance of Occupational Safety and Health Standards. A descriptive survey was done among the fifty respondents from the group of DPWH staff, contractors, and from the labor force in the construction sites. The findings revealed that Occupational Safety and Health Standard had been significant in the project implementation. It also revealed that the execution of the infrastructure projects was highly involved in the OSHS and appropriate stakeholders' communication. This study recommended that project implementers review competency standards on the grounds of occupational safety and health.

Key Words: — *Occupation, safety, health, project, OSHS, construction.*

I. INTRODUCTION

Department of Public Works and Highways (DPWH) was one of the most significant beneficiaries of government funds. Most of its funds are being allocated to secure more accurate connectivity and improved infrastructure projects in terms of bridges, roads, buildings, and prior activities for a more livable settlement. A country must prosper through its infrastructures, especially to reach out to the marginalized sectors. As a result, the government and other stakeholders are concerned about the quality of infrastructure project execution and, as a result, the project outcomes in resolving most of its concerns, especially in the evaluation of particular projects.

All of the stages in the construction as being projected from Project Management using the System

Development Life Cycle needed extensive manifestations of the significance of the mandates on Occupational Safety and Health Standards (OSHS). Because each step of the building is crucial, it must be monitored and evaluated before moving on to the next. (1) Needs Assessment of the Infrastructure Program, (2) agreement process with the contractors, (3) mechanisms of construction guidelines, and (4) program hand-over with the stages in the project management using the system development life cycle with the DPWH to execute the building of infrastructure projects. The agency also wishes to make sure that when the construction project is built, it completes the work that was able to be partnered with contractors through the regulations of the General Appropriation Act of 2022.

As a result, the significance of the Occupational Safety and Health Standards developed by the DPWH as indicators of infrastructure project execution is examined in this study. The findings may aid in the knowledge of infrastructure project life-cycle execution-as-practice, taking into account OSHS requirements as prescribed by numerous legal grounds. Furthermore, the study gives information on how to improve the performance of the sectors by examining the remedial actions taken to overcome impediments that may obstruct the successful completion of infrastructure projects.

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Construction sites frequently need people to work at a height, manage heavy loads, run enormous machines, and work with rough materials, to mention a few, in an ever-changing environment. The risks associated with these working conditions can be significantly reduced by putting in place proper health and safety measures and ensuring that the workforce is aware of them. Work-related disorders such as vibration white finger, carpal tunnel syndrome, occupational deafness, and dermatitis affect construction workers. The use of vibrating instruments, inhaling dust and being exposed to overly loud noises for long periods of time cause these disorders. After exposure to asbestos and silica, for example, occupational cancers are another danger connected with working in the construction sector. Although there are several risks, many of them may be considerably avoided by ensuring that proper health and safety procedures are followed on all building sites. These procedures will provide crucial information about the hazards involved and how to avoid them, providing managers and employees with the knowledge and information to complete the job safely.

II. OCCUPATIONAL SAFETY AND HEALTH STANDARDS

The Occupational Safety and Health Standards (OSHS) apply to all operations and undertakings in the construction industry and its subdivisions, namely general building construction, general engineering construction, and specialty trade construction, as defined by the Philippine Construction Accreditation Board (PCAB) of the Construction Industry Authority of the Philippines (CIAP); to companies and entities engaged in demolition works, and to those who work in the construction industry and its subdivisions.

The Department of Labor and Employment (DOLE) and the Department of Public Works and Highways (DPWH) have signed a Memorandum of Agreement (MOA) aimed at streamlining the approval process for Construction Safety and Health Programs, which are a requirement for all construction operations as well as for the safety and health of construction workers.

Many activities are involved in the life-cycle of infrastructure projects that lead projects to satisfy schedule, money, quality, scope, and occupational safety and health limitations. In order to make sure that the construction programs are completed within the restrictions and with a zero-accident goal, the Department of Public Works and Highways has separated

infrastructure project execution into four primary phases:

- Well-Planned Programs, which include the following vital activities starting with identifying needs, how the activities for every protocol must be observed, and the crafting of all technicalities of the program;
- A review of the tender documents, acquisition execution and sourcing administration are all essential priorities in the identification of contracted partners;
- Building procedures, with significant operations comprising pre-construction design, building works, and development supervision;
- Material hand-over in Development, with main operations comprising object identification and processing, market pressure, specific project conversion, and recording and control of material hand-over.

A project's life cycle can be divided into phases in several ways. A building project's character, on the other hand, can be recognized by its slow movement at the start, which increases during the construction phase and becomes more progressive as the project develops. The project life-cycle comprises the initiating work package, planning phase organization, implementing project tasks, evaluating and reporting a series of processes, and termination. Consequently, the stages of the program cycle may vary based on the extent of the program and the style of program deliverables.

Although the infrastructure project life-cycle is well known for maximizing performance in each phase, it will be a certain requirement due to a shortage of project resources and a quality control system throughout the project life-cycle. The success of the infrastructure project should be evaluated from the planning phase to the hand-over of the constructed product. Put another way, the success of infrastructure projects depends on the active participation of a variety of parties, including construction service providers, service users, the government, and its partners; this has been regulated, but the roles and responsibilities of those parties must be clarified.

Stakeholder participation is critical since they are valuable assets throughout the project development process; as a result, they must be efficiently managed, politely handled, and respected, as they can be a source of driving the project ahead.

2.1 Well-Planned Programs

An infrastructure project's planning phase is to compile and provide information on the necessary work, including drawings and specifications and all tender documents. At this stage, the project owner's responsibilities include having ideas for the project plan, providing funding and project area, making final decisions about project development, and having absolute authority in determining and appointing construction management and project planners/planning consultants.

When it comes to the project owner's and planner's responsibilities, the government, as the infrastructure project's owner, gives ideas to the planner, who is then in charge of translating the owner's views into technical words. Every element of the consultant's planning should, in theory, be submitted to and approved by the owner. One of the drawbacks of such collaboration is that the consultant is less capable of translating the project owner's goals and desires. The assumptions used by the consultant to create the planning documents frequently differ from reality on the ground, resulting in an additional effort that exceeds the allowed needs.

Developing project development needs is crucial work in the construction and project management fields, and the ability to execute a project is based on the planning documentation. According to the authors, construction planning involves knowledge and experience, particularly in two areas: comprehending what will be constructed and having a plan for how to build while maximizing project resources. As a result, the contractor is designated as the executor of the planning paperwork. Formal documentation is required as a source of information to be given to project stakeholders in the next step.

2.2 Identification of Contracted Partners

The project owner is entirely responsible for generating procurement papers and navigating the selection committee during the selection of service provider's phase. The project owner presents tender documents generated by the planning consultant to the committee. The process of identifying service providers must be done online, according to government laws.

In this phase of the implementation of the regulations on the selection of service providers in the execution of government products and services, there is a lack of consistency. As a result, the proposed tendering can only be recognized administratively because the election results do not match the

required competence and ability of the winners as indicated in the tender documents for the standards of work required. On the other hand, awarding a contract to a qualified contractor should ensure that the construction project is completed on time and on budget. Contractors who were unable to implement the planning documents due to wrongdoing during a preliminary inspection of the project site were also uncovered. As a result, not only should the project owner certify the pre-award contractual project winner, but also the project planning document's ability to be carried out successfully.

2.3 Building Procedure

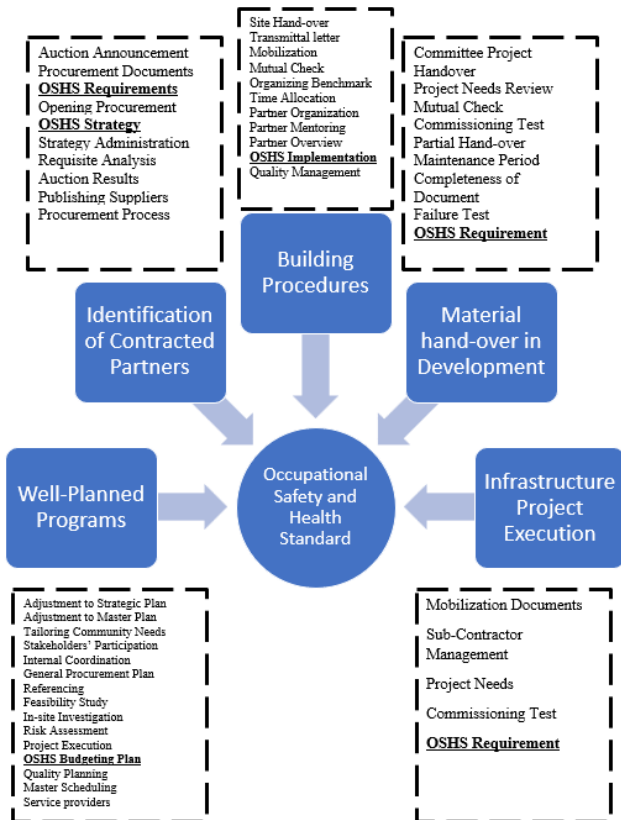
The purpose of the construction implementation phase is to deliver a construction product that meets the project owner's specifications, as defined by the planning consultant while adhering to the contract's timing, budget, and quality standards. The primary project stakeholders involved in this phase include project owners, contractors, and supervisory consultants. According to Loosemore & Malouf, a construction project has various parties, long project durations, and complicated contractual linkages¹.

During the implementation of infrastructure projects, stakeholders must build strong connections and communicate effectively while assessing their roles, tasks, authorities, and responsibilities. Contractors, for example, must receive approval for completed work from the technical director and supervising consultants. If the contractors are unable to complete the project due to inconsistencies in the planning papers, problems may occur. Because the supervising consultants are not responsible for project planning and the planning consultant is not required to be on-site during the implementation phase, they are unable to decide the best option in this case. This example employs a design-bid-build technique, in which the project design and construction are contracted separately. The research of Yiu, Sze, and Chan on road infrastructure projects in Indonesia has pushed for the use of design-build procurement, which can help infrastructure projects perform better. Long procurement periods often result in less desirable outcomes, such as exorbitant expenditures, poor quality, and schedule delays, according to these writers, and these impediments may impair the infrastructure project's performance during Construction³.

Because each construction project is different, a construction performance evaluation should start at the project task level. This discovery also applies to infrastructure project

construction, as rigorous monitoring of job progress appears to be actively used during the construction period.

Project performance monitoring, including quality control, is required at all stages of the project life cycle.



Without neglecting the performance of other project stakeholders, contractors are the primary drivers of infrastructure project performance during the building period. Contractors should communicate with the operations and maintenance teams on a regular basis to ensure that the project's original goals are being met.

2.4 Material hand-over in Development

The purpose of the hand-over of the project results phase is to ensure that the final project results are in compliance with the contractual agreement, as well as to evaluate all construction project stakeholders' performance in terms of their needs. Even while each partner is aware of its own needs and thus supports the project's success, there are still issues with the infrastructure project's final phase.

Due to defective project planning and control, project

activities have been adjusted in excess of work needs, which is a common problem in the last phase of the infrastructure project life-cycle. In terms of the scope and roles of the Indonesian infrastructure project, the government should actively participate in each sub-phase of project hand-over, including re-evaluating project needs, conducting mutual checks, conducting commissioning tests, conducting partial construction failure. Grill et al. examine the use of a virtual model in the delivery of construction project value, a fresh and current ICT concept that can improve the delivery of construction end products by leveraging efficient procedures and delivering effective results. Meeting stakeholders' satisfaction by successfully completing total project performance is a major characteristic in developing project performance criteria for construction projects; yet, achieving this goal for infrastructure projects remains a challenge. ⁴

III. LEGAL BASIS

Every construction project must have a suitable Construction Safety and Health Program (CSHP) that complies with DOLE rules and other orders and issuances. Compliance is the responsibility of the Construction Project Manager, or in his absence, the Project Manager designated by the owner. The Occupational Safety and Health Standards were promulgated by the DOLE under Article 162 of the Labor Code of the Philippines for the guidance and compliance of all concerned in order to protect every worker against the dangers of injury, sickness, or death through safe and healthy working conditions, assuring the conservation of valuable manpower resources and the prevention of loss or damage to lives and properties.

A Construction Safety and Health Program is a set of detailed rules that cover the processes and practices that should be used in a specific construction site in accordance with occupational safety and health standards, as well as the personnel who are responsible and the penalties for breaking the rules. ⁵

The MOA spells out the DOLE's and DPWH's roles in the CSHP approval process. According to the MOA, CSHP applications that were initially authorized by the DPWH would be considered accepted if they are not acted on by the DPWH on the sixth day after the prescribed process cycle time of five working days from the date of submission of all required papers. In this scenario, the DPWH may rely on the CSHP, which has been approved by the pertinent DOLE

Regional Office, as well as a notice posted on the DPWH's official website.

It specifies that, in accordance with DOLE Department Order No.13, Series of 1998, the DOLE shall supply the DPWH with a checklist of requirements for CSHP applications. It must also adhere to the five-working-day deadline for concurring with or rejecting the DPWH-approved CSHP applications.

The DOLE-Regional Office, on the other hand, shall: provide the DPWH with a list of approved CSHP applications on a regular basis, indicating the project name, location, and duration, project owner, general contractor, OSH personnel, and contracts for OSH services appropriate for a particular project, when applicable; conduct necessary assessments of construction project sites as it monitors the execution of CSHP; deploy Labor Law Compliance Officer (LLCO) within 24 hours.

The DPWH, for its part, will require the winning contractor to submit the CSHP in accordance with Section 5 of DOLE D.O. No. 13, Series of 1998, which states that every construction project must have a suitable CSHP; receive CSHP applications that meet all of the DOLE's requirements; and identify and send DPWH regional personnel who will undergo DOLE orientation following the CSHP's approval.

The CHSP shall also include provisions and instructions pertaining to the implementation of the CSHP in every project bidding document, specifically under the Instruction to Bidders; decentralize the approval of the CSHP to DPWH Regional Directors/District Engineers where the project site is located in accordance with DPWH rules and regulations; designate a General Construction Safety Officer who shall oversee the full-time/overall implementation of the CSHP of the office in accordance with DPWH rules and regulations; (OSHI).

The DOLE-DPWH MOA supplements the DOLE, DPWH, DTI-Construction Manpower Development Foundation-Philippine Constructors Association Board, Department of Interior and Local Government, and Professional Regulation Commission's Joint Administrative Order 1, Series of 2012, as well as other specific issuances aimed at promoting and ensuring the safety and health of construction workers.

Concerned persons are encouraged to contact the DOLE Regional Office and/or Provincial or City Field Offices to report harmful working conditions and practices in the workplace. This is one way to encourage a safe and healthy culture in the workplace by involving workers and the

community in the process. In the construction sector, safety procedures and training services reduce accidents.

IV. METHODOLOGY

In the construction industry, knowing which research methodologies and methods are appropriate for successful data collection is crucial. As a result, the study's purpose is to develop an agreement on the DPWH's infrastructure project execution indicators' level of implementation. The study then polls three different types of construction project stakeholders to find out what they think about the OSHS's importance. The three groups are the DPWH employees, contractors/subcontractors, and the construction labor force.

It is crucial to choose the right group for data collection using a survey questionnaire. Purposive sampling procedures were employed to pick respondents for this research study, which required gathering a consensus of data from the aforementioned groups who are involved in the implementation of infrastructure projects from start to completion. Furthermore, this method was chosen since it is both time-consuming and cost-effective while still producing essential information.

This study aimed to determine the Significant Impact of Occupational Safety and Health Standards on Project Implementation in DPWH Aurora, Philippines. Specifically, it will answer the following questions:

1. How may the assessment of the project implementation of the DPWH-Aurora be described along with the following structure?
 - 1.1. Well-Planned Programs;
 - 1.2. Identification of Contracted Partners;
 - 1.3. Building Procedures;
 - 1.4. Material hand-over in Development; and
 - 1.5. Infrastructure Project Execution?
2. What is the significance of Occupational Safety and Health Standards in the project implementation in DPWH-Aurora?
3. Is there a significant relationship between the assessment of project implementation and the significance of Occupational Safety and Health Standards?

The respondents of the study are the three groups that the researchers identified, namely: DPWH (employees,

engineers, and staff); contractors/subcontractors; and the labor force in site construction. The following presented the distribution of respondents per group:

Table.1. Respondents of the Study

Group	Population	Respondents
DPW	38	20
Contractor	14	5
Labor Force	117	25
Total	169	50

The empirical flow of data gathering was used from survey to data analysis using measures of central tendencies (weighted mean). The range interval was as follows:

- 1.00-1.80- Least Significant
- 1.81-2.60- Partially Significant
- 2.61-3.40- Moderately Significant
- 3.41-4.20- Significant
- 4.21-5.00- Highly Significant

V. RESULTS AND DISCUSSION

This section presents the results of the study. Table 1 it showed that Occupational Safety and Health Standards obtained a 4.65 weighted mean and interpreted it as "Highly Significant." It was second to the highest, tailoring community needs with the highest rating. However, the OSHS was rated as highly significant. Construction and demolition sites have their own set of hazards and risks that put workers' safety and health at risk. Occupational safety and health management systems assist firms in identifying and eliminating safety and health risks, minimizing the risk of incidents, complying with legislation, and implementing risk-reduction strategies. Inadequate or non-existent occupational health and safety have a severe impact not only on the usual construction project characteristics of cost, quality, and schedule but also on the environment's long-term viability. Because occupational fatalities, injuries, and diseases are not project requirements, they are considered faults.⁶

Table.2. Well-Planned Programs

Particulars	WM	Description
Adjustment to Strategic Plan	3.84	Significant

Adjustment to Master Plan	3.80	Significant
Tailoring Community Needs	4.79	Highly Significant
Stakeholders' Participation	4.19	Significant
Internal Coordination	4.40	Highly Significant
General Procurement Plan	3.98	Significant
Referencing	4.09	Significant
Feasibility Study	3.99	Significant
In-site Investigation	3.98	Significant
Risk Assessment	4.26	Highly Significant
Project Execution	3.56	Significant
OSHS Budgeting Plan	4.65	Highly Significant
Quality Planning	3.89	Significant
Master Scheduling	3.89	Significant
Service providers	3.70	Significant

Table 3 revealed that the OSHS requirement obtained 3.81 weighted means while OSHS Tender Plan obtained a 3.74 weighted mean, both interpreted as "Significant." It fell under the three least responses. Safety and health programs encourage employees to take a proactive approach to "identifying and addressing" problems on the job site before they cause damage or disease. Rather than reacting to an incident, management and employees work together to anticipate and resolve problems. This type of collaboration fosters trust, improves communication, and frequently leads to other commercial benefits. Due to the rise in temporary and contract employment, conventional ties between workers and employers are altering, necessitating modifications in safety programs and policies to protect the safety and health of all workers at workplaces characterized by these newer, more fluid interactions. The major purpose of a safety and health program, according to responsible employers, is to prevent work-related injuries, illnesses, and deaths, as well as the suffering and financial burden that these occurrences can create for workers, their families, and their employers.⁷

Table.3. Identification of Contracted Partners

Particulars	WM	Description
Auction Announcement	4.00	Significant
Procurement Documents	3.89	Significant

OSHS Requirements	3.81	Significant
Opening Procurement	3.68	Significant
OSHS Strategy	3.74	Significant
Strategic Administration	4.42	Highly Significant
Requisites Analysis	4.27	Highly Significant
Contract Agenda	4.47	Highly Significant
Issuances of MOA	4.32	Highly Significant
Procurement Initiatives	4.35	Highly Significant

Table 4 revealed that OSHS Implementation obtained a 3.84 weighted mean and was interpreted as "Significant." First on the list in the construction implementation was Site Handover with a 4.37 weighted mean and interpreted as "Highly Significant." OSHS Implementation was co-equal in significance with Time Management. All construction trades experience injuries and illnesses. The preventive techniques suggested in these recommended practices are applicable to both small and large construction companies. Small businesses may discover that informal interactions and procedures are the most effective way to carry out the tasks mentioned in these best practices. A more formal and extensive program may be required for larger firms with more complex work processes and hazards.

They may also want to link their safety and health program to other programs they use to manage production, quality control, and environmental protection or sustainability.

Table.4. Building Procedures

Particulars	WM	Description
Site Hand-over	4.37	Highly Significant
Transmittal letter	3.70	Significant
Mobilization	3.88	Significant
Mutual Check	4.15	Significant
Organizing Benchmark	3.83	Significant
Time Allocations	3.84	Significant
Partner Organization	3.88	Significant

Partner Mentoring	3.83	Significant
Partner Overview	3.83	Significant
OSHS Implementation	3.84	Significant
Quality Management	3.89	Significant

Table 5 revealed that OSHS Requirement obtained a 4.35 weighted mean and was interpreted as "Highly Significant." It was the fourth among the most significant needs in project hand-over. Because occupational fatalities, injuries, and diseases are not project requirements, they are considered faults. Workers' compensation insurance is included as a labor expense, and the cost of accidents is built into the cost structure of contractors, so they contribute to the cost of building and Development. TQM is a strategy that connects the processes of occupational health and safety, productivity, and quality, with health and safety serving as the catalyst for achieving synergy between the three. Although each member of the client, design and construction teams has an impact on occupational health and safety, project managers are ideally positioned to incorporate occupational health and safety into all phases of the design and construction process as project leaders and coordinators.⁸

Table.5. Material hand-over in Development

Particulars	WM	Description
Committee Hand-over	3.91	Significant
Project Needs Review	3.83	Significant
Mutual Check	3.86	Significant
Commissioning Test	3.94	Significant
Partial Hand-over	4.58	Highly Significant
Maintenance Period	4.62	Highly Significant
Completeness of Document	4.72	Highly Significant
Failure Test	4.33	Highly Significant
OSHS Requirement	4.35	Highly

		Significant
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Table 6 revealed that OSHS Requirement obtained a 4.52 weighted mean and was interpreted as "Highly Significant." It was the highest-rated indicator in the Infrastructure Project Execution. Because occupational fatalities, injuries, and diseases are not project requirements, they are considered faults. In reality, successful completion of an activity is defined as finishing it without harm or disease. Health and safety is an essential project parameter since it complements the successful completion of a project, which includes completion on time, within budget, to quality criteria, without causing environmental damage, and without disease, fatalities, or injuries. 'Zero injuries,' like 'zero-defect,' is the performance benchmark for health and safety. Accidents and rework would be acceptable under any other performance standard. Medical care, rehabilitation, pensions payable in the event of fatalities, and rework all add to the cost of resources; therefore, the system for health and safety and quality is prevention. A shorter project period invariably results in an increase in the number of workers; the number of hours worked per worker, or even a combination of the two; the amount of plant and equipment; and the number of subcontractors simultaneously undertaking work per period of time, all of which can have an impact on health and safety. Incidents are more likely as a result of this intensity.⁹

Table.6. Infrastructure Project Execution

Particulars	WM	Description
Mobilization Documents	4.34	Highly Significant
Sub-Contractor Management	4.51	Highly Significant
Project Needs	4.38	Highly Significant
Commissioning Test	4.44	Highly Significant
OSHS Requirement	4.52	Highly Significant

Table 7 revealed that the most significant indicator of the OSHS in project implementation was "Implementation of effective communication across all levels of the organization," which obtained a 4.60 weighted mean and interpreted as

"Highly Significant." The importance of health and safety in construction must be communicated to those working on the ground. Workers and visitors will be more aware of hazards, wear adequate safety equipment, and adopt safety procedures if there is strong safety culture in place. Ascertain that they have the tools they require to succeed. From the leadership team on down, everyone on a construction project must be aware of the hazards they encounter and how to prevent them. Ascertain that everyone has the necessary training and abilities to recognize and convey hazards. They should also be aware of the steps they can take to do their duties in a safe and efficient manner.¹⁰

Table.7. Significance of OSHS

Particulars	WM	Description
Identification of workplace risk when planning work and implementation of appropriate controls to avoid personal injury and property damage.	4.58	Highly Significant
Monitoring of work to provide early detection and correction of unsafe practices and conditions	4.58	Highly Significant
Implementation of effective communication across all levels of the organization.	4.60	Highly Significant
Protecting the adjacent public and private properties.	4.57	Highly Significant
Providing safety education and incentive programs.	4.46	Highly Significant
Complying with occupational, health, and safety rules and requirements.	4.43	Highly Significant

Table 8 revealed that only the infrastructure project execution has a significant relationship with the Occupational Safety and Health Standard. Construction site safety not only minimizes the risk of public injuries but also reduces the risk of work-related injuries and accidents. According to the Occupational Safety and Health Administration, the construction industry accounts for roughly a quarter of all work-related fatalities, with many more injuries that do not result in death. The four most prevalent causes of unintentional deaths and injuries are

falls, being struck by an object, electrocution, and being stuck between equipment. The danger of these types of incidents is reduced when there is safety culture in place.

Table.8. Test of Relationship

Particulars	p-value	Description
Well-Planned Programs	0.2190	Not Significant
Identification of Contracted Partners	0.0298	Not Significant
Building Procedures	0.0500	Not Significant
Material hand-over in Development	0.9536	Not Significant
Infrastructure Project Execution	0.0001	Significant

VI. CONCLUSION AND RECOMMENDATION

In order to improve the implementation of project indicators approved by the Departments of Labor and Employment and Public Works and Highways, the OSHS in the life-cycle execution of infrastructure projects must be profiled. As the project owner, the government must ensure that infrastructure projects are completed successfully while also decreasing construction failures, occupational hazards, and other disasters.

According to the findings, the OSHS recommended essential areas in infrastructure projects with the goal of fully executing the indicators of infrastructure project life-cycle with a major connection to the Philippines' Occupational Safety and Health Standards. The essential areas of procurement plan details, engineering design, and project timeline, according to the findings, are critical for being adequately developed throughout the planning process, and these indicators have a high degree of execution. To avoid legal issues, it was also stressed that all indications of service provider selection were given high marks and that the level of implementation was widely agreed upon. Throughout construction, the indicator of conducting subcontractor management was rated low, while

the indicator of creating mobilization documentation was rated average. The results of the surveys also suggest that indications in the project hand-over phase, such as re-evaluating project needs, commissioning tests, partial hand-over, and checking OSHS requirements, have finally reached the OSHS's medium level of implementation.

Practical Implication:

Despite the fact that most infrastructure project execution indicators are widely known and implemented, there are still a number of barriers to implementing them across the project life cycle, which could stymie the sector's high performance. To overcome barriers and promote consistency and high performance of the four phases of the infrastructure project life-cycle, it is still necessary to adjust and improve relevant regulations and processes in terms of detailed legislation and regulation on project planning and control, service providers' capabilities, and the implementation of the quality system and OSHS. Last but not least, project stakeholders' roles and responsibilities at each phase of the project infrastructure life-cycle should be revised to encourage active participation in assuring infrastructure project quality.

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