IMPEDIMENT TO SAFETY PROGRAM IMPLEMENTATION IN THE CONSTRUCTION INDUSTRY OF PAKISTAN

Author[1]: Shabbir Hussain, Author[2]: Kamran Arshad, Author[3]: Hanzla Rasheed, Author[4]: Rana Daniyal

[1]*Author: Student, Aviation Management, Superior University, Punjab, Pakistan*

[2]*Author: Student, Aviation Management, Superior University, Punjab, Pakistan*

[3]*Author: Student, Aviation Management, Superior University, Punjab, Pakistan*

[4]*Author: Supervisor, Aviation Management, Superior University, Punjab, Pakistan*

ABSTRACT:

According to several studies, the construction industry is one of the most dangerous, with high rates of fatalities and considerable financial damages because of work-related accidents. Construction companies use several safety strategies to prevent or eliminate safety concerns on construction sites.

To emphasize the impact of the Construction Safety Factors on the execution of safety programs, a questionnaire survey research was undertaken. The AIM (Average Index Method) was used to assess the findings of the questionnaire survey, and a rank correlation test was used to determine the link between different groups of respondents.

The study's findings revealed that project management support is a vital aspect in establishing a safety program. According to statistical tests, all respondent groups were highly in favor of CSF as a management support component (Critical Success Factor). The results of this investigation were confirmed in a few case studies. The case study data will help determine the influence of different factors on the execution of safety programs.

1. INTRODUCTION:

Around the globe, the construction sector is known for its terrible health and safety record. This terrible performance has a negative impact on both economic growth and the bottom lines of construction firms. Construction companies have developed and executed a variety of safety methods in reaction to the requirement to enhance health and safety performance. The attempts to promote safety via an integrated package of legislation and operations are referred to as a safety program. A safety program is defined as "a systematic mix of operations, procedures, and facilities intended to create and maintain a safe and healthy workplace," according to the “Industrial Accident Prevention Association”. The construction company, which includes the consumer, interior decorator, constructor, construction

team, subcontractor, and vendors, is committed to ensuring that each project is done safely or that the building business must address identified issues, therefore safety requirements are essential.

Safety programs are important measures for promoting excellent health and safety at the workplace. Lower accident rates and good working conditions have resulted from its implementation. Furthermore, putting in place safety programs and creating a safety culture may make it easier for senior management and their employees to work together more successfully. Despite the obvious advantages, safety initiatives in the construction industry are still in their infancy in Pakistan. Due to inadequate management and an insufficient attention to safety, safety initiatives are either non-existent or ineffective. The Pakistani construction industry suffers from outdated safety norms and regulations, as well as a lack of enforcement. According to figures from the Ministry of Labor and Social Affairs of Pakistan, the construction sector accounts for 38 percent of all industrial accidents. Despite the high prevalence of accidents in Pakistan's construction sector, there is still a scarcity of safety studies (Valence, 2012).

Because of the nature of construction projects, where a variety of occupations are performed and resources are properly used to efficiently and cheerfully fulfill objects/goals/tasks. In such situations, the construction industry produces a significant amount of crashes, and it is everyone's responsibility to keep an eye on each other's safety.

During the implementation of projects in the Pakistan Construction Industry, the element of safety is given minimal emphasis. Construction is the third most dangerous sector after industry and agriculture. According to Farooqui et al., the majority of Pakistani construction enterprises are operating in highly dangerous to moderately dangerous circumstances (about 58 percent). Construction workers are also the ones that see the problem of workplace safety more vividly. According to a 2010 assessment by the Health and Safety Executive, the construction industry had a greater rate of work-related sickness than the other manufacturing industries (Buniya, 2021).

Construction safety covers a wide range of topics, from individual employee fatalities to injuries caused by a dangerous working environment. Every person must work together to provide a safe and risk-free building site.

To establish a safe and healthy workplace, employees must be responsible and accountable. In light of global and Pakistani data on accidents and injuries, in the construction business, a need for a safety culture has been discovered, which may increase productivity on the job site while lowering the accident rate. This research makes an effort to draw attention to the aspects that have a role in creating a safe workplace A questionnaire survey was conducted to determine the safe program on site. The survey's findings will aid in the identification of essential aspects that may contribute to a safe and healthy working environment on building sites. In order to design a safety policy, it will be necessary to identify important variables (Memon, 2022).

1.1 RESEARCH OBJECTIVES:

This research tries to close this gap by analyzing the obstacles to the safety program's implementation in the Pakistani construction sector. Intervention techniques may be established and prioritized to overcome these obstacles depending on their relevance, enabling for the effective implementation of safety initiatives in this environment.

1.2 PROBLEM STATEMENT:

Controlling accidents involving on the job site is a difficult challenge for project managers. Individuals and communities alike suffer significant costs because of workplace injuries and fatalities. During the implementation of projects in Pakistan's construction sector, the element of safety is given minimal attention.

1.3 LIMITATIONS OF STUDY:

This research aims to highlight the critical variables that contribute to creating a safe environment. A questionnaire survey was conducted to determine the safe program on campus. The survey's findings will aid in the identification of essential aspects that may contribute to a safe and healthy workplace on construction projects. Identifying essential criteria will aid in the development of a safety program.

2. LITERATURE REVIEW:

There are various advantages to high safety performances in the contracting business when safety programs are implemented properly. Lower rates of workplace accidents and illnesses cut accident expenses, reduce attrition and absenteeism, improve productivity, and raise employees' morale. The aims of applying safety standards in building projects, according to Rawlinson, are to prevent needless and harmful behaviors, detect risks and hazards, and guarantee that incidents are properly recorded and addressed. According to Oliveira et al., companies that adopt

safety precautions enhance the quality of their work, enhance their reputation, encourage individual cooperation, and raise their revenues.

Developing nations confront significant problems in implementing inclusive safety standards, in contrast to industrialized countries, which have made significant efforts. Due to its geographical positions and customs, Middle Eastern nations are classified as developing nations and face comparable challenges. As a result, they face comparable challenges in implementing safety initiatives. There is a plethora of literature on the challenges that developing nations face in implementing safety initiatives. Limited funding are a big obstacle that may wreak havoc on safety initiatives. To run a safe workplace, administration must provide enough resources, such as competent employees, time, money, expertise, safety work procedures, facilities, technology, and equipment. A limited project timetable is another important hurdle to the implementation of safety strategies. Working under pressure causes stress, which may result in health and safety issues as well as lower productivity.

Another important factor contributing to the high frequency and intensity of accidents in construction projects in underdeveloped nations is a lack of commitment to health and safety. Their level of safety knowledge, which influences their prioritizing, dictates how much importance they place on safety. A bad safety culture results from a lack of commitment to safety. Security personnel are also considered as having exclusive responsibility for safety. This impression indicates that workplace safety is an aberration, and that collaboration and cooperation are absent. Furthermore, a lack of understanding of safety matters at the executive level has an impact on the institution's expertise and strategies for managing safety and hazards. The most typical challenges in mandate to ensure, according to Kartam et al., are a lack of safety awareness and a lack of safety norms. Safety training, according to Yiu et al., is critical for accident management and protection. Poor safety behaviors are unavoidable owing to a lack of qualified staff and a lack of safety knowledge and awareness of how to function appropriately.

In addition, interviews with Pakistani construction practitioners were conducted to substantiate the list of barriers discovered in the literature review. Because of this approach, three more obstacles were introduced, and the barriers considered in this research are listed in Table 1.

Table 1: Implementation challenges for safety programs

No	Items	References
1	Lack of safety standards	Interview
2	Insufficient resources	[21,27,30]
3	Tight project schedule	[21,30,31]
4	Inadequate commitment to OSH	[21,30]
5	Putting safety as a lower priority	[26,27,30]
6	Lack of training	[20,25]
7	No safety rules and policy	Interview
8	Assuming that safety is only the responsibility of safety personnel	[26,30]
9	Lack of safety inspection reports	Interview
10	Higher management unaware about safety consideration	[27,30,32]
11	No safety officer	[24,33]
12	Lack of competent workers in the construction industry	[30]

2.1" IDENTIFICATION OF CSF FOR SAFETY CULTURE"

Researchers define a collection of morals, observations, methods, and arrangements of behavior among stakeholders in the organization as safety culture. It also contains ideas, insights, and tactics for lowering risk in any operation

and safeguarding personnel from accidents, disease, and dangerous working circumstances. The personal and collective ideas, attitudes, skills, and behavioral patterns that define an ongoing vision to, as well as the style and competency of, its health and safety programs constitute an organization's safety culture. The members of the organization put forth effort and make key choices to enhance the safety environment on site by emphasizing the construction site as an accident-free place. Developing a safety-based mindset that begins at the top is critical to this achievement. According to the research analysis, the following important characteristics of safety culture are generally disconcerting:

- Prizes
- Preparation
- Employing
- Communication/feedback
- Management support

A considerable lot of study has been done in the building industry to uncover essential aspects. Different scholars offered a list of seventeen characteristics based on a thorough literature study. These criteria have a significant impact on the organization's safety system's performance (Othman, 2021)

3. RESEARCH METHODOLOGY:

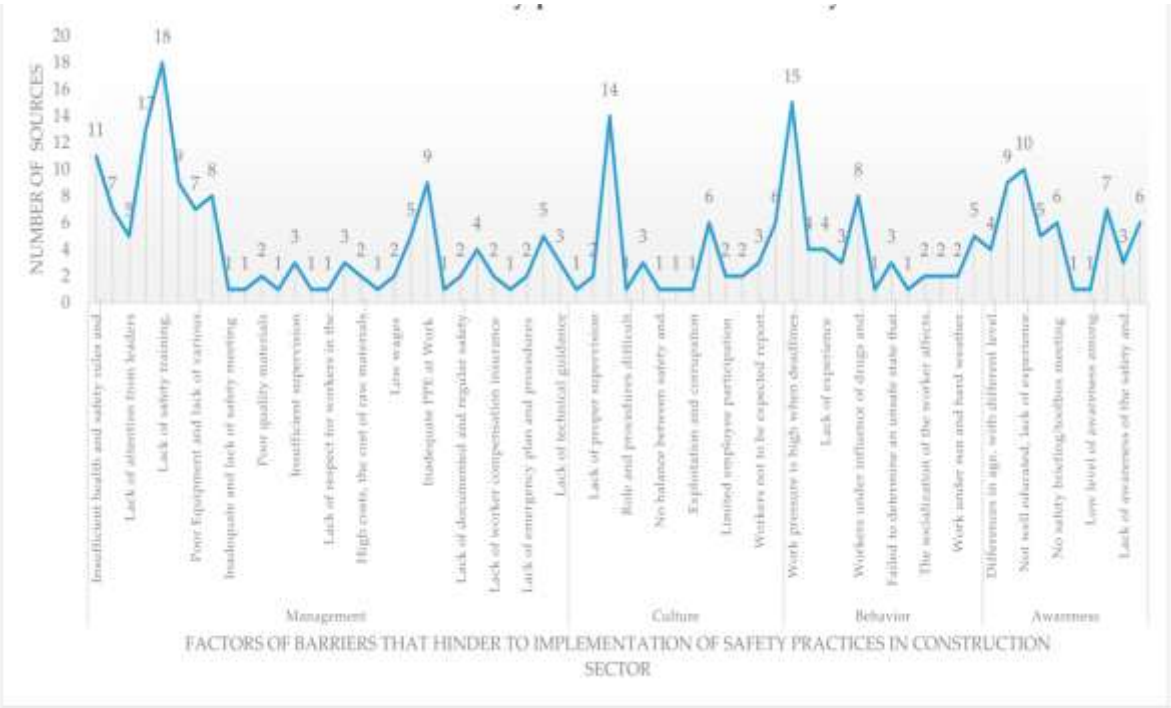
First, a literature review was conducted in order to identify barriers to implementation of safety practices, particularly in developing countries. Second, 16 professionals in the Pakistani construction business with at least five years of experience were interviewed in semi-structured interviews. The interviews have two purposes: first, to validate the obstacles identified in the literature, and second, to find prospective barriers that have not been identified before. All restrictions are important to the Pakistani building sector, according to the respondents. They also identified three more obstacles: a lack of safety standards, safety regulations and policies, and safety inspection reports (Memon, 2022).

A questionnaire study was done inside the Pakistani construction sector to underline the relevance of the issues. A questionnaire survey was conducted in two stages: the first stage gathered data on respondents' perceptions of the effect of seventeen essential success variables, and the second stage verified the critical success elements discovered during the first stage. Various construction-building projects were chosen for this investigation to verify the important success criteria. The verification result contributes to the study's conclusions formulation. For setting priorities, many criteria were assumed, including the kind of program, total project cost, construction phase during implementation, information on the number of subcontractors/suppliers, and specifics of the contractual arrangement for planning, supervising, and managing the project.

When asked about "familiarity with the safety program," the majority of respondents (68 percent) claimed they were familiar with it. Around 87 percent of those polled said they had not received official safety training, indicating a lack of concern for safety in the Pakistani construction business. To make matters worse, the majority of respondents (71.3 percent) claimed that their firms lacked a safety policy. Despite minimal training and the absence of a safety policy, 73 percent of respondents thought that safety measures are vital.

Figure1: Barriers of safety practices

4. DISCUSSION AND RESULTS:



To meet the study's goals, mean values were determined and each component was assigned a rank. The usefulness of the ranking approach in recognizing the impact of CSF within the Pakistani building industry is significant. The three responder categories, contractors, clients, and consultants, were put through a statistical test. To check whether there is substantial agreement in the ranks of distinct participant groups, a null hypothesis (H0) is tested in conjunction with a correlations test at a 95 % confidence level. This suggests that various groups of responders have similar ranks. If no significance is found, an alternative hypothesis (H1) is proposed.

Respondents were given an option of answering an optional question in the poll. The mean values obtained from the respondents' data were used to establish the rank for each approach. The goal of the structured questionnaires was to assess the importance of critical success factors for the implementation of safety initiatives in the Pakistani construction industry, as seen by consumers, consultants, and contractors. The results of the questionnaire survey are highlighted in the following sections.

4.1 "PERCEPTION OF THE EFFECT OF CSF ON SAFETY PROGRAMS"

The results of the first data obtained for the CSF for the safety implementation stage are discussed in this section. Table 2 summarizes AM (Average Mean) and R (Ranks) findings by responder groups. Table 2 also gives CSF's overall rating of seventeen.

The connection between the ranks of the CSF for the three participants: "Client versus Consultant, Client versus Contractors, and Consultant versus Contractor: was determined using Spearman's Connection Coefficient (Rs) test. Memon, et al. employed the t-statistic test to establish the degree of significance (the null hypothesis, H0), and the results are shown in Table 3. Table 3 shows the results of the statistical test of customer vs. supplier. The Spearman's rank correlation coefficient is 0.821, the t-statistics (Calculated) tcal is 5.571, and the t-statistics tst is derived from the t-table. For these groups, the null hypothesis H0 was rejected, and the association was statistically significant at the 5% level. The analysis clearly shows that the contractor and client concur on the importance of key safety criteria (Roslan, 2021).

No.	Factors	Client		Contractor		Consultant		Overall	
		Average Mean	Ranks	Average Mean	Ranks	Average Mean	Ranks	Average Mean	Ranks
1.	Management support	4.5	1	4.353	1	4.38	1	4.407	1
2.	Team work	4.375	2	4.235	2	4.238	2	4.277	2
3.	Appropriate safety education and training	4.25	3	3.705	5	4.05	4	4.05	4
4.	Appropriate supervision	4.187	4	3.941	3	4.095	3	4.074	3
5.	Clear and realistic goals	4.062	5	3.764	4	4.047	5	3.962	5
6.	Safety equipment acquisition and maintenance	4.0	6	3.11	13	3.571	10	3.568	9
7.	Continuing participation of employees	3.937	7	3.294	9	3.523	12	3.574	8
8.	Safety meetings	3.875	8	3.352	8	4.0	6	3.759	6
9.	Delegation of authority and responsibility	3.812	9	3.117	12	3.619	9	3.518	12
10.	Good communication	3.75	10	3.47	6	3.714	8	3.648	7
11.	Personal attitude	3.687	11	3.235	10	3.562	11	3.562	10
12.	Personal competency	3.5	12	3.176	11	3.476	13	3.388	13
13.	Sufficient resource allocation	3.437	13	3.0	16	3.095	16	3.166	16
14.	Effective enforcement scheme	3.376	14	3.411	7	3.809	7	3.555	11
15.	Program evaluation	3.375	15	3.058	14	3.323	15	3.222	15
16.	Personal motivation	3.312	16	3.052	15	3.38	14	3.296	14
17.	Positive group norms	3.062	17	2.588	17	3.047	17	2.907	17

Table 3 also shows the results of the data tests for the other two groups. Therefore, it was discovered that there was a strong ranking similarity between consultant and client, as well as consultants and contractors. These results suggest that both number of respondents had the same idea about how to create a CSF for a safety program.

Table 3: DISCUSSION ON THE RANKING OF ESSENTIAL SUCCESS FACTORS

Groups	Spearman's Correlation Coefficient (Rs)	t-statistics (Calculated) t_{cal}	t-statistics (from t-Table) t_{cl}	Null Hypothesis H_0
Client Versus Contractor	0.821	5.571		True
Client Versus Consultant	0.860	6.535	1.746	True
Contractor Versus Consultant	0.946	11.311		True

4.2 “UNCONDUCTIVE WORK CLIMATE”

A workplace harassment is the first barrier to developing a safety program. Obstacles include a lack of finance, a lack of commitment to OSH, and the belief that security is primarily the responsibility of safety personnel. These barriers are interrelated and have an effect on the execution of the safety project. According to Goh and Chua, a lack of funds, for example, causes management staff to be less committed to OSH. A lack of safety knowledge, on the other hand, is shown by a paucity of resources to carry out safety actions. The assumption that safety is the duty of safety professionals is another example of a lack of accountability to OSH. Inefficient safety programs, inadequate risk management techniques, and insufficient protection of persons and performance indicators stem from a lack of cooperation between project staff and safety professionals. The most commonly reported success element in safety studies is management commitment. As a result, improving management commitment to OHS is critical in addressing concerns connected to a hostile work environment (Ismail, 2012).

4.3 POOR SAFETY AWARNESS:

The lack of safety awareness is the second constraint. There are three challenges to this component's success: insufficient training, a lack of knowledge of safety threats and problems, and a lack of safety assessments. These things are connected to one another once again. Employees have a limited understanding of dangers and safety due to a lack of training, matching the management team's poor awareness of security problems. Because of all of this, managers will be unable to detect, prevent, and control problems, as well as a lack of safety inspections (Bannerstakes, 2017).

4.4 UNSUPPORTIVE INDUSTRY NORMS:

The third barrier element is unsupportive industry standards, which are illustrated by the three barriers: a shortage of qualified personnel in the construction business, a tight project timetable, and a reduced focus for safety. In Pakistan's construction business, a scarcity of qualified personnel is frequent, limiting their involvement in the execution of safety programs. To make things worse, building projects are notorious for having a short and unreasonable timeline, which is the industry standard. As a result, contractors in Pakistan prioritize finishing projects as rapidly as feasible within the specified timeline. In this situation, project team members often prioritize safety lower on the priority list, which is compounded by insufficient resources and a lack of conviction to security (Yusof, 2012).

“CONCLUSION”

According to the study's findings, the most effective element in the implementation of health and safety initiatives in the Pakistani construction projects is "direct supervision." All participants, on the other hand, placed teamwork and education for a safety program, second and third, respectively. It is obvious from the data that establishing a safe culture on a construction site is very difficult without the support of senior management. Maintaining top management support, a safe atmosphere on the building site, teamwork, and associated training for employees may all help to promote the safety culture. In addition to identifying the most crucial component, considerable relationships between various groups of respondents on the factor ranking for the safety program were discovered.

Safety programs are used in the construction industry to reduce safety risks, reduce injuries and fatalities, eliminate expenses associated with poor safety culture, and safeguard the image of construction companies. Despite its benefits, the Pakistani construction sector still confronts challenges in putting safety systems in place. Due to the implementation of CSF on a few projects, it has been discovered that project leaders on these initiatives believe that the 'Management Commitment' element is very important for the effective administration of a safety program. However, project managers on a few projects are considering how protective gear procurement and maintenance might enhance the on-site safety program.

The study discovered four major roadblocks that must be overcome in order to improve the compliance with safety initiatives in the Pakistani construction sector. First, a hostile work environment caused by a lack of safety resources, a lack of safety commitment, and a lack of safety responsibility. Second, there is a lack of safety awareness, which is based on a lack of safety training, safety knowledge, particularly among senior management levels, and safety control. Third, the absence of a safety management program reflects insufficient governance. Fourth, owing to their focus on finishing projects as quickly as feasible at the lowest possible cost, the Pakistani construction industry's rules do not allow the adoption of safety measures. The EFA result was then validated using a PLS-SEM. The findings show that all four-barrier dimensions have a substantial impact on the adoption of safety

programs. This validation provides numerical data about the dimensions and products in the Pakistani construction industry that inhibit the compliance with safety initiatives.

To promote a safe environment on construction sites, top leadership must advocate assigning appropriate resources (particularly money and people), actively engaging in safety training, implementing remedial measures, and inspiring all employees to participate in such activities.

REFERENCES:

- Memon, Z., Khatri, K. and Memon, A. (n.d.). *Identifying the Critical Factors Affecting Safety Program Performance for Construction Projects within Pakistan Construction Industry*. [online] Available at: http://publications.muet.edu.pk/research_papers/pdf/pdf767.pdf [Accessed 25 Mar. 2022].
- De Valence, G. (2012). The Significance of Barriers to Entry in the Construction Industry. *Construction Economics and Building*, 7(1), pp.29–36.
- The Constructor. (2019). *What are Construction Barriers?* [online] Available at: https://theconstructor.org/construction/what-construction-barriers/36928/.
- Buniya, M.K., Othman, I., Sunindijo, R.Y., Kineber, A.F., Mussi, E. and Ahmad, H. (2021). Barriers to safety program implementation in the construction industry. *Ain Shams Engineering Journal*, 12(1), pp.65–72.
- Ne'Matullah, K.F., Pek, L.S. and Roslan, S.A. (2021). Investigating communicative barriers on construction industry productivity in Malaysia: An overview. *International Journal of Evaluation and Research in Education (IJERE)*, 10(2), p.476.
- Guest (2021). *How to Overcome Language Barriers in Construction*. [online] IVANNOVATION. Available at: https://ivannovation.com/blog/language-barriers-in-construction/.
- Hai, T., Yusof, A., Ismail, S. and Wei, L. (2012). A Conceptual Study of Key Barriers in Construction Project Coordination. *Journal of Organizational Management Studies*, [online] pp.1–14. Available at: https://ibimapublishing.com/articles/JOMS/2012/795679/795679.pdf.
- Bannerstakes.com. (2017). *Banner Stakes*. [online] Available at: https://www.bannerstakes.com/blog/2017/10/31/safety-barriers [Accessed 25 Mar. 2022].