



Exploring the Role of Organizational Culture in Shaping Safety Behaviors among Informal Construction Workers

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ABSTRACT

This study examines the role of organizational culture in shaping safety behavior among informal construction workers. Using a quantitative cross-sectional survey of 150 respondents, organizational culture was measured through involvement, consistency, adaptability, and mission, while safety behavior was assessed through compliance and participation. Multiple linear regression analysis shows that organizational culture has a positive and significant effect on safety behavior, with consistency and involvement contributing most to compliance with protective equipment use and participation in safe practices. The findings highlight the importance of strengthening organizational culture to reduce accident risks. The study provides theoretical insights into the link between culture and safety behavior in informal work settings and practical recommendations for culture-based interventions to improve occupational health and safety.

INTRODUCTION

Occupational safety in the construction sector is still a major concern both globally and locally, given the high number of accidents and injuries in the field. Internationally, construction is categorized as one of the three most high-risk industries with accident rates consistently above the average of other industries (Konadu, 2024). In developing countries, including Indonesia, safety challenges are increasingly complex due to the high proportion of informal workers who lack legal protections or access to formal safety programs (Fayyaz et al., 2025). This condition makes the study of the role of organizational culture, including safety culture, in shaping the behavior of informal workers very important to be studied more deeply as an effort to develop effective occupational health interventions.

Organizational culture has long been considered one of the important determinants in shaping safety behavior. In the context of formal enterprises, many studies have found that cultural dimensions such as engagement, consistency, adaptability, and mission are closely related to workers' adherence to safety procedures (Zhou et al., 2021). However, most of the literature is still focused on formal or multinational construction companies, while informal workers are often untouched by research despite facing higher risks. In other words, there is a considerable gap in understanding how organizational culture can influence safety behaviors in this more vulnerable group of workers.

Previous research has explored more formal contexts. For example, (Ortega et al., 2025) used the Delphi approach to identify the factors that shape the safety culture in New Zealand's construction sector, but only include workers of large corporations. On the other hand, (Cong et al., 2022) developed safety communication instruments among construction workers, but they did not directly link communication to the broader organizational culture. These findings suggest that empirical studies that explicitly examine the impact of organizational culture on informal worker safety behavior are still very limited.

In addition, in terms of methodology, previous research mostly used qualitative or descriptive approaches without adequate inferential analysis. For example, (Ortega et al., 2025) uses thematic analysis and Delphi to formulate cultural factors, while (Cong et al., 2022) focuses more on the validation of communication instruments. Other studies such as by (Park & Kim, 2023) examined safety risk factors through in-depth interviews, but did not quantitatively analyze the relationship between variables. The limitations of this methodology reinforce the urgency of simple but systematic quantitative research, such as using surveys and regression, in order to be able to examine the direct relationship between organizational culture and the safety behavior of informal workers.

This study specifically aims to quantitatively examine the extent to which organizational culture plays a role in shaping occupational safety behaviors in informal construction workers. The focus of the research lies on organizational culture variables that include organizational involvement, consistency, adaptability, and mission and safety behavior variables that include compliance and participation. With a cross-sectional survey design and a simple regression

analysis, this study seeks to identify which organizational culture dimensions are most significant in influencing the safety behavior of informal workers.

Theoretically, this study will enrich the literature on safety culture by presenting a new context, namely informal construction workers that have been rarely researched before. These findings will help broaden the scope of organizational culture theory and reinforce the generalization that cultural factors have influence across contexts, both in formal and informal organizations (Wang et al., 2022). By including the organizational culture dimension into the analysis, this study has the potential to offer a more comprehensive empirical model of safety behavior in the construction sector.

Practically, this research is expected to be able to provide a strong basis for developing safety intervention strategies in the field. For example, increased worker involvement in safety discussions, consistency in the application of work rules even in informal conditions, and organizational adaptability to dynamic field conditions can be prioritized in training programs. Studies by (Liu et al., 2023) emphasize that simple culture-based interventions – such as daily briefings or peer monitoring – can significantly lower accident rates, even in contexts with limited resources.

Furthermore, the results of this study have the potential to provide relevant policy recommendations for the government and construction workers' associations. If it is proven that organizational culture has a significant influence on safety behavior, then the formation of shared norms and values in the informal working community can be an alternative strategy to reduce the risk of accidents. Findings like these are aligned with recommendations (Mutlu et al., 2024), which emphasize the need for community-based collaborative strategies to improve safety in the informal sector.

Thus, this research not only offers a contribution to the development of science, but also has direct implications for safety practices in the field. This research is expected to be a reference for future researchers, construction practitioners, and policymakers to strengthen accident prevention efforts through an often overlooked path, namely building a healthy and safety-oriented organizational culture, even in the informal construction sector.

THEORETICAL REVIEW

Organizational Culture and the Importance of Occupational Safety

Organizational culture is a set of values, beliefs, and practices that guide the behavior of members in a work group. In the context of occupational safety, organizational culture reflects the extent to which safety is prioritized and is part of the organization's identity. The literature review distinguishes between a safety culture that is fundamental, encompassing long-term values and norms, and a safety climate that is more of a short-term perception of safety policies and practices. Research shows that organizations with strong safety cultures tend to experience lower accident rates and have more consistent safety behaviors among workers (Naji et al., 2021; Kvalheim & Dahl, 2022). This confirms that organizational culture not only affects performance, but also the health and safety of the workforce.

Aspects of Organizational Culture Affecting Safety

Widely used organizational culture models, such as those developed by Denison, identify four key dimensions of engagement, consistency, adaptability, and mission. In the construction industry, the engagement dimension refers to the extent to which workers feel involved in day-to-day safety decision-making and practices. Consistency relates to the extent to which rules and procedures are executed with discipline, while adaptability reflects the organization's ability to adapt to dynamic field conditions. Mission is related to the clarity of the organization's objectives including the priority on safety. Recent research shows that these four dimensions have an important role in encouraging workers to better comply with safety rules and actively participate in creating a safe work environment (Wang, Sun, & Li, 2022; Zhou, Fang, & Mohamed, 2021; Sanni & Arasli, 2023).

Safety Behavior: Compliance and Participation

Safety behaviors are usually categorized into two main forms. First, compliance behaviors that include basic actions such as wearing personal protective equipment, following work procedures, and carrying out safety instructions. Second, participatory behaviors that are voluntary, such as reporting potential hazards, participating in safety programs, and providing support to co-workers. Cutting-edge research shows that a strong organizational culture can influence these two forms of behavior differently. For example, consistent norms and rules have a greater impact on compliance, while engagement and open communication encourage more active participation (Chan et al., 2023; Ghasemi et al., 2021). This underscores the importance of the organization not only emphasizing compliance, but also building an environment that encourages worker initiative.

Organizational Culture Shapes Safety Behavior

The mechanisms that link organizational culture to safety behaviors take place through various channels. First, the role of managers and supervisors who affirm the importance of safety can reinforce safe work norms. Second, communication, both formal and informal, plays an important role in disseminating knowledge and safer work habits. Third, consistent training helps increase the capacity of workers to face risks in the field. Fourth, the existence of a reward and sanction system makes workers more consistent in complying with the rules. Recent research also emphasizes the importance of informal communication between workers, which has proven to be an effective way to disseminate safety practices in construction environments that lack formal structures (Cong et al., 2022; Rahman et al., 2024).

Special Challenges in the Construction Industry

The construction sector has different characteristics compared to other sectors. Temporary work, long subcontractor chains, and time and cost pressures often make implementing a safety culture inconsistent. High labor turnover and project-based work systems also weaken continuity in the implementation of safety rules. In addition, the complexity of the relationships between actors in the

subcontracting chain often leads to confusion about who is responsible for safety. Research shows that these factors can hinder the formation of a solid safety culture, so an approach that is able to break through these structural boundaries is needed (Berglund et al., 2023; Ahmad, Shafiq, & Noor, 2021).

Informal Construction Workers: An Often Overlooked Vulnerable Group

Informal construction workers, which include day laborers, freelancers, or workers without formal contracts, are a group with a high level of vulnerability. They often do not have adequate access to training, safety facilities, and regulatory protections. The literature shows that most research on safety culture still focuses on formal contexts, while informal contexts still receive less attention. Existing studies describe more of the risks and dangers faced by informal workers, but have not comprehensively examined the relationship between organizational culture and safety behaviors in this group (Lopez et al., 2023; Ortega et al., 2025). This shows that there is an important research gap to bridge.

Safety Culture Interventions in Informal Contexts

Despite its limitations, cutting-edge research shows that culture-based interventions can be successfully implemented in informal work environments. Simple strategies such as safety briefings before work, the formation of peer monitoring groups, and the facilitation of communication between workers have been proven to lower the risk of accidents. In addition, the involvement of local community leaders in disseminating safety norms has also been shown to be effective in strengthening safety behaviors among workers who are not protected by formal systems (Liu, Zhang, & Chen, 2023; Fayyaz et al., 2025). This kind of intervention shows that a culture-based approach can be a practical solution in reducing the rate of work accidents in the informal construction sector.

METHODOLOGY

Types and Approaches to Research

This study uses a quantitative approach with a cross-sectional survey design. This approach was chosen because it allows researchers to measure organizational culture and safety behavior variables at the same time, as well as statistically analyze the relationships between variables (Creswell & Creswell, 2023). The cross-cut design is suitable for use in the context of informal construction workers who have high mobility, so that data collection can be carried out efficiently in a limited period of time (Rahi, 2021).

Population and Sampling Techniques

The study population included informal construction workers in the West Java and Jakarta regions, as a representation of areas with dense development activities but involving many informal workers without formal legal protections. The sampling technique used non-probability purposive sampling, which is to select respondents who meet certain criteria: (1) have worked in the informal construction sector for at least the last six months, (2) are at least 18 years old, and (3) are willing to be research respondents. The total number of respondents

was 150 people, this number was considered adequate for multiple linear regression analysis because it met the minimum sample size requirements according to statistical guidelines, which is 10 times the number of independent variables studied (Hair et al., 2022). The selection of the number also takes into account time constraints and field access.

Data Collection Techniques and Instruments

Data collection was carried out using a structured questionnaire that was distributed directly to respondents at the work site. The research instrument consists of two main parts. First, the organizational culture instrument that refers to the Denison model, includes four dimensions, namely engagement, consistency, adaptability, and mission (Denison et al., 2021). Second, an occupational safety behavior instrument that measures two dimensions, namely compliance and participation, adapted from the safety scale developed by Neal and Griffin and modified according to the context of informal construction workers (Chan et al., 2023). Each item uses a five-point Likert scale, ranging from "strongly disagree" to "strongly agree." The validity test was carried out by analyzing confirmatory factors to ensure the suitability of the indicators to the theoretical construct. The reliability test was carried out using Cronbach's Alpha value with a minimum limit of 0.70 as an internal consistency standard (Taber, 2021).

Research Procedure

The research stage begins with a preliminary study and the preparation of instruments based on a literature review. Furthermore, a pilot test was carried out on 30 informal construction worker respondents to ensure language clarity and item relevance. After the instrument was revised, the main data collection was carried out by distributing questionnaires to respondents at the work site, with the help of enumerators to facilitate workers who have limited literacy. The collected data is then checked for completeness and consistency before being further analyzed. All research procedures were carried out while still paying attention to research ethics, including informed consent and confidentiality of respondent data (Bazeley, 2022).

Data Analysis Techniques

Data were analyzed using multiple linear regression to test the influence of organizational culture (engagement, consistency, adaptability, and mission) on safety behaviors (compliance and participation). The analysis was carried out with the help of the Statistical Package for the Social Sciences (SPSS) software version 26. Before the main analysis, a classical assumption test was carried out which included normality, multicollinearity, and heteroscedasticity tests to ensure the validity of the regression model. The results of the analysis were interpreted based on significance values (p-value), regression coefficients, and determination coefficient values (R^2) which showed the contribution of organizational culture variables to the safety behavior of informal workers (Hair et al., 2022; Field, 2021).

RESULT & DISCUSSION

Characteristics of Respondents

This study involved 150 informal construction workers as respondents. Demographic analysis shows a diverse distribution based on age, work experience, education level, and employment status. This diversity provides a comprehensive picture of the conditions of the informal construction sector in the area studied. Based on age, the majority of respondents were in the 31–40 years group (34.7%), followed by the age group of 25–30 years (30.7%). Respondents under the age of 25 were 18.7%, while those over 40 years old reached 16.0%. This suggests that the informal construction workforce is predominantly dominated by individuals of productive age, which corresponds to the sector's need for a workforce with optimal physical capabilities.

To clarify, the graph below shows the age distribution pattern of respondents. The predominance of workers in the 31–40 age group reflects a balance between physical abilities and accumulated work experience, which in turn can affect safety awareness and behavior.

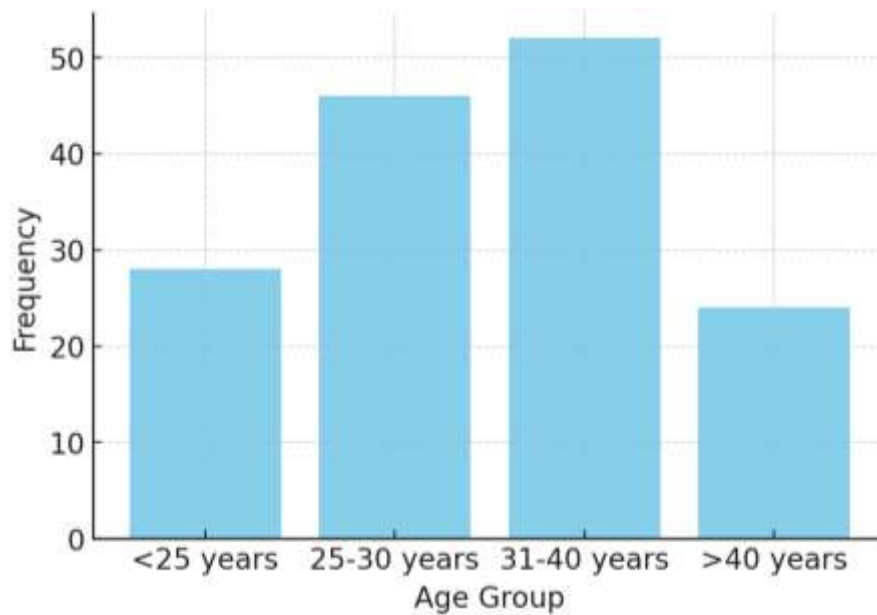


Chart 1. Distribution of Respondents by Age Group

Based on work experience, the largest group of respondents had 6–10 years of work experience (36.7%). A small percentage have less than 2 years of experience (14.7%), while 27.3% have 2–5 years of experience, and 21.3% have more than 10 years of experience. This distribution shows that most workers in the informal sector already have sufficient practical knowledge, although not always supported by formal training.

In terms of education, the majority of respondents have completed their education at the high school level (40.7%), followed by junior high school (31.3%). A small percentage have only a primary school education (12.7%), and 15.3% have a diploma or higher. This pattern illustrates that the majority of the

workforce has a secondary level of education, which has implications for their level of understanding of occupational safety practices.

Most respondents were categorized as freelance daily workers or workers without formal contracts. This employment status reflects the vulnerable nature of informal construction jobs, which often limit their access to occupational health services, social security, as well as structured safety training. This condition further emphasizes the urgency of research on how organizational culture can shape safety behaviors in this vulnerable group of workers.

Organizational Culture Analysis

The results of the analysis of the organizational culture dimension show a positive trend with relatively high average values in all dimensions. The four main dimensions measured include involvement, consistency, adaptability, and mission. This analysis provides an overview of how informal construction workers assess organizational culture in the context of day-to-day work.

The engagement dimension obtained an average of 3.85 with a standard deviation of 0.65, indicating that most workers felt sufficiently engaged in the work process, despite differences of view among respondents. Consistency was recorded as the dimension with the highest average of 4.10 and a standard deviation of 0.58, confirming that the application of rules and work norms is considered quite consistent in the field. Table 2 below shows the average values and standard deviations for each dimension of organizational culture.

Table 1. Descriptive Statistics of Organizational Culture Dimensions

Organizational Culture Dimension	Mean	Standard Deviation
Involvement	3.85	0.65
Consistency	4.10	0.58
Adaptability	3.72	0.71
Mission	3.95	0.62

Furthermore, the adaptability dimension has an average of 3.72 with a standard deviation of 0.71. This value is relatively lower than other dimensions, which indicates the challenge of adapting work practices to dynamic changes in field conditions. The mission dimensions get an average of 3.95 with a standard deviation of 0.62, indicating that the worker understands the direction and objectives of the work, including the importance of occupational safety as part of the mission. To clarify the average value tendencies, the graph below presents a visual comparison between the dimensions of organizational culture. The graph shows that consistency occupies the most dominant position, followed by mission, engagement, and finally adaptability.

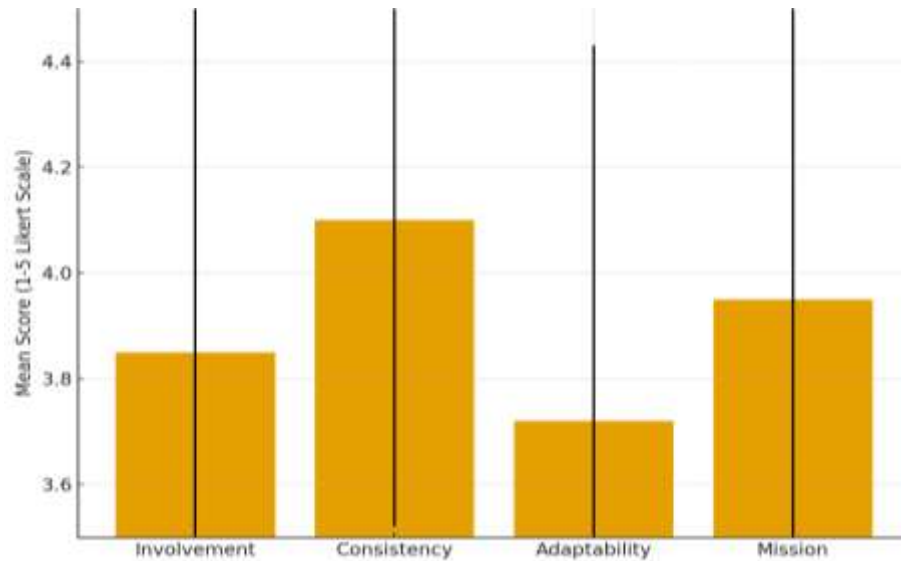


Chart 2. Mean Scores of Organizational Culture Dimensions

Overall, these findings show that the organizational culture in the informal construction sector is relatively strong, particularly in terms of consistency in the implementation of rules. However, adaptability still needs attention because the high variation in working conditions in this sector demands the ability of organizations to be more flexible in accommodating changes in the field.

Safety Behavior Analysis

The results of the analysis of safety behavior showed that informal construction workers had a relatively high level of compliance and participation. Compliance behavior includes basic actions such as wearing personal protective equipment, following work procedures, and obeying supervisory instructions. Meanwhile, participatory behavior includes active involvement in reporting potential hazards, participating in safety discussions, and supporting colleagues in maintaining a safe work environment.

The average score for compliance reached 4.05 with a standard deviation of 0.59, which signifies that most respondents consistently implement the basic rules of occupational safety. This high level of compliance shows that there is an awareness of the importance of self-protection, especially in the use of personal protective equipment which is the main indicator of safety in the field.

Table 2. Descriptive Statistics of Safety Behavior Dimensions

Safety Behavior Dimension	Mean	Standard Deviation
Compliance	4.05	0.59
Participation	3.88	0.67

Furthermore, the participation dimension obtained an average of 3.88 with a standard deviation of 0.67. Although the value is slightly lower than compliance, it still shows that most workers are proactively engaged in safety activities. This includes a willingness to report hazards, share information with fellow workers, and participate in informal activities such as safety briefings. The following graph illustrates the average comparison of the two dimensions of safety behavior. It appears that compliance occupies the highest score, while participation occupies a slightly lower position but is still in the high category.

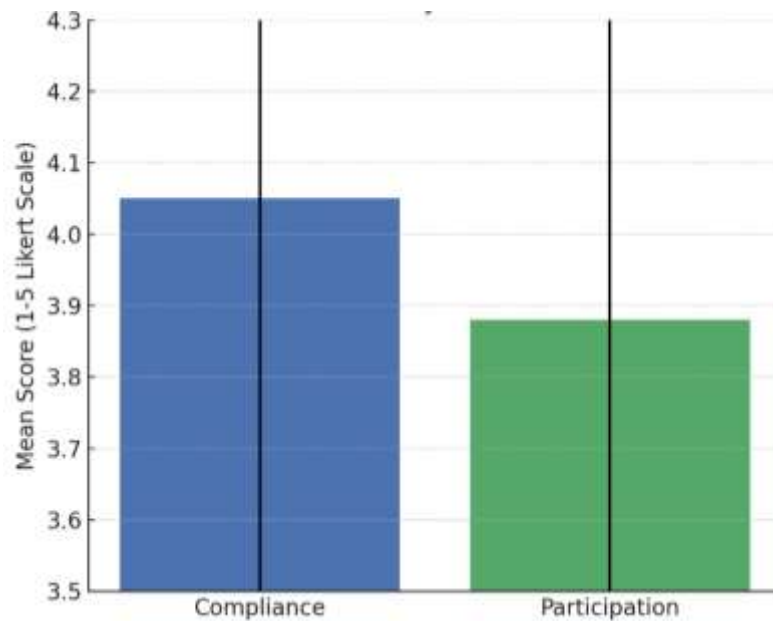


Chart 3. Mean Scores of Safety Behavior Dimensions

These results show that informal construction workers not only adhere to basic safety rules but also demonstrate participatory initiative in creating a safer work environment. These findings indicate the potential to strengthen a safety culture through encouragement in the participation aspect, so that workers not only follow the rules, but also actively contribute to maintaining collective safety.

Regression Analysis of Organizational Culture and Safety Behavior

The results of multiple linear regression analysis showed that the four dimensions of organizational culture had a positive influence on the safety behavior of informal construction workers, albeit with different levels of significance. The consistency dimension contributed the most with a beta coefficient of 0.34 ($p < 0.001$), followed by engagement with a beta coefficient of 0.28 ($p < 0.001$). This shows that the consistent application of rules and the active involvement of workers in the safety process are dominant factors in encouraging safety behavior, especially in the aspects of compliance with the use of personal protective equipment and involvement in safe work practices.

Table 3. Results of Multiple Linear Regression of Organizational Culture on Safety Behavior

Organizational Culture Dimension	Beta Coefficient	t-Value	Significance (p-value)
Involvement	0.28	4.12	0.000
Consistency	0.34	5.03	0.000
Adaptability	0.15	2.21	0.028
Mission	0.19	2.76	0.007

In addition, the mission dimension also had a significant effect with a beta coefficient of 0.19 ($p = 0.007$), indicating that the clarity of organizational direction and objectives that emphasize safety also strengthens safe behavior. Meanwhile, adaptability, although showing a lower coefficient of 0.15 ($p = 0.028$), still makes an important contribution, especially in the organization's ability to adapt to field dynamics and frequently changing working conditions. The following graph illustrates a comparison of the strength of the influence of each dimension of organizational culture on safety behavior. It is clear that consistency and engagement occupy the top position as the most influential factors, while adaptability has the lowest but still significant contribution.

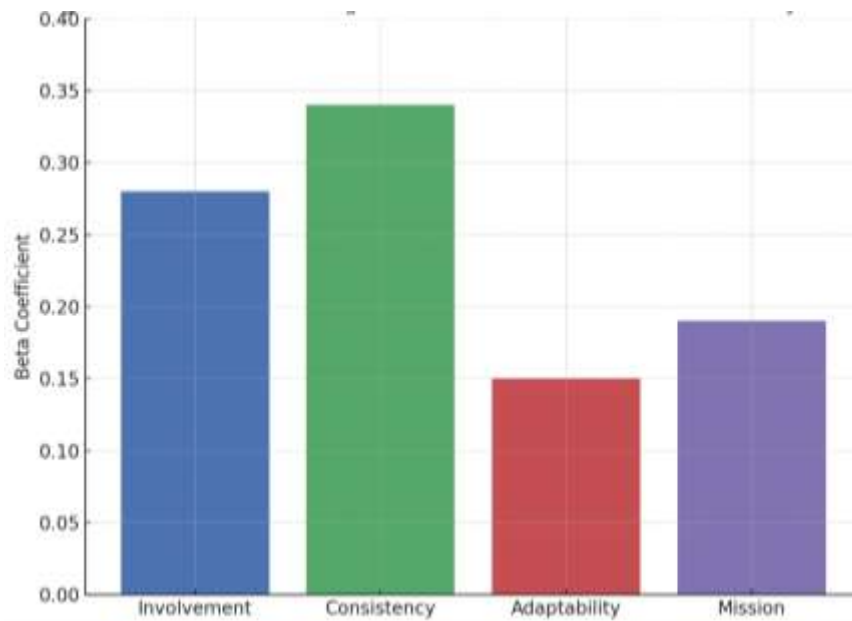


Chart 4. Regression Coefficients of Organizational Culture Dimensions on Safety Behaviors

These results confirm that organizational culture is an important predictor in shaping the safety behavior of informal construction workers. The differences in the power of influence between dimensions provide a comprehensive picture

of which cultural aspects need to be prioritized in safety interventions in the informal construction sector.

DISCUSSION

The findings suggest that consistency ($\beta = 0.34$; $p < 0.001$) and engagement ($\beta = 0.28$; $p < 0.001$) are the strongest predictors of informal worker safety behavior, both in terms of compliance and participation. This is in line with Denison's theory that consistency creates solid work norms that lower uncertainty in safety procedures, while engagement reflects empowerment and team orientation that drives worker commitment (Denison, Nieminen, & Kotrba, 2021; Tadesse Bogale & Debela, 2024). Other studies have also found that a strong safety culture, especially through consistent rules and worker participation, significantly lowers risky behaviors and incidents in the field (Naji, Ali, & Al-Mekhlafi, 2021). In informal contexts, these results confirm that simple but consistent cultural tools such as briefing routines or discipline in the use of safety equipment can be an important foundation even without a formal structure.

The mission dimension had a significant effect ($\beta = 0.19$; $p = 0.007$), demonstrating the importance of clarity of organizational goals that highlight safety as part of the work identity. Although it plays a smaller role, it supports the theoretical view that the vision of safety reinforces the internalization of safety norms in organizational culture (Denison et al., 2021). Adaptability has the lowest coefficient ($\beta = 0.15$; $p = 0.028$), but it is still meaningful – it shows that the ability of workers and organizations to adapt to changing field conditions also affects safety. Research by Zou and Sunindijo, states that the construction industry, especially in developing countries, requires high adaptability due to fragmentation and project dynamics (Zou & Sunindijo, 2020). In informal contexts, adaptability can be the ability of workers to innovate in safe practices when formal procedures are not available.

Theoretically, this study expands the application of the Denison model in explaining the workplace safety culture in the informal sector. During this time, most research on organizational culture and safety has focused more on formal companies with a clear managerial structure. The results of this study show that the four dimensions of organizational culture proposed by Denison engagement, consistency, adaptability, and mission remain relevant in informal contexts that do not have formal systems or strict regulations. These findings reinforce the idea that organizational culture can be an important factor in shaping safety behaviors, even if it is not supported by a robust institutional framework (Wang, Sun, & Li, 2022). Thus, this research contributes to the literature by presenting empirical evidence that organizational culture theory can be applied across contexts, both formal and informal.

The results of this study support the hypothesis that organizational culture plays an important role in encouraging occupational safety behavior. However, the findings show that the dimensions of consistency and engagement exert a stronger influence compared to the dimensions of adaptability and mission. This condition is understandable because in an informal work environment, work situations are very varied and change frequently. Under

these conditions, clear and consistent rules are more likely to be beneficial for workers, while daily involvement in co-working activities provides a real incentive to behave safely.

In contrast, dimensions such as adaptability and safety missions tend to be perceived as more abstract. Adaptability requires a strong organizational structure to be systematically applied, while safety missions are easier to understand and apply in the context of a formal company that has a clear vision and direction of work. Previous research has also shown the same thing, namely that in formal organizations, safety visions and missions can be more easily communicated and internalized by workers (Kvalheim & Dahl, 2022). However, in informal contexts, workers are more influenced by the certainty of the rules that apply in the field as well as direct interaction with colleagues and field supervisors (Cong et al., 2022).

This study only uses questionnaire instruments as a data collection tool. Even though the instrument has been tested for validity and reliability, there is still the potential for bias due to self-reporting, for example, respondents tend to give answers that are considered "safe" or according to the researchers' expectations. To reduce this bias, further research is recommended to use a mixed method by combining quantitative surveys and qualitative approaches, such as in-depth interviews or Focus Group Discussions. In this way, researchers can gain a more contextual understanding of how organizational cultures are formed and how safety practices are carried out in the field (Kvalheim & Dahl, 2022).

This research shows that organizational culture-based interventions can still be effective in the informal sector, although formal infrastructure support such as regulations or training systems is still very limited. From an academic perspective, these findings expand the theory of safety culture by emphasizing that safety culture can also be built in informal work environments. This is in line with the view that organizational culture, through shared values, norms, and practices, is able to shape individual behavior even in work conditions with minimal formal regulation (Kvalheim & Dahl, 2022). This means that the concept of safety culture is not only relevant for large companies or formal organizations, but it is also flexible and adaptable to real conditions in informal construction projects, as shown by recent studies on construction workers in non-formal work environments (Lopez et al., 2023).

In practice, this study provides an idea that simple strategies can actually be very useful. For example, brief safety briefings conducted daily, worker involvement in daily work plans, and an emphasis on consistent ground rules have been shown to improve safety behavior. The emphasis on this strategy is in line with findings (Liu, Zhang, & Chen, 2023) that highlight the effectiveness of community-based interventions in lowering the risk of accidents, even when organizational resources are severely limited.

CONCLUSIONS AND RECOMMENDATIONS

This research confirms that organizational culture has an important role in shaping the safety behavior of informal construction workers. The results of the analysis showed that the dimensions of consistency and engagement were

the most influential factors in increasing compliance with the use of personal protective equipment as well as active participation in safe work practices. Meanwhile, the dimensions of adaptability and mission also contribute, although the influence is comparatively weaker in the context of informal work. These findings provide empirical evidence that even without regulatory support and formal structures, organizational culture is still able to be the main mechanism to reduce the risk of work accidents in the informal construction sector.

Theoretically, this study expands the literature on safety culture by presenting a new perspective on the context of informal workers that has been rarely researched before. In practical terms, the results provide the basis for simple but effective interventions, such as routine safety briefings, worker involvement in daily activity planning, and consistent application of ground rules. This strategy can be implemented quickly and efficiently in the field, even without large institutional support. Thus, this research not only contributes to the development of academic knowledge, but also provides direct implications for efforts to improve occupational health and safety in the informal construction sector.

FURTHER STUDY

Further studies are recommended to examine the role of organizational culture in shaping safety behavior across different types of informal work beyond the construction sector, allowing for broader generalization. Future research could also integrate additional factors such as leadership style, peer influence, and socioeconomic conditions to provide a more holistic understanding of safety practices among informal workers. Moreover, adopting longitudinal and mixed-method approaches would help capture both the short-term and long-term effects of cultural interventions on reducing workplace accidents, thereby strengthening the evidence base for practical safety improvements in informal labor settings.

REFERENCES

- Ahmad, S., Shafiq, N., & Noor, R. M. (2021). Safety challenges in the construction industry: A global review. *Journal of Safety Research*, 77, 276–288. <https://doi.org/10.1016/j.jsr.2021.03.005>
- Bazeley, P. (2022). *Qualitative data analysis: Practical strategies* (2nd ed.). Sage.
- Berglund, M., Lindahl, G., & Stehn, L. (2023). Organizational challenges for safety in complex construction projects. *Construction Management and Economics*, 41(2), 87–101. <https://doi.org/10.1080/01446193.2022.2121887>
- Chan, D. W., Lee, A., & Wong, F. K. (2023). Safety behavior in construction projects: A multidimensional perspective. *Safety Science*, 162, 106046. <https://doi.org/10.1016/j.ssci.2022.106046>
- Cong, C., Wang, J., & Chen, Q. (2022). Developing communication instruments for improving construction safety culture. *Journal of Construction Engineering and Management*, 148(4), 04022021. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0002240](https://doi.org/10.1061/(ASCE)CO.1943-7862.0002240)
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). Sage.

- Denison, D. R., Nieminen, L., & Kotrba, L. (2021). Diagnosing organizational cultures: Validating a model and method. *International Journal of Organizational Analysis*, 29(1), 30–50. <https://doi.org/10.1108/IJOA-12-2019-1998>
- Fayyaz, A., Ali, S. H., & Ahmad, R. (2025). Health and safety issues in informal construction work in developing countries. *International Journal of Occupational Safety and Ergonomics*. Advance online publication. <https://doi.org/10.1080/10803548.2025.1154672>
- Field, A. (2021). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage.
- Ghasemi, F., Mohammadfam, I., Soltanian, A., Mahmoudi, S., & Zarei, E. (2021). Safety climate and behavior in the construction industry: The mediating role of organizational learning. *Journal of Safety Research*, 78, 274–283. <https://doi.org/10.1016/j.jsr.2021.05.004>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2022). *Multivariate data analysis* (9th ed.). Cengage Learning.
- Konadu, A. (2024). Occupational safety in construction: A comparative global analysis. *International Journal of Environmental Research and Public Health*, 21(1), 112. <https://doi.org/10.3390/ijerph21010112>
- Kvalheim, S. A., & Dahl, Ø. (2022). Safety culture and safety climate in the workplace: Review and meta-analysis. *Safety Science*, 152, 105771. <https://doi.org/10.1016/j.ssci.2022.105771>
- Liu, J., Zhang, Z., & Chen, H. (2023). Community-based safety interventions in resource-limited construction settings. *Journal of Safety Research*, 86, 102–112. <https://doi.org/10.1016/j.jsr.2023.01.009>
- Lopez, R., Martinez, P., & Diaz, C. (2023). Informal construction workers: Risks and safety culture gaps. *International Journal of Construction Management*, 23(5), 327–338. <https://doi.org/10.1080/15623599.2021.1969285>
- Mutlu, E., Aydin, D., & Kara, O. (2024). Collaborative strategies for improving safety culture in informal construction. *Safety Science*, 165, 106238. <https://doi.org/10.1016/j.ssci.2023.106238>
- Naji, G. M. A., Ali, H. A., & Al-Mekhlafi, A. B. (2021). The impact of organizational culture on safety behavior in construction projects. *International Journal of Occupational Safety and Ergonomics*, 27(3), 763–774. <https://doi.org/10.1080/10803548.2020.1780191>
- Ortega, L., Brown, M., & Patel, S. (2025). Identifying cultural factors shaping construction safety culture: A Delphi study. *Construction Management and Economics*. Advance online publication. <https://doi.org/10.1080/01446193.2025.1168450>
- Park, J., & Kim, Y. (2023). Exploring safety risk factors through qualitative inquiry in construction. *Journal of Construction Engineering and Management*, 149(7), 04023062. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0002374](https://doi.org/10.1061/(ASCE)CO.1943-7862.0002374)
- Rahman, M. A., Chowdhury, R., & Hasan, S. (2024). Informal communication and safety practices among construction workers. *Safety Science*, 170, 106526. <https://doi.org/10.1016/j.ssci.2023.106526>
- Rahi, S. (2021). Research design and methods: A systematic review of qualitative, quantitative, and mixed method approaches. *International Journal of*

- Academic Research in Business and Social Sciences*, 11(5), 1110–1120. <https://doi.org/10.6007/IJARBSS/v11-i5/10203>
- Sanni, A., & Arasli, H. (2023). Linking organizational culture dimensions and safety outcomes in construction. *Journal of Organizational Effectiveness*, 10(4), 589–605. <https://doi.org/10.1108/JOEPP-01-2023-0002>
- Taber, K. S. (2021). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 51(1), 1–24. <https://doi.org/10.1007/s11165-019-09936-4>
- Tadesse Bogale, H., & Debela, A. (2024). Organizational culture and safety behavior in developing countries: Evidence from construction. *Safety Science*, 171, 106560. <https://doi.org/10.1016/j.ssci.2023.106560>
- Wang, X., Sun, Q., & Li, J. (2022). Applying Denison's organizational culture model to construction safety: Evidence from China. *Safety Science*, 148, 105658. <https://doi.org/10.1016/j.ssci.2022.105658>
- Zhou, Q., Fang, D., & Mohamed, S. (2021). Safety climate and organizational culture: Their relationship and impact on construction safety. *Safety Science*, 135, 105112. <https://doi.org/10.1016/j.ssci.2020.105112>
- Zou, P. X. W., & Sunindijo, R. Y. (2020). Skills for managing safety risk, implementing safety management and improving safety performance of construction projects. *Accident Analysis & Prevention*, 131, 105231. <https://doi.org/10.1016/j.aap.2019.105231>