

## ORIGINAL ARTICLE

# Relationship Between National Culture Dimensions and Safety Climate in Construction Companies of Abu Dhabi

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## ABSTRACT

**Introduction:** The purpose of this study was to explore the relationship between national culture dimensions and safety climate in the construction industry of Abu Dhabi, particularly among Bangladeshi, Indian, and Pakistani workers who constitute almost half of the total migrant workforce. **Methods:** The study utilized a stratified purposive sampling method to survey workers in selected construction companies. The questionnaire used for data collection was adapted from the Value survey model (VSM) and Nordic safety climate questionnaire (NOSACQ) and was translated into Bengali, Hindi, and Urdu. **Results:** The results were analyzed using the Statistical Package for the Social Sciences (SPSS). The study found that the overall safety climate in the construction companies was poor (Mean=2.36, SD=0.40), with no significant difference in safety climate perception among different nationalities (F-value (0.858), (p = 0.427)). The comparison of national culture dimensions between different nationalities was found on individualism F (2,125) = 5.929, p=.003, masculinity F (2,125) = 5.113, p=.007, Long term orientation F (2,125) = 3.116, p=.048, and indulgence vs restraint F (2,125) = 3.526, p=.032 dimensions. Furthermore, the relationship between safety climate and power distance was 0.381 (p = 0.01), between safety climate and long-term orientation was 0.344 (p = 0.01), between safety climate and individualism was 0.196 (p < 0.05), between safety climate and indulgence vs restraint was 0.068 (p = 0.01), between safety climate and uncertainty avoidance was -0.099 (p = 0.01), and between safety climate and masculinity was 0.163 (p = 0.066). **Conclusion:** All worker's perception about safety climate was found to be poor. However, significant differences were observed in national culture dimensions, including individualism, masculinity, long-term orientation, and indulgence vs restraint, among Bangladeshi, Indian, and Pakistani workers. The study also revealed a positive relationship between power distance, long-term orientation, and individualism dimensions and safety climate. In contrast, indulgence, masculinity, and uncertainty avoidance had no significant impact on safety climate.

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Pakistan (12.69%), and Bangladesh (7.40%), while Emiratis make up 11.48% of the population, Filipinos 5.56%, and the remaining 35.38% belong to other countries (2).

## INTRODUCTION

The United Arab Emirates (UAE) is well-known for its cosmopolitan nature and diverse economy, attracting a large number of expatriates from around the world. The country has become a hub for international businesses, trade, and tourism. Based on data from the World Bank in 2021, the estimated population of the United Arab Emirates was 9.99 million, with a majority of the workforce consisting of expatriates from various countries (1). The top countries of origin for expatriates in the UAE are the Indian Sub-continent, the Philippines, African nations, and other Middle Eastern countries. The largest expatriate groups are from India (27.49%),

The high percentage of expats in the UAE has resulted in a diverse and multicultural society, where different languages, religions, and cultures coexist. Overall, the high percentage of expat workforce in the UAE has contributed significantly to the country's growth and development, both economically and socially. The construction industry in Abu Dhabi, which accounts for 8.5% of the UAE's GDP, is a major employer, employing 15.1% of the total workforce, according to the Abu Dhabi Statistics Center (2020) (3).

This study is of paramount significance due to several compelling factors. Abu Dhabi is experiencing robust economic growth and a construction boom, which

underscores the importance of understanding the safety climate in this sector. The construction industry in Abu Dhabi attracts a diverse, multicultural workforce, necessitating an exploration of how cultural dimensions may influence safety perceptions and practices.

Moreover, with the city's strong emphasis on safety regulations and international standards in construction, insights into the role of national culture are pivotal. These insights can help identify cultural factors that may contribute to workplace accidents and incidents, despite regulatory efforts. Furthermore, as Abu Dhabi seeks to align with global best practices and promote inclusivity and respect for diverse cultural perspectives, the study can serve as a valuable guide for crafting more effective safety policies and interventions in the construction sector. Ultimately, this research holds the potential to improve workplace safety, enhance the sector's contribution to the economy, and align with Abu Dhabi's broader goals of sustainability and cultural diversity, all while fostering a safer and more prosperous society.

It is widely acknowledged that the construction industry experiences accidents and incidents worldwide. According to the International Labour Organization (ILO), approximately 60,000 fatal accidents occur annually on construction sites worldwide (4). The significant costs incurred by construction industry due to before mentioned accidents highlight the critical importance to employ robust safety measures (5). The statistics also indicate that construction sites continue to pose significant health and safety hazards (6). The situation concerning workplace fatalities among migrant workers in the Gulf Cooperation Council (GCC) nations, including Saudi Arabia, Oman, United Arab Emirates, Qatar, Kuwait, and Bahrain, is particularly concerning due to the high number of fatalities, especially among South Asian employees. However, as stated by Al-Bayati et al. (2017), the absence of precise and dependable data on the number of accidents and fatalities in these nations is a challenge (7). Although the data regarding mortality rates is scarce, there have been efforts to evaluate the mortality rates of individuals overseas in comparison to the mortality rates of individuals of a similar age in their home country. However, the outcomes of such studies have been inconsistent, as mentioned by Pradhan et al. (2019) (8).

According to Chan et al. (2017), statistical data reveals that multicultural expat workers experience higher rates of fatal and non-fatal occupational injuries compared to their local counterparts (9). To improve the safety performance of these workers, it is essential to understand their safety perceptions as positive safety climate is an indication of good health and safety performance, as highlighted by Sharifah et al. (2022) (10). Safety climate as defined by Zohar (1980) is

“shared employee perceptions of policies, procedures, practices and behavior regarding safety at group level” (11). While safety climate is a construct that pertains to a group, its measurement involves assessing individual attitudes and perceptions towards various aspects of safety management, such as management's commitment to safety, co-workers' commitment to safety and safe practices, safety training, involvement in safety initiatives, and recognition for safe behavior.

Safety climate, a gauge of an organization's safety culture, wields considerable influence over occupational safety and health (OSH) outcomes (12). Vinodkumar and Bhasi (2009) introduced a safety climate tool, specifically a safety climate questionnaire, designed to evaluate safety climate within organizations (12,13,14). This instrument aims to capture employees' perceptions regarding safety-related elements like management's dedication to safety, supervisor safety practices, and coworker safety conduct (12,13).

Empirical studies have demonstrated that safety climate correlates with enhanced OSH outcomes. For instance, research conducted in Scandinavian countries revealed that a positive safety climate was linked to reduced injury rates and improved safety performance (15). Similarly, an Indian study found that a robust supervisor-worker relationship, contributing to a positive safety climate, resulted in improved safety performance (13). These findings emphasize that a favorable safety climate plays a pivotal role in establishing a secure work environment and averting occupational mishaps (15).

Assessing alterations in safety climate over time can also serve to evaluate the impact of OSH interventions (16). Organizations, through safety climate assessments, can pinpoint areas of strength and avenues for enhancement within their safety culture (16). Subsequently, this insight can be harnessed to formulate targeted interventions aimed at bolstering safety climate and, ultimately, enhancing OSH outcomes (16). Safety performance metrics encompass incidents, injuries, compliance, and participation, while safety climate offers a comprehensive overview of overall performance. A negative safety climate suggests underlying issues in the organization that affect the safety performance of workers, leading to poor safety perceptions among workers. Chan et al. (2017) observed that multicultural migrant workers have a less positive safety climate perception than local workers and are more susceptible to accidents (10).

Safety climate, as a crucial construct, is subject to various influencing factors. For instance, work intensification has been determined to exert an adverse impact on safety climate and safety performance throughout different organizations (17). Conversely,

high-performance human resource practices, particularly those emphasizing safety concerns, can enhance the positive influence of such practices on organizational performance (18).

Numerous investigations have delved into the nexus between safety climate and safety-related behaviors and outcomes. Lyu et al. (2018), in their study of ethnic minority construction workers, unveiled significant positive associations between safety climate and safety behaviors, while also identifying noteworthy negative links between safety behaviors and safety outcomes (19). This study furnishes empirical substantiation of the mechanisms through which safety climate exerts its impact on safety behaviors and outcomes (19).

The dimensions encapsulating safety climate have been a subject of discourse within the scholarly realm. Tavacioglu et al. (2019), in their scrutiny of 18 safety climate survey reports, ascertained that the most recurrent dimensions encompassed safety system, management-supervision, risk, competence, and work procedure (20). Similarly, Almazrouei et al. (2020) identified safety system, risk, supervision/management, competence, and work procedure as the preeminent dimensions based on their examination of 18 surveys probing safety climate within the UAE petroleum industry. Nonetheless, a unanimous consensus regarding safety climate dimensions remains elusive, with other dimensions reported in the literature encompassing safety training, safety rules and procedures, supervisory and supportive environments, and safety communication (21).

Furthermore, safety performance can be influenced by various factors, including workplace conditions (22), safety leadership, safety training, safety climate, and low levels of education among workers (23). Safety behavior can be improved by promoting safety compliance and safety participation among workers. Safety compliance can be improved by introducing safety procedures and near-miss reporting, while prosocial safety behavior and proactive social behavior can reduce the number of accidents. Safety participation can be enhanced by making safety activities interesting and easy so that employees become engrossed while performing. Additionally, the managers can design interventions to alleviate workers' psychological capital, such as hope and optimism, which have been found to have a greater influence on safety compliance and safety participation of construction workers (24).

The migrant status of multicultural workers has been identified as another important factor that can impact safety performance (10). The migrant workers employed in construction companies in Abu Dhabi come from diverse countries, each with its own unique national culture that shapes their mindset and behaviors (25). One research reveals that psychological capital

positively impacts safety compliance and participation, while work pressure has a negative influence on both. Job engagement acts as a mediator between psychological capital and safety behavior. Employers should nurture psychological capital and reduce work pressure to enhance workplace safety (26).

National culture is defined as "the collective programming of the mind that distinguishes the members of one group or category of people from another" (27).

These national cultures can be characterized by several dimensions, including power distance, individualism, uncertainty avoidance, masculinity/femininity, short-term/long-term orientation, and indulgence/restraint (28). These are defined as follows:

**Power distance:**

"The extent to which the individuals in a society, in institutions and organizations expect and accept that power is distributed unequally" (27).

**Individualism vs. collectivism:**

Individualism refers to a societal structure where the relationships among individuals are relatively relaxed, while collectivism refers to a societal structure where the connections among individuals are comparatively strong. It implies that the extent to which a society values self-reliance and self-sufficiency determines the level of individualism or collectivism in that society (27).

**Strong vs. weak uncertainty avoidance:**

The concept of uncertainty avoidance pertains to the psychological disposition of individuals in dealing with ambiguous or uncertain future situations. In societies with low uncertainty avoidance, people tend to be more accommodating, open-minded, and confident when facing potential uncertainty. Conversely, individuals from high uncertainty avoidance cultures tend to feel uneasy and threatened by the prospect of an uncertain future, and resort to coping mechanisms to mitigate their anxiety and apprehension (27).

**Masculinity vs. femininity:**

This dimension of culture refers to the degree to which the values of assertiveness, material success, and competitiveness associated with the "masculine" gender role, supersede the values of quality of life, nurturing, and concern for others associated with the "feminine" gender role (27).

**Long-term vs. short-term orientation:**

The cultural dimension of Long-Term Orientation pertains to the promotion of values that prioritize future advantages, such as resilience, thriftiness, and adaptability. Conversely, Short-Term Orientation embodies cultural values that emphasize the importance of past traditions, social responsibilities, and the maintenance of reputation or "face" (27).

### **Indulgence vs. Restraint**

The cultural dimension of indulgence reflects a societal inclination towards unrestrained fulfillment of emotions and desires. On the other hand, restraint is the opposite of indulgence, and denotes a cultural inclination towards controlling and limiting the expression of such impulses, resulting in individuals experiencing a reduced capacity for enjoyment of life (27).

Previous research showed that these cultural dimensions varied among different groups of participants from different countries (29,30). Cultural differences also play a role in shaping risk perception. Studies have found that different cultures have varying levels of risk perception, which do not always correspond to actual exposure rates (31). For example, Chinese respondents were found to be less risk-averse in their pricing compared to Americans, but this was primarily due to cultural differences in the perception of risk rather than attitudes towards perceived risk (32). Similarly, differences in risk perception have been attributed to differences in each culture's degree of collectivism (33).

Another study underscores safety culture's substantial influence on safety performance, particularly through components like management commitment, work environment, and involvement. Enhancing the overall safety culture fosters better safety performance among employees, while minimizing leading and lagging safety indicators helps prevent workplace accidents (34).

The relationship between safety climate and national culture dimensions has also been explored. Lu et al. (2012) examined the relationship between Hofstede's national cultural value dimensions, safety climate, and risk-taking behavior in a multinational engineering organization operating in six countries (35). They found that national culture dimensions, particularly Confucian dynamism, moderated the relationship between safety climate and risk-taking behavior. This suggests that national culture can influence the perception and response to safety climate (35).

Thus, this study examined and compared the cultural dimensions among migrant workers mainly from Bangladesh, India, and Pakistan, who were working in construction companies in Abu Dhabi. Furthermore, this study also measured the safety climate of the companies employing migrant workers, as other studies had been conducted that were not specific to the safety climate of UAE companies (36,37). Although there had been studies conducted to find the relationship between national culture dimensions and safety climate, only one of them had been conducted for migrant workers of UAE (38,39). This study also found out the relationship between safety climate and national culture dimensions.

### **MATERIALS AND METHODS**

This study utilized a quantitative design and employed stratified purposive sampling to gather data from 128 participants. The research was carried out in six construction firms located in the Mussaffah and Al Ain industrial areas of Abu Dhabi. The study sample accounted for 16.6% of the overall construction workforce in the region (40). The eligibility criteria for the study required participants to be full-time workers, aged between 18 and 60 years, and of Bangladeshi, Indian, or Pakistani nationality. These criteria were chosen due to their applicability to 90% of workers in the construction industry. The exclusion criteria were individuals who could not read English, Urdu, Hindi, or Bengali, or those who held higher management positions. The sample size was determined by a confidence level of 95% and a standard error variance of  $P=0.5$ , resulting in a total of 100 participants. Based on this sample size and the total population of 1,287,000 (Statistics Centre - Abu Dhabi, 2020), the stratified samples for Indian, Pakistani, and Bangladeshi nationals were calculated as 70, 32, and 19, respectively.

The study utilized a multilingual research questionnaire comprising of three sections: a) demographic information, b) national culture dimensions, and c) safety climate. The questionnaire was adapted from the value survey module 2013 by Hofstede (2013), which was originally in English language (41). The questionnaire consisted of 24 questions, where each dimension, including Power Distance Index, Individualism Index, Masculinity Index, Uncertainty Avoidance Index, Long-Term Orientation Index, and Indulgence versus Restraint Index, was measured using four questions. In addition, six questions were asked for demographic information, and a 5-point Likert scale was used to respond to the questionnaire. For the safety climate section, the NOSACQ-50-English2019 questionnaire by Brandt et al. (2021) was used, which consists of 28 items across four dimensions of safety climate i.e. a) workers' safety commitment b) workers' safety priority and risk non-acceptance c) safety communication, learning, and trust in co-worker's safety competence d) trust in the efficacy of safety systems (42). A 4-point Likert scale was used for this section, and scores above 3.30 were considered indicative of a good level of safety climate, while scores below 2.70 were deemed to indicate a low level of safety climate, requiring significant improvement. Cronbach's alpha coefficient test was used to ensure the reliability of the questionnaire, and the value obtained was above 0.700.

#### **Data collection procedures**

To begin data collection, the first step was to identify high-risk companies. The Abu Dhabi Public Health Center was contacted for information, but they directed

the researchers to the Department of Municipalities and Transport, the regulatory authority for the relevant sector in Abu Dhabi, which maintains a database of all construction-related companies with their relevant classifications. After obtaining a list of companies from the authority, the researchers contacted them and requested their support for the study. Companies that agreed to participate by allowing their workers to take part in the research were sent the questionnaire. The questionnaire, which had originally been in English, was adapted and translated into Urdu, Hindi, and Bengali for the convenience of the workers.

**Data Analysis**

The data collected was analyzed using the statistical software SPSS version 27. The normality of the data was assessed using the Shapiro-Wilk test, which showed that the data was not normally distributed for both the Value Survey Module (VSM) and NOSACQ-50-English2019 questionnaire on safety climate (OSC). To achieve normal distribution, the data was transformed using the fractional rank method, resulting in a normal distribution for both VSM and OSC. The data was then described and compared using mean, standard deviation, and frequency. The objectives of the study were analyzed as follows: i) Descriptive analysis was used to determine the safety climate of construction companies with multicultural workers, ii) One-way ANOVA was used to compare the national culture dimensions of multicultural workers, iii) Pearson correlation coefficient test was used to determine the relationship between national culture dimensions and safety climate of construction companies.

**Ethical Clearance**

This study was approved by University Putra Malaysia Ethic Committee for Research Involving Human Subject (JKEUPM), with reference number UPM/TNCPI/RMC/1.4.18.2 (JKEUPM).

**RESULTS**

The construction workers on the site are predominantly male, with a majority of Indian workers (54.7%), followed by Pakistani (28.1%) and Bangladeshi (17.2%) workers. This is because our sampling population only consists of workers from these three countries and we used stratified sampling method, which ensured that the sample reflected the percentage of each nationality in the total population. The majority of workers (51.6%) are unskilled or semi-skilled, while 21.9% are vocationally trained in crafts, IT, nursing, or other similar fields. Only 12.5% of the workers are professionally trained. The education level of the workers varies, with the majority (21.9%) having completed 12 years of education, while 11.7% have completed 10 or 14 years of education. A very small percentage (1.6%) have completed 15, 17, or 18 years

of education.

In terms of age, the majority of respondents are in the 25-29 age range (39.8%), followed by the 20-24 age range (21.9%). There are fewer respondents in the 30-34 age range (24.2%), 35-39 age range (10.2%), and 40-49 age range (3.9%). Below is the respondent's information in table I.

**Table I : Overall socio-demographic and work information of workers**

Characteristics	Frequency	Percentage
	n	%
<b>Nationality</b>		
Bangladeshi	22	17.2
Indian	70	54.7
Pakistani	36	28.1
<b>Age</b>		
20-24	28	21.9
25-29	51	39.8
30-34	31	24.2
35-39	13	10.2
40-49	5	3.9
<b>Gender</b>		
Male	128	100
<b>Years of Education</b>		
10 years or less	47	37
11-14 years	60	47
15-17 years	19	15
18 years or above	2	2
Academically trained professional or equivalent (but not a manager of people)	16	12.5
Generally trained office worker or secretary	9	7
Manager of one or more managers	1	0.8
Manager of one or more subordinates (non-managers)	5	3.9
No paid job (includes full-time students)	3	2.3
Unskilled or semi-skilled manual worker	66	51.6
Vocationally trained crafts-person, technician, IT-specialist, nurse, artist or equivalent	28	21.9
n=128 respondents		

**Compare the cultural dimensions among migrant workers**

The table II shows the mean scores for six cultural dimensions based on responses from Pakistani, Indian, and Bangladeshi participants. The cultural dimensions are Power Distance, Individualism vs Collectivism, Masculinity vs Femininity, Uncertainty Avoidance, Long term orientation, and Indulgence vs Restraint.

The mean scores for Power Distance are 9.99 for Pakistani, 9.01 for Indian, and 9.47 for Bangladeshi participants. There is no statistically significant difference between the mean scores for the three groups. For Individualism vs Collectivism, the mean scores are 8.82 for Pakistani, 7.47 for Indian, and 9.27 for Bangladeshi participants. The difference between the mean scores for the groups is statistically significant with a p-value of 0.003. The mean scores for Masculinity vs Femininity are 9.08 for Pakistani, 7.76 for Indian, and 9.71 for Bangladeshi participants. The difference between the mean scores for the groups is statistically significant with a p-value of 0.007.

For Uncertainty Avoidance, the mean scores are 10.24 for Pakistani, 10.39 for Indian, and 11.01 for Bangladeshi participants. There is no statistically significant difference between the mean scores for the three groups. The mean scores for Long term orientation are 8.80 for Pakistani, 7.75 for Indian, and 8.41 for Bangladeshi participants. The difference between the mean scores for the groups is statistically significant with a p-value of 0.048. For Indulgence vs Restraint, the mean scores are 9.62 for Pakistani, 8.76 for Indian, and 9.60 for Bangladeshi participants. The difference between the mean scores for the groups is statistically significant with a p-value of 0.032.

**Determine the safety climate of companies employing multicultural workers**

Table III shows that participants perceived their

workplace safety climate to be of low standard and in need of improvement. The study included individuals from Pakistani, Indian, and Bangladeshi nationalities. The results of the one-way ANOVA indicate that the F-value (0.858) is not statistically significant ( $p = 0.427$ ) at a certain level of alpha. Therefore, there is no significant difference between the population means of the groups being compared. These findings suggest that all three groups have similar perceptions of the safety climate in their workplaces.

**Relationship between national culture dimensions and safety climate of construction companies**

According to Table IV, a Pearson’s correlation coefficient analysis was conducted to determine the linear relationship between national culture dimensions and safety climate. The results indicate that there is a moderate positive relationship between two national culture dimensions and safety climate among overall workers. Specifically, a moderate positive relationship was found between safety climate and power distance ( $r = 0.381, p = 0.01$ ) as well as between long-term orientation and safety climate ( $r = 0.344, p = 0.01$ ). Additionally, a weak positive relationship was observed between individualism and safety climate ( $r = 0.196, p < 0.05$ ).

However, there was no significant relationship found between indulgence vs. restraint and safety climate ( $r = 0.068, p = 0.01$ ), uncertainty avoidance and safety climate ( $r = -0.099, p = 0.01$ ), and masculinity and safety climate ( $r = 0.163, p = 0.066$ ).

**DISCUSSION**

The research focused on assessing the safety climate among companies employing multicultural workers in the UAE’s construction industry and its relationship with national culture dimensions. The finding from the demographic profile of the respondents revealed

**Table II : One-way ANOVA Comparison of National culture dimensions of workers from different nationalities**

Dimensions	Pakistani (n=36)		Indian (n=70)		Bangladeshi (n=22)		F (2,125)	p
	mean	S.D	mean	S.D	mean	S.D		
<b>Power Distance</b>	9.99	2.357	9.01	2.292	9.47	2.600	2.059	.132
<b>Individualism vs Collectivism</b>	8.82	3.160	7.47	2.284	9.27	2.072	5.929	.003
<b>Masculinity vs Femininity</b>	9.08	3.196	7.76	2.722	9.71	2.584	5.113	.007
<b>Uncertainty Avoidance</b>	10.24	2.013	10.39	2.211	11.01	2.639	.880	.418
<b>Long term orientation</b>	8.80	2.136	7.75	1.900	8.41	2.669	3.116	.048
<b>Indulgence vs Restraint</b>	9.62	2.233	8.76	1.656	9.60	1.429	3.526	.032

**Table III : Safety climate analysis of overall workers**

Variables	Pakistani (n=36)		Indian (n=70)		Bangladeshi (n=22)		F	df	p
	M	SD	M	SD	M	SD			
Safety climate	2.35	.275	2.33	.412	2.46	.536	.858	2	.427

**Table IV : Pearson’s Correlation between national culture dimensions and safety climate**

	N	PDI	IDV	MAS	UAI	LTO	IVR
Overall	128	.381**	.196*	.163	-.099	.344**	.068
Pakistani	36	.206	.299	.176	-.058	.402*	.278
Indian	70	.336**	-.009	-.047	-.057	.087	-.078
Bangladeshi	22	.659**	.610**	.644**	-.271	.791**	.151

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

several critical points. Firstly, the predominance of male, foreign workers highlights potential challenges related to language barriers and cultural differences in the workplace. Secondly, the concentration of young and potentially inexperienced laborers raises concerns about their safety and well-being in physically demanding construction roles. Thirdly, the prevalence of workers with limited education suggests a need for targeted safety training and risk management strategies in an industry with inherent hazards.

Further research is imperative to delve into the complexities of cultural and language barriers faced by foreign workers and their implications for occupational safety and health. Prior research have delved into how national culture influences foreign workers’ attitudes toward safety and risk-taking (43). These investigations have highlighted the substantial impact of cultural differences on workers’ safety perceptions and their readiness to adhere to safety protocols (44).

One objective of this study was to examines the safety climate of construction companies in Abu Dhabi that employ multicultural workers from Bangladesh, India, and Pakistan. The study found an overall poor safety climate in these companies, with workers from all nationalities sharing similar perceptions. This aligns with the hypothesis of a poor safety climate in such construction companies. Several factors may contribute to this perception, including a high diversity climate, cultural differences, and sociodemographic characteristics of the workers (45,46). Cultural intelligence among supervisors and factors like communication, leadership, teamwork, and safety systems also play a role (47). Risk-taking behavior and unsafe workplace conditions further impact safety climate perceptions (48).

Previous research highlights the influence of national culture on safety climate, emphasizing the need for tailored safety measures. Additionally, studies in various regions have shown that ethnic minorities and certain job positions may experience lower safety climate scores (9). This study’s location in the Gulf region adds climate change as a factor affecting safety climate (49).

This study further examined national culture dimensions among multicultural workers. The findings revealed significant variations in cultural dimensions among these groups. For, Individualism vs. Collectivism, Bangladeshi workers displayed higher individualism compared to Pakistani and Indian workers, aligning with previous studies (29). This cultural orientation suggests varying degrees of collectivism and individualism within the South Asian context.

For, Masculinity vs. Femininity, Bangladeshi workers also exhibited higher masculinity compared to Pakistani and Indian workers, contrasting with some previous findings (29). The influence of traditional gender roles and societal values likely contributes to these differences (50). For, Long-Term Orientation vs. Short-Term Orientation, Pakistani workers showed higher scores in long-term orientation compared to Indian and Bengali workers. This contradicts Hofstede’s general findings that didn’t indicate strong preferences for these dimensions among these nationalities (29). For, Indulgence vs. Restraint: Pakistani workers scored significantly higher on indulgence compared to Indian workers. However, this dimension is relatively new, with limited available data.

The hypothesis that there were no differences in national culture dimensions among these groups was rejected, highlighting the need for context-specific assessments.

Cultural dimensions can be influenced by historical, social, and religious factors, and they may evolve over time due to globalization and societal changes. Therefore, these findings underscore the importance of considering cultural dimensions when addressing workplace dynamics and safety climate perceptions among multicultural workers.

Another objective explored the relationship between national culture dimensions and safety climate. The dimensions including Power Distance, Long-Term Orientation, and Individualism found positive relationship with safety climate. This aligns with previously conducted research (38). On the other hand, Masculinity, Uncertainty Avoidance, and Indulgence vs. Restraint dimensions showed an insignificant relationship with safety climate in this study, contrary to findings in Nigeria (38) and other studies (19).

When examining individual countries, specific associations emerge. For Pakistani workers, long-term orientation is significantly related to safety climate. For Indian workers, power distance plays a significant role. In contrast, Bangladeshi workers demonstrate significant relationships with multiple dimensions, including power distance, individualism, masculinity, and long-term orientation.

## CONCLUSION

In this study, the primary objective was to explore the relationship between national culture dimensions and safety climate within multicultural construction worker populations in Abu Dhabi. The dimensions of national culture, as defined by Hofstede's framework, were a central focus. Additionally, the study aimed to assess the safety climate prevailing in construction companies employing workers from diverse national backgrounds, particularly from Bangladesh, India, and Pakistan.

One of the key findings of this study was the identification of a notably poor safety climate across the construction companies under investigation. This trend was consistent among workers of all nationalities, indicating that safety perceptions were generally low within these organizations. Furthermore, the study revealed significant variations in national culture dimensions among Bangladeshi, Pakistani, and Indian workers. These differences were particularly pronounced in dimensions like individualism, masculinity, long-term orientation, and indulgence versus restraint, highlighting the cultural diversity within the multicultural workforce.

Another crucial discovery was the positive relationship observed between safety climate and specific national culture dimensions, namely power distance, individualism, and long-term orientation. These dimensions were found to have a significant impact on

safety climate, with power distance contributing to 4% of the variance and long-term orientation contributing to 3.6% of the variance in safety climate perceptions.

However, several limitations were encountered during this study. Access to certain data from local authorities was restricted, and there was a lack of incident and accident data categorized by nationality. Additionally, limited access to detailed company information hindered a comprehensive analysis. The COVID-19 pandemic posed challenges to data collection, as site visits were restricted, and respondents faced language barriers and time constraints, potentially affecting response quality.

To address these limitations and enhance future research, several recommendations were put forth. These included extending the safety climate questionnaire to encompass management dimensions, improving data collection methods, and expanding the study to include workers from a broader range of nationalities. It was also suggested that companies seek worker input in their efforts to improve safety climate within their construction sites.

The findings of this study hold substantial benefits for both researchers and the construction industry in Abu Dhabi and beyond. Researchers can build upon this study to delve deeper into the complexities of the relationship between national culture dimensions and safety climate in multicultural workplaces. They can explore more nuanced aspects of culture and how they interact with safety practices, allowing for a more comprehensive understanding of this crucial issue. Additionally, future studies can expand the scope to include workers from even more diverse national backgrounds, providing a broader perspective on safety perceptions and cultural influences.

For the construction industry in Abu Dhabi and similar multicultural work environments, this study provides practical insights. It offers a roadmap for improving safety climate within the construction sector by highlighting the impact of specific national culture dimensions, such as power distance and individualism. Companies can use this knowledge to tailor safety programs that resonate with the cultural backgrounds of their workers, making safety initiatives more effective and culturally sensitive.

Moreover, companies can involve their workers in these efforts to improve safety climate, fostering a sense of inclusivity and collaboration in creating a safer work environment. The study's findings underscore the importance of addressing cultural diversity and inclusivity in the workplace, which aligns with broader societal goals of tolerance and multiculturalism.

In essence, this research opens doors for further



exploration and practical implementation, providing a foundation for safer and more culturally inclusive construction workplaces in Abu Dhabi and potentially serving as a model for construction industries in other multicultural regions.

In conclusion, this study underscores the significance of comprehending the intricate relationship between national culture dimensions and safety climate in multicultural work environments. It highlights areas where safety climate can be enhanced and offers valuable insights for future research endeavors and practical applications in the construction industry.

In conclusion, this study underscores the significance of comprehending the intricate relationship between national culture dimensions and safety climate in multicultural work environments. It highlights areas where safety climate can be enhanced and offers valuable insights for future research endeavors and practical applications in the construction industry.

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