

## **Influence of work hazards and employee health initiatives on workforce engagement: Evidence from Saudi construction sectors.**

### **Abstract**

**Aims:** The current research aims to analyse the influence of workplace hazards and worker health initiatives on employee engagement in the construction sector. It has been claimed that the construction industry is increasingly relevant toward economic and the social development of the nation on a large scale. Such that the construction industry.

**Method/design:** The current study is largely based on a primary quantitative method. Where the survey has been conducted from about 200 sample size and the employees of the construction industry. The analysis has been performed through Stata by test namely descriptive, correlation and regression analysis.

**Findings:** The findings of the research showed that workplace hazard, employee health initiatives and leadership encompass significant influence over the engagement of the employee. However, it has been also found that the influence of leadership as a mediating variable has partial influence over employee engagement.

**Future implications:** Future researches should consider culture or technology as the mediating variable as they also have potential influence over employee engagement. Moreover, future studies can also consider the qualitative design of research and interview to attain in-depth insight.

**Keywords:** *Workplace hazard, employee health initiative, employee engagement, construction sector*

### **Introduction**

The industry of construction is relevant to the social and economic development of the nation on a large scale. Such that the industry tends to represent about 6 per cent of the total GDP and is likely to reach about 14% by the year 2030 (Betts, 2013). The study conducted by Rivera, Mora-Serrano and Oñate (2021) claimed that the industry provides about 18 million jobs across Europe

however it is perceived as one of the most dangerous industries across the globe. Such that the industry has recorded one of the highest rates of an accident at an increased level. The study of Al-Aubaidy et al. (2019) further asserted that as compared to the industry of manufacturing the suffering probability pertinent to the accident in the sector of construction is about 2.5 times higher. It is indicated in the above study that the probability of an accident is five times higher while at a global level there exist about 30 to 40 % construction accident rates.

The research performed by Nguyen and Kretschmann (2013) claimed that in recent years, the figure of an accident has thereby varied. There has been an increase in the concern of the sector while the issues are also increased. These all have given a significant rise to the initiative toward the Zero accident vision emphasised on profound and systematic improvement of safety across construction. The study by Fortunato et al. (2012) indicated that high accident rates in construction largely display significant social damages. Such that the safety problems at the site of construction influence the worker integrity and the families that generate repercussion from the aspect of social welfare of the sector. The study further claimed that the accident has affected the performance of the worker and the working team which has made it significant to reorganize and offer emotional as well as psychological support (Karakhan and Gambatese, 2017).

Mosly (2015) claimed that the industry of construction is largely known for being one of the most dangerous industries across the world. It is also perceived as a labour-intensive industry requiring increased machinery and material movement within a confined area. This has thereby led toward high safety hazard levels. Such that in Saudi Arabia the industry of construction is recognised as a potential contributor to the working accident. While the research of Mosly (2015) also indicated that the poor record pertinent to the safety measure in the construction industry is thereby leading toward increased accident rates. The construction sector in Saudi Arabia is perceived to be a primary reason for the accident in small or medium-sized projects. For this purpose, the current research aims to determine the influence of work hazards and the working initiatives on the engagement of the workforce. For this purpose, evidence of the Saudi construction sector has been considered.

The objective of the current research is following:

- To determine the significance of employee health initiatives and prevention of workplace hazards in the construction sector of Saudi Arabia.
- To analyse the role of leadership in mediating the role for prevention of workplace hazards and the employee working initiatives.
- To examine the influence of work hazards and the employee working initiatives on workforce engagement.

### **Literature Review and Hypothesis development**

The current section aimed at gathering the literature pertinent to employee engagement and workplace hazards and health initiatives. For this purpose, a different hypothesis has been developed and relevant discussion has been made with the support of the prior literature.

H1: Work hazard has a significant impact on workforce engagement in Saudi construction sectors

It has been found that accident is increasingly common in construction site. However, these hazards present numerous threats to the workplace area. According to Panuwatwanich, Al-Haadir and Stewart (2017), the hazards need to be managed or addressed with the help of executing the safety principle to avoid incidents. Hazard, harm and risk are perceived to be significant for the construction workers. According to Alkhalaf (2016), the potential hazard in the industry of construction are injuries in excavation, fall from height, sliding or tripping because of a wet surface, working in bad confined space or being injured through hand tool. These all are recognised as the safety personnel over the construction site for the construction worker safety. Another study conducted by Al Haadir and Panuwatwanich (2011), claimed that the workplace hazard encompasses negative influence over the engagement and the performance of the employee. It has been further claimed that the sector of construction encompasses increased hazards and risk. It has been claimed by the study of Sousa, Almeida and Dias (2014), despite the improvement in the safety of construction across many years the rate of accidents is still highest in the industry of

construction. For instance, the construction industry accident rates are higher in Saudi Arabia as compared to any other industry which negatively influences the engagement of the employees.

H2: Employee health initiative has a significant influence on workforce engagement in Saudi construction sectors

The engagement of an employee is largely regarded as the emotional or the cognitive activity which demonstrate the daily occurrence which led toward the individual bonding with the co-worker, their organisation and the job. For instance, according to Alkhalaf (2016), there has been a large focus on the influence of employee engagement. The reason behind this is that it relates largely to the safety of the worker. The study of Allam and Shaik (2020), claimed that there exists a significant relationship between the well-being and the working morale of the employee. Companies having a strong emotional bond with employees tend to have reduced absenteeism and increased productivity. Thus, the research of Panuwatwanich et al. (2017), claimed that the initiatives of health and safety are increasingly vital in the construction industry. Such that safety and health processes play a significant role to minimise the number of risks at the construction site. However, when a manager fails to initiate the health and safety measure it is likely that the risk continues to grow and may result in an accident at a high rate. For this purpose, the construction sector of Saudi is increasingly engaged in employing different health initiatives for the employee.

H3: Leadership has a significant impact on workforce engagement in Saudi construction sectors

The leaders are perceived as the ones who encompasses significant influence over the engagement of the employees. The study of Nicholas and Erakovich (2013) claimed that it is significant to balance the moral perspective with the interpersonal association. The reason behind this is that it can thereby create healthy leadership and employee relationship. Another study by Lowe (2012) claimed that balancing the moral perspective with the interpersonal association can thereby create or develop a healthy relationship. The study of Osborne and Hammoud (2017) further demonstrated that the engagement of employees is enhanced when the leaders encompass direct and significant association with the employee and ensure their safety. The study of Nicholas and

Erakovich (2013) claimed that ensuring the empowerment and the engagement of work play a notable role in employee involvement. Such that effective leaders tend to offer direction and the vision for the development of the employees. The study performed by Souba (2011) claimed that the leadership ability is to communicate effectively based on the engagement of the employee. The potential focus of employee engagement is over the alignment of employment with its goals. Thus, leadership encompasses significant influence over the engagement of employees by contributing to the success of the organisation and facilitating productivity. Another study by Eldor and Harpaz (2015) claimed that the engagement of employees is perceived as multidimensional therefore it is significant for leaders to engage the employee physically, emotionally and cognitively.

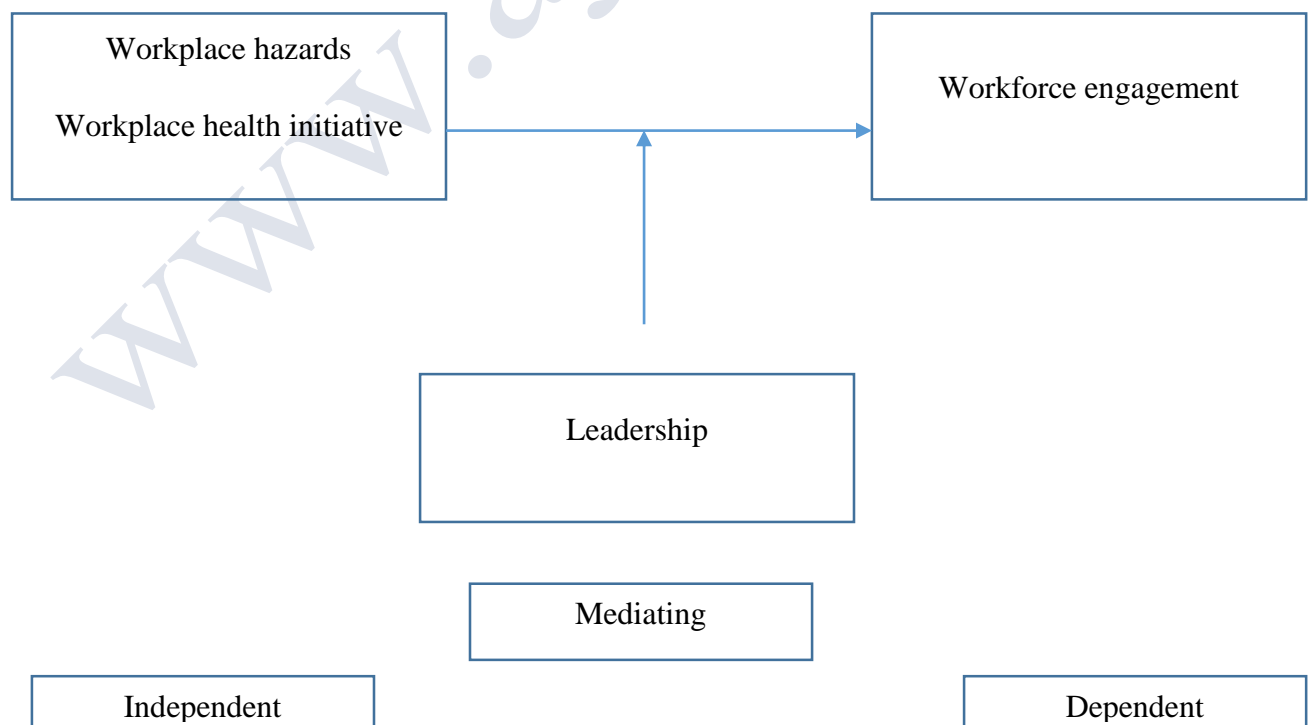
H4: Leadership has a significant mediating effect on Work hazard and workforce engagement in Saudi construction sectors

The leader of the industry is required to consider the influence which project can have on the employees. The study of Nicholas and Erakovich (2013) claimed that the construction work tends to have long working hours which largely influences the mental, emotional and physical wellbeing of the employees. This can thereby negatively influence the worker ability to connect with the client and complete the project on time. Another study by Sousa et al. (2014), claimed that when there exist a limited number of projects, the employee tends to have a seasonal schedule as they might not be able to consistently work on the site. Thus, it can be challenging for them as it may result in unworthiness or emotional distress. Therefore, the role of leaders is significant. The reason behind this is that effective leadership can assist in increasing the engagement of the workforce by offering safety to the workers. As asserted by Osborne and Hammoud (2017), effective leadership is largely recognised as one of the significant elements for increasing the engagement of the workforce. On the other hand, the inadequate skills of leadership can increase disputes or conflicts in the workforce. Thus, adoption of an effective style of leadership in the sector of construction can largely assist in preventing workplace hazards.

H5: Leadership has a significant mediating effect on employee health initiatives and workforce engagement in Saudi construction sectors.

Most industries tend to struggle for addressing the issues of health in the workplace. Employees tend to work harder for completing their routine responsibilities of the job however the issues of mental health can become a significant barrier for the employees (Farrukh, Kalimuthuan and Farrukh, 2019). However, according to the study of Basahel (2021), most of the private and public groups are working at a large scale for reversing this trend and develop more programs for supporting the employee with professional and personal uncertainty. It has been claimed by the research of Osborne and Hammoud (2017), that the worker at construction sites is particularly vulnerable toward the suffering from the condition of mental health for several reasons. Thus, the leaders are largely required to address the issue by undertaking health initiatives for the employees. It is significant for the industry leaders to determine why the worker at a construction site are likely to struggle with the condition of mental health. Basahel (2021) claimed that the leaders promoting health largely care about wellbeing and the health of the employees and enhance health awareness as well. These offer the employee sufficient work resource and job autonomy and job control.

*Conceptual framework*



## Methodology

The philosophy of study is considered as the underlying belief through which research intent to carry the research. According to the study conducted by Matta (2015), the research philosophies are effectively categorised into different types. These types include pragmatism, realism, positivism and interpretivism. Among all these philosophies the philosophy that best suits the current research is positivism philosophy. Under this philosophy, the author intends to measure, identify and evaluate the particular research element alongside a justification for problem identification. Thus, this philosophy has assisted in discerning objective insights that are present in the literature that can back up the quantitative data. The positivist philosophy has assisted the research in eradicating the bias from the accessed insight by emphasising objective data. According to Edmonds and Kennedy (2016), there exist two designs of research i.e., quantitative and qualitative research. The present study has adopted a quantitative design study to ascertain the truth. The research for using the quantitative design is that it assists in quantifying the outcome and testing the hypothesis.

The quantitative design is significant as it has enabled the use of statistical analysis to ensure the data validity alongside the validity of the outcome. On the other hand, the quantitative investigation assists in dealing with the psychological biases and mitigation of systemic. Consequently, according to Gregory and Muntermann (2011) there exist two research approaches i.e., the inductive approach and the deductive approach. The inductive approach is largely suitable for qualitative researches while the deductive is suitable for quantitative analysis. As the current study is based on the quantitative design therefore deductive design has been utilised. With the help of the deductive approach, the different hypothesis has been developed as per the objective and the findings of the research. Soiferman (2010) claimed that there exist two methods for collecting the data i.e., primary or secondary.

As the current research aimed to focus on the impact of workplace hazards and the health initiative on the engagement of employees therefore the primary data collection method has been selected.

The reason for utilising this method is to access first-hand information. The sample of the current study is the employees working in the construction sector of Saudi. While the sample size is about 200 participants. The data collected is further analysed through Stata with the help of descriptive, regression and the correlation model. The current research has also adhered to the ethical consideration and no participant was harmed during the process of the study.

### Results

*Table 1 – Descriptive Statistics Analysis*

Variable	Obs	Mean	Std. Dev.	Min	Max
Work Hazard	200	1.53875	0.83098	0	3.833333
Employee Health Initiatives	200	1.433333	0.898538	0	4
Leadership	200	1.685	0.973661	0	4
Workforce Engagement	200	1.423333	0.902698	0	3.666667

The above table of descriptive statistics represents the mean, standard deviation, minimum and maximum values of the variables that have been collected from 200 participants (observation). Referring to the Work hazard, it can be seen that the minimum value of work hazard is calculated as 1.53, and the standard value is estimated as 0.83. This denotes that the average number of participants are inclined towards agree, and it is expected to remain towards agree. In addition, the mean value of employee hazard is identified as 1.43, and the standard value is 0.89 which depicts that average respondents are inclined toward agreement, and it is expected to remain towards agreeing. Moreover, the mean value of leadership is identified as 1.68, and its standards value is estimated as 0.97 which denotes that average respondents are inclined toward neutral, and it is expected to deviate by agree. Lastly, the mean value of workforce engagement is estimated to be 1.42, and its standard value is identified as 0.90 which implies that average respondents are inclined toward agreement, and it is expected to remain towards agree.



Table 2 - Correlation Analysis

	Work Hazard	Employee Health Initiatives	Leadership	Workforce Engagement
Work Hazard	1			
Employee Health Initiatives	0.9834*	1		
Leadership	0.9659*	0.9447*	1	
Workforce Engagement	0.9868*	0.9677*	0.9767*	1
	0.000	0.0000	0.0000	-

The above table indicates the association between dependent and independent variables. Referring to the above table, it can be seen that coefficient values of work hazard, employee health initiatives, and leadership concerning workforce engagement are identified as 0.986, 0.9677, and 0.9767 which implies that these variables have a strong positive association with workforce engagement.

Table 3 – Regression Analysis

Workforce Engagement	Coef.	Std. Err	t	P> t	[95% Conf. Interv]	
Work Hazard	***0.731726	0.072945	10.03	0.000	0.587868	0.875585
Employee Health initiatives	-0.02533	0.053222	-0.48	0.635	-0.13029	0.079633
Leadership	***0.324407	0.034482	9.41	0.000	0.256404	0.39241
_cons	-0.21293	0.021327	-9.98	0.000	-0.25499	-0.17087
Number of Obs	=	200				
Prob > F	=	0.000				
R -Squared	=	0.9821				
Adjusted R-Squared	=	0.9818				

\*Significant at 10%; \*\*Significant at 5%; \*\*\*Significant at 1%

The regression analysis has also been used to examine the relationship between dependent and independent variables. From the perspective of Work hazard, the coefficient value is identified as 0.73 and the P-value is  $0.000 < 0.01$  which implies that Work hazard has a significant and positive influence on workforce engagement. Similarly, the coefficient value of leadership is identified as 0.324, and its P-value is  $0.000 < 0.01$  which denotes that leadership has a positive and significant influence on workforce engagement. Whereas, B value of employee health is determined to be -0.02 and its p-value is 0.635 which depicts that employee health has a negative but insignificant influence on workforce engagement.

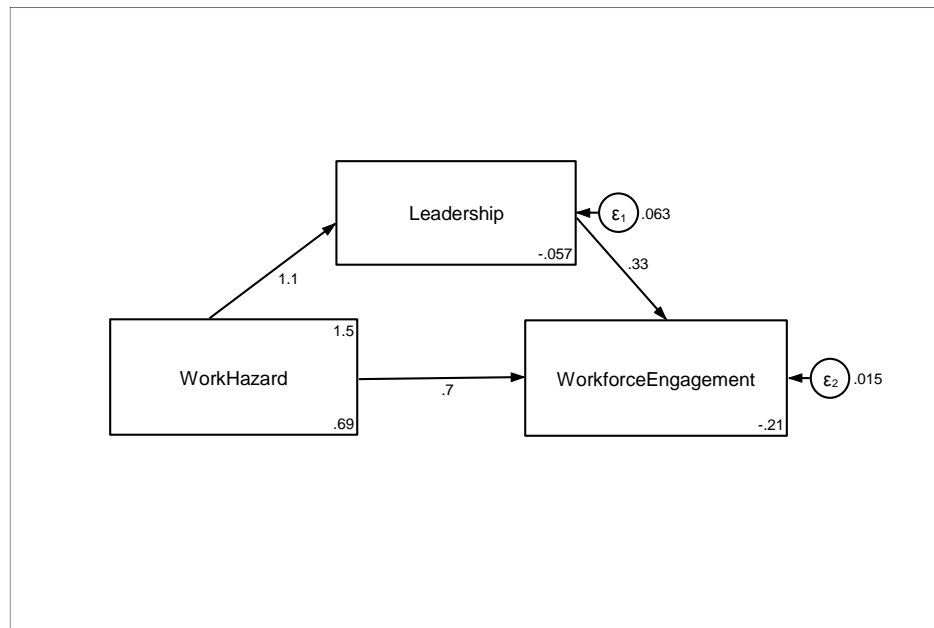


Figure 1 - Structural Equation Modeling (Work Hazard)

Table 4 - Structural Equation Modeling (Maximum Likelihood Method) – Employee Health Initiatives

	Coef.	Std. Err.	z	P> z	[95% Conf	. Interval]
Structural						
Leadership <-						
Employee Health initiatives	***1.023651	0.025134	40.73	0.000	0.974391	1.072912
_cons	***0.217766	0.042488	5.13	0.000	0.134491	0.301042
Workforce Engagement <-						
Leadership	***0.539071	0.032927	16.37	0.000	0.474534	0.603608
Employee Health initiatives	***0.420378	0.03568	11.78	0.000	0.350446	0.490311
_cons	***-0.08754	0.021045	-4.16	0.000	-0.12879	-0.0463
var(e. Leadership	0.101492	0.010149			0.083428	0.123468
var(e. Workforce Engagement	0.022008	0.002201			0.018091	0.026773

\*Significant at 10%; \*\*Significant at 5%; \*\*\*Significant at 1%

The structural equation model has been used to examine the mediating effect of leadership with employee health initiatives on workforce engagement. Referring to the direct effect, it can be seen that coefficient value of Leadership  $\leftarrow$  Employee Health initiatives is recorded as 1.02 and its P-value is recorded as  $0.000 < 0.01$ . In addition the coefficient value of Workforce Engagement  $\leftarrow$  Leadership is identified as 0.53, and Workforce Engagement  $\leftarrow$  Employee Health initiatives is determined as 0.42, and P-value =  $0.000 < 0.01$ . Thus it implies leadership has a partial mediating effect on relationship of workforce engagement and employee health initiatives.

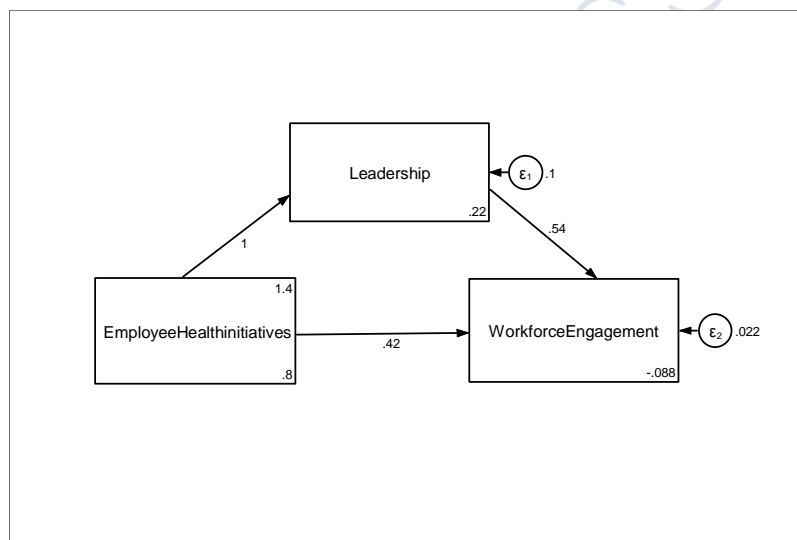


Figure 2 - Structural Equation Modeling (Employee Health Initiatives)

Table 5 - Structural Equation Modeling (Maximum Likelihood Method) - Work Hazard

	Coef.	Std. Err.	z	P> z	[95% Conf.	Interval]
Structural						
Leadership $\leftarrow$						
Work Hazard	***1.131788	0.021441	52.79	0.000	1.089765	1.173811
_cons	-0.05654	0.037474	-1.51	0.131	-0.12999	0.01691
Workforce Engagement $\leftarrow$						

Leadership	***0.326218	0.033946	9.61	0.000	0.259684	0.392751
Work Hazard	***0.702745	0.039775	17.67	0.000	0.624787	0.780702
_cons	***-0.20769	0.018093	-11.48	0.000	-0.24315	-0.17223
var(e. Leadership)	0.063171	0.006317			0.051927	0.076849
Var (e. Workforce Engagement)	0.014559	0.001456			0.011968	0.017711

\*Significant at 10%; \*\*Significant at 5%; \*\*\*Significant at 1%

Second, the Structural equation model has been used to examine the mediating effect of leadership on the relationship of work hazard and workforce engagement. Referring to the direct effect, it can be seen that coefficient value of Leadership  $\leftarrow$  Work Hazard is recorded as 1.13 and its P-value is recorded as  $0.000 < 0.01$ . In addition the coefficient value of Workforce Engagement  $\leftarrow$  Leadership is identified as 0.53, and Workforce Engagement  $\leftarrow$  Work Hazard is determined as 0.42, and P-value =  $0.000 < 0.01$ . Thus it implies leadership has a partial mediating effect on relationship of workforce engagement and work hazard.

### Discussion and Hypothesis Assessment Summary

The developed hypothesis of the research was aimed to determine the association between independent variable i.e., workplace hazard and workplace health initiative with dependent variable i.e., employee engagement. For this purpose, the role of mediating variable i.e., leadership was also analysed. Within the literature, it has been viewed by Sweis et al. (2013) that the industry of construction encompasses adequate hazards such as unexpected falls, risk linked with heavy equipment and dangerous working zones. Thus, the injuries on the construction site might range from minor to severe rely on different factors. Thus, the health initiative of employees plays a significant role in workforce engagement and motivation of employee's at a large scale. Similarly, the health initiative is considered as the basic key for improving workplace engagement in the construction sector of Saudi Arabia. Moreover, the study of Muñoz-La Rivera et al. (2021) claimed that the accident also encompasses repercussions over the productivity of the project. This has led to delays and the cost problem in planning because of the work interruption. Such that the cost linked with the compensation of workers and the cost of civil liability display a large increase in the budget. It has been noted that the industry of construction is dynamic and complicated. Such

that each of the projects is unique and encompasses distinct professionals having a different vision and the product which need to be fit together for attaining the particular aim of the project. Betts (2013) asserted that engagement is generally cited as the tool or the technique for enhancing the working lives of the worker at construction sites. The findings of the current research show that the workplace hazard and the workplace health initiative encompass significant influence over the engagement of employees in the sector of construction. Moreover, it has been also found that the impact of leadership is wide in the construction sector. According to Nicholas and Erakovich (2013) leadership play a significant role in the construction sector to motivate an employee and facilitate productivity by ensuring their safety. The findings of the analysis depicted that workplace hazards (.9868), employee health initiatives (.9677) and leadership (.9767). These all values show an increasingly significant and strong association of these variables with employee engagement. While through the structural equation model it has been found that there is a partial mediating effect of leadership on the association of working hazard and the employee health initiative with employee engagement.

*Table 6 - Hypothesis summary*

<b>S. No.</b>	<b>Hypothesis</b>	<b>Status</b>
1.	Work hazard has a significant impact on workforce engagement in Saudi construction sectors	Accepted
2.	Employee health initiative has a significant influence on workforce engagement in Saudi construction sectors	Accepted
3.	Leadership has a significant impact on workforce engagement in Saudi construction sectors	Accepted
4.	Leadership has a significant mediating effect on Work hazard and workforce engagement in Saudi construction sectors.	Partially Accepted

4.	Leadership has a significant mediating effect on employee health initiatives and workforce engagement in Saudi construction sectors.	Partially Accepted
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### **Conclusion**

The current research aimed to determine the influence of workplace hazards and the employee health initiative over employee engagement. For this purpose, a quantitative design was used and the survey was collected from 200 employees working in the sector of construction. These responses were thereby collected on the 5-Point Likert scale. Statistical correlation display that each of the three variables encompasses an increasingly significant and strong association with employee engagement in construction sector. Whereas, the regression model denotes, that the workplace hazard and the leadership encompass significant and notable influence over employee engagement. Whereas, the employee health initiative encompasses negative and insignificant impacts on the engagement of the workforce.

### **Future Implication**

The current study has focused on leadership as the mediating variable while future studies can consider culture or technology as the mediating variable to determine the mediating effect on employee engagement. The current study has utilised the quantitative aspect by conducting the survey and quantifying the findings. Future studies can thereby bridge the gap by qualitatively conducting the study. With the help of qualitative design, future research can interview to attain in-depth experience with regards to the importance of worker safety. The interviews can largely assist in determining how and in what ways employee engagement is fostered or reduced in the construction site. These interviews can also assist in attaining in-depth insight into how employee engagement at a construction site can be improved.

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## Appendix

### *Demographic Variables*

#### **Gender:**

- 0 = Female
- 1 = Male

#### **Age:**

- 0 = 20-30
- 1 = 31-40
- 2 = 41-50
- 3 = 51 and Above

#### **Employment status:**

- 0 = Manager
- 1 = Employees
- 2 = Construction Workers

### *Questionnaire*

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<i>Variable/ Codes</i>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Independent Variables</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
<b>Work Hazards</b>					
Work hazard has a negative influence on the working performance and employee engagement					
Construction sector involves high risks and hazards.					
At what extent do you agree that "reduction in work hazard increase the workforce engagement".					
<b>Employee Health initiatives</b>					
To what extent do you agree that the "Saudi Construction sector is engaged in employing health initiatives"					
Employee health initiatives play an essential role in motivating employees and workforce engagement.					
Health initiative is the key to enhancing workforce engagement in the Saudi construction sector.					
<b>Leadership</b>					
Effective leadership is considered an essential element to increase workforce engagement.					

Inadequate leadership skills may lead to an increase in conflicts and disputes among the workforce.					
Adoption of leadership style in the construction sector can significantly help in reducing the management issues in the construction sector.					
<b>Workforce engagement</b>					
Health initiatives adopted by the Saudi Construction sector is enhancing workforce engagement.					
Leadership style is considered as one of the most important factors in boosting workforce engagement but it is not so practically implemented in an organisation.					
Work hazard has a negative influence on workforce engagement.					