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Research Paper

Safety, Commitment, and Performance: A Study of Manufacturing Firms

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Abstract: This study investigates the interplay between Occupational Health and Safety (OHS) practices, employee commitment, and employee performance at manufacturing companies. A quantitative approach using correlation and regression analyses assessed relationships between variables. Data were collected from 115 employees across three manufacturing companies in Ghana's Awutu Senya District. OHS practices positively influence both employee commitment and performance, with commitment partially mediating this relationship. This suggests that a safety-focused environment leads to a more committed and high-performing workforce. These findings hold significant practical implications for manufacturing companies. By prioritizing comprehensive OHS initiatives, organizations can cultivate a safer and more supportive work environment, which leads to a more engaged and productive workforce. This study examines the under-explored mediating role of employee commitment in the OHS-performance relationship within the manufacturing industry in Ghana. By doing so, it extends knowledge and offers insights for optimizing workplace safety, employee well-being, and organizational success.

Keywords: manufacturing, occupational health and safety, employee commitment, employee performance

1. Introduction

Ensuring and guaranteeing a healthy and safe workplace has been a key concern since the Industrial Revolution (Hofmann et al., 2017). Stoddart and Evans (2017) recognize workplace health and safety as essential for employees' quality of life, describing it as the absence of detrimental effects on psychological, physical, and emotional well-being (Lim et al., 2016). To perform optimally, employees must be physically, mentally, and emotionally sound. Thus, organizations must prioritize worker safety and health, as these factors significantly impact sustainability, competitiveness, and productivity (Osei Boakye et al., 2021).

Prioritizing workplace health and safety prevents injuries and suffering, and enhances employee happiness and activity, thereby boosting economic performance (Waddell & Burton, 2006; Alli, 2008). Healthy employees demonstrate higher commitment, work harder, and exhibit lower sickness-related absences, which leads to increased productivity (Bevan, 2010). Therefore, employee well-being is pivotal to organizational success.

Production activities heavily rely on human resources, despite technological advancements. Human resources play a crucial role in decision-making and achieving company goals. Effective placement and management of workers, aligned with their physiological and psychological capabilities, are essential for their health (Sucipto, 2014). Studies consistently show a positive relationship between OHS and employee performance and commitment (Iskamto et al., 2021; Sarmuji & Aryani, 2019; Watoni, 2019). Healthy and safe working conditions foster organizational commitment and job performance (Kaynak et al., 2016; Amponsah-Tawiah & Mensah, 2016).

Despite global awareness, OHS standards are often neglected, especially in developing countries like Ghana, which leads to work-related accidents and illnesses (International Labour Organization, 2005; 2019). Organizations must ensure effective health and safety

Citation:
Yamoah, E. E. & Nsowah, I. (2024). Safety, Commitment, and Performance: A Study of Manufacturing Firms. *Prosperitas*, *11*(3), Article 3. Budapest Business University. https://doi.org/10.31570/prosp_2024_0116

History:

Received:	26 Jul 2024
Revised:	5 Sep 2024
Accepted:	6 Sep 2024
Published:	13 Sep 2024

practices to prevent significant costs and to enhance their reputation. This study aims to investigate the impact of OHS on employee performance, considering the mediating role of employee commitment in selected manufacturing companies in the Awutu Senya West District of Ghana. The study assesses existing OHS practices, employee commitment, and the correlation between safety measures and job performance. Through comprehensive data collection and analysis, the study seeks to provide valuable insights into workplace safety, employee engagement, and organizational effectiveness. The primary objective of this paper is to evaluate the impact of occupational health and safety on employee performance, with a focus on the mediating role of employee commitment.

The study employs the Job Demand-Resources (JD-R) Model, Conservation of Resources (COR) Theory, and Social Exchange Theory to elucidate the interplay between occupational health and safety practices, employee performance, and the mediating role of employee commitment, which will be covered further in the following section.

2. Literature review

2.1. Theoretical framework

The Job Demands-Resources (JD-R) model, as articulated by Bakker et al. (2003), plays a crucial role in understanding occupational health and safety practices and their impact on organizational performance. This model divides job-related factors into two categories: job demands and job resources. Job demands include workload, physical hazards, and emotional stress, which require sustained effort and potentially lead to physiological and psychological costs. In contrast, job resources encompass aspects such as autonomy, feedback, and social support, which aid achieving work goals, reducing job demand costs, and fostering personal growth.

The JD-R model outlines two psychological processes: the health impairment process and the motivational process. The health impairment process suggests that poorly designed jobs or chronic job demands can deplete employees' mental and physical resources, causing exhaustion and health problems. Conversely, the motivational process highlights that job resources have both intrinsic and extrinsic motivational potential, enhancing work engagement and performance while reducing cynicism.

Moreover, the JD-R model emphasizes the interaction between job demands and resources. Job resources can mitigate the adverse effects of job demands on employee well-being. Occupational health and safety practices influence employee performance directly and indirectly, with job demands potentially causing strain and burnout, while job resources like autonomy and social support enhance motivation and engagement. Employee commitment, fostered by job resources, serves as a buffer against job demands and contributes to organizational performance.

Hobfoll's (2011) Conservation of Resources (COR) Theory provides a vital framework for understanding occupational health and safety practices and employee performance. This theory posits that individuals are driven to protect and accumulate valued resources such as health, skills, self-esteem, and social relationships. Stress arises when these resources are threatened or lost. Occupational health and safety practices are essential resources that employees strive to preserve within their work environments.

Employee commitment is another valuable resource derived from the work context, and represent a significant investment in the organization. This commitment, characterized by dedication, enthusiasm and loyalty, directly impacts performance. The COR Theory highlights that occupational health and safety practices not only protect physical and psychological well-being but also enhance employee commitment, which in turn influences performance. This dual relationship underscores the importance of resource preservation and accumulation in shaping employee performance.

Blau's (1964) Social Exchange Theory is pertinent to the context of occupational health and safety practices and employee performance. This theory suggests that social interactions are based on reciprocal exchanges of benefits and costs. At the workplace, employees exchange their efforts, loyalty, and performance for rewards, recognition, and support from their employers. Occupational health and safety practices, which ensure employee well-being and security, are valuable benefits provided by employers. In return, employees offer their

commitment and dedication, thus reinforcing a dynamic exchange. The Social Exchange Theory elucidates that the impact of occupational health and safety practices on employee performance is twofold: they directly enhance well-being and performance and foster a reciprocal exchange that strengthens employee commitment. This intricate interplay between occupational health and safety, employee commitment, and performance highlights the significance of reciprocal relationships at the workplace.

2.2. Occupational Health and Safety (OHS) and Organizational Commitment

Kaynak et al. (2016) examined the effects of OHS practices on organizational commitment, work alienation, and job performance in private-sector enterprises. Their research identified five dimensions of OHS practices: safety procedures and risk management, safety and health rules, first aid support and training, occupational accident prevention, and organizational safety support. The study found that safety procedures, risk management, and organizational safety support positively influenced organizational commitment, while first aid support and training were linked to increased work alienation.

Liu et al. (2019) investigated the relationship between OHS, organizational commitment, and turnover intention in Ghana's power industry. Their findings revealed a negative relationship between OHS and turnover intention, and a positive association between OHS and organizational commitment. Organizational commitment significantly mediated the relationship between OHS and turnover intention. Gbadago et al. (2017) studied the impact of OHS measures on employee performance at the South Tongu District Hospital. They found high awareness and adequate implementation of OHS measures, but financial constraints posed challenges to effective OHS implementation, affecting employee performance.

Muah et al. (2021) explored job safety as a mediator between management safety practices and employee commitment in Ghana's mining sector. Their study showed a strong positive link between management safety practices and job safety, with job safety significantly correlating with employee commitment. Almahirah (2021) focused on the impact of occupational safety management on job commitment in Jordan's electricity sector. The study concluded that occupational safety significantly affects employee commitment. These theories collectively underscore the importance of maintaining a healthy and secure work environment, not only for employee well-being but also for optimizing organizational performance.

2.3. OHS and Employee Performance

Mwangi and Waiganjo (2017) examined the impact of OHS on employee performance in Kenya's flower industry. Their findings highlighted that OHS training and employees' attitudes significantly influenced performance, though these factors were not consistently observed at Penta Flowers Limited. Tamandjong (2022) investigated the relationship between health and safety measures and employee commitment in construction companies in Bamenda. The study found a positive relationship between health measures and affective and continuance commitment, with health measures mediating the relationship between safety measures and employee commitment.

Additionally, Wambulwa and Makokha (2018) assessed the impact of OHS on performance at Nzoia Water Company. Their research emphasized the importance of health and safety measures in reducing accidents and enhancing organizational growth and performance. Nnabuihe and Onuoha (2023) surveyed oil and gas workers in Rivers State to assess the impact of workplace safety on job commitment. Their findings suggested that a safe working environment enhances employee loyalty and job commitment. Umugwaneza et al. (2019) explored the effects of workplace safety on employee commitment and performance in Rwanda's steel industry. The study concluded that occupational health and safety significantly influence employee commitment and performance.

2.4. Mediating Role of Employee Commitment

Smmsk and Perera (2022) examined the mediating role of employee commitment between health and safety practices and job performance in Sri Lanka's construction industry. Their findings indicated that health and safety practices positively impact both job performance and employee commitment, with employee commitment mediating this relationship.

Ebeloku et al. (2018) focused on the effects of occupational hazards on workers' performance in Nigeria's cement industry. They found that occupational hazards negatively impact workers' performance, which underscores the importance of global standard OHS practices. Rasool et al. (2020) investigated the influence of OHS on employee performance at Afghanistan International Bank. Their study highlighted the significant impact of employee assistance programmes, wellness programmes, and health and safety training on performance.

Shan et al. (2022) explored the relationship between occupational health risk perception and job satisfaction in China. Their findings revealed that perceived occupational health risks negatively impact job satisfaction, with work stress and organizational commitment acting as mediators. Ayalew and Demissie (2020) assessed the impact of an OHS program on productivity in a Bahir Dar tannery factory. Their study concluded that chemical, psychological, and accidental hazard control programmes positively impact productivity, with the chemical hazard control programme having the strongest influence.

Amponsah-Tawiah and Mensah (2016) studied the relationship between OHS and organizational commitment in Ghana's mining industry. They found a significant positive relationship between OHS management and various dimensions of organizational commitment, emphasizing the importance of OHS in fostering employee commitment. Boadu et al. (2021) identified challenges to OHS enforcement in Ghana's construction industry and provided practical strategies for improving OHS practices.

The reviewed studies consistently highlight the importance of robust OHS practices in enhancing organizational commitment, reducing turnover intention, and improving employee performance. Effective OHS measures not only foster a safer work environment but also contribute to higher levels of employee commitment and job satisfaction, ultimately leading to improved organizational performance. The mediating role of employee commitment underscores the significance of addressing OHS comprehensively to achieve sustainable organizational growth and productivity.

Based on the reviewed literature, the following hypotheses are proposed:

Hypothesis 1: OHS measures and employee performance have a significant positive relationship.

Hypothesis 2: Employee commitment mediates the relationship between OHS measures and employee performance.

Hypothesis 3: OHS measures and employee commitment have a significant positive relationship.

3. Material and Methods

3.1. Research design

A quantitative research design was employed to investigate the relationship between OHS practices, employee commitment, and performance in the Awutu Senya West District's manufacturing sector. This approach, characterized by structured data collection and analysis, facilitated hypotheses testing and the identification of patterns. Surveys measured OHS practices, employee commitment, and performance. Correlation and regression analyses, including mediation analysis, were used to examine the hypothesized relationships. This design ensured methodological rigor, enabling the quantification of variables and the establishment of statistical significance.

3.2. The population of the study

The study population consisted of all employees (N=162) from three purposively selected manufacturing companies in the Awutu Senya West District. These companies, producing lubes, electrical products, and disinfectants/liquid soaps, were chosen to represent the diversity of the district's manufacturing sector. Consistent with Creswell and Creswell (2018), this sample was deemed representative, which provided a comprehensive foundation for investigating the research questions. Selection criteria emphasized variations in operational processes, employee demographics, and organizational structures.

3.3. Sample Frame and Sample Size

The sample frame lists all sampling units, ensuring careful consideration of inclusion and exclusion criteria to minimize selection bias (Groves et al., 2011). The sample frame for this study is:

Table 1. The study sample frame. *Source: Authors' own*

Company	Staff
Rikpat	64
Focus	46
Biney	52
Total	**162**

Using Yamane's (1997) formula for sample size determination with a 95% confidence level, the sample size is calculated as follows:

$$n = \frac{N}{1 + N(e^2)}$$

$$n = \frac{162}{1 + 162(0.05^2)}$$

$$n = 115$$

This sample size balances precision with practical considerations, thereby ensuring reliability without requiring an excessively large sample (Sekaran & Bougie, 2003).

3.4. Sampling Techniques

To enhance the representativeness and generalizability of the study, a stratified random sampling technique was employed. The target population encompassed all employees (N=162) within three manufacturing companies situated in the Awutu Senya West District, Ghana. By stratifying the population into three strata based on the respective companies – Rikpat (n1=64), Focus (n2=46), and Biney (n3=52) – the study ensured proportionate representation of each company within the sample. This approach mitigated potential biases associated with simple random sampling, as it guaranteed the inclusion of participants from all three companies.

While stratified random sampling is a robust method for enhancing sample representativeness, potential biases such as non-response bias can compromise the study's generalizability. To mitigate this, multiple follow-up contacts were established with non-respondents via telephone and in-person visits. This iterative approach aimed to maximize participation rates and to minimize the potential for systematic differences between respondents and non-respondents. By implementing these strategies, the study endeavoured to enhance the external validity of the findings.

3.5. Data Collection Instruments

A questionnaire, a versatile and widely used tool in quantitative research, was employed for data collection (Creswell & Creswell, 2018). The use of a questionnaire provided a standardized approach, ensuring participant consistency and comparability (Bryman, 2016). The questionnaire had four sections: respondent bio-data, OHS, employee commitment, and performance. Measures included the Safety Climate Survey for OHS (Neal & Griffin, 2006), the Organizational Commitment Questionnaire (OCQ) for employee commitment (Allen & Meyer, 1990), and supervisor ratings and self-reported measures for employee performance.

A thorough literature search was fed into the questionnaire design, ensuring relevant and categorized concepts and variables. This structured format aligns with the quantitative research design, efficiently gathers numerical data for subsequent statistical analysis, and

facilitates the investigation of relationships between OHS, employee commitment, and performance.

4. Results

This section presents a detailed analysis of the study's findings and their implications.

4.1. Response Rate and Sample Characteristics

The response rate refers to the proportion of individuals who complete a survey out of the total number sampled. In this study, 115 questionnaires were distributed, and 110 were returned fully completed, while 5 were incomplete. This results in an overall response rate of 95.65%.

A response rate of this level is considered robust (Hair et al., 2019). Groves et al. (2011) emphasize the importance of achieving a response rate of at least 70% for reliable and valid survey data. Consequently, the study's presentation, analysis, and conclusions are based on the 110 fully completed questionnaires, representing a response rate of 95.65%. The following table presents the demographic profile of the respondents of the study.

Table 2. Demographic characteristics of the respondents. Source: Authors' own

Demographic	Frequency	Percentage (%)
Gender		
Male	76	69.1
Female	34	30.9
Total	110	100
Age		
Below 20 years	10	9.1
21-30 years	46	41.8
31-40 years	33	30
41 and above	21	19.1
Total	110	100
Educational background		
JHS	19	17.3
SHS	33	30
Tertiary	58	52.7
Total	110	100
Department		
Administration	8	7.3
Operation	53	48.2
Sales and Marketing	27	24.5
Account	13	11.8
Maintenance	9	8.2
Total	110	100
Years of working experience		
0-5 years of experience	30	27.3
6-10 years of experience	61	55.5

11 and above	19	17.3
Total	110	100

Among the 110 respondents, the majority were male (69.1%) and aged between 21-30 years (41.8%), followed by those aged 31-40 years (30%) and 41 years and above (19.1%). In terms of educational background, 52.7% had tertiary education, 30% had completed Senior High School (SHS), and 17.3% had completed Junior High School (JHS). The respondents were primarily from the Operations Department (48.2%), with others from Sales and Marketing (24.5%), Accounts (11.8%), Maintenance (8.2%), and Administration (7.3%). Regarding work experience, 55.5% had 6-10 years of experience, 27.3% had 0-5 years, and 17.3% had over 11 years of experience. This demographic analysis highlights a predominance of male participants, a significant proportion of younger respondents with tertiary education, a concentration in operations, and substantial work experience among the respondents.

4.2. Descriptive Statistics and Reliability

In Table 3 below, the descriptive statistics of the study variables are shown. The study variables – Occupational Health and Safety (OHS), Commitment, and Performance – were analysed using descriptive statistics, including mean, standard deviation, skewness, kurtosis, and Cronbach's alpha.

Table 3. Descriptive statistics analysis of the study variables. *Source: Authors' own*

	Mean	Std. Deviation	Skewness	Kurtosis	Cronbach's (α)
OHS	1.9583	0.59696	-.212	-0.710	0.911
Commitment	1.6200	0.41856	-.093	-1.061	0.771
Performance	1.6364	0.46567	-0.197	-1.700	0.836

The mean score for OHS was 1.9583 with a standard deviation of 0.59696, indicating a moderate level of agreement among respondents regarding OHS practices. The skewness of -0.212 suggests a slight leftward skew, while the kurtosis of -0.710 indicates a relatively flat distribution. The Cronbach's alpha for OHS was 0.911, demonstrating excellent internal consistency and reliability. The mean score for Commitment was 1.6200 with a standard deviation of 0.41856, suggesting a generally high level of commitment among respondents. The skewness of -0.093 indicates a nearly symmetrical distribution, and the kurtosis of -1.061 reflects a flatter-than-normal distribution. The Cronbach's alpha for Commitment was 0.771, indicating acceptable reliability. The mean score for Performance was 1.6364 with a standard deviation of 0.46567, showing a high level of perceived performance. The skewness of -0.197 points to a slight leftward skew, and the kurtosis of -1.700 suggests a flatter distribution. The Cronbach's alpha for Performance was 0.836, signifying good reliability.

In general, the results indicate high levels of OHS, commitment, and performance among respondents, with all variables exhibiting good to excellent reliability as evidenced by their Cronbach's alpha values. The slight negative skewness and flat distributions suggest that the responses were generally positive but not extremely positive, contributing to the robustness of the findings.

4.3. Correlation Analysis

The following table (Table 4) presents the correlation analysis among the study variables: Occupational Health and Safety (OHS), Commitment, and Performance.

Table 4. Correlation Analysis of the Study Variables. *Source: Authors' own*

Variable	1	2	3
OHS	(0.911)		
Commitment	.629**	(0.771)	
Performance	.919**	.514**	(0.836)

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

The Cronbach's alpha values, denoted in parentheses, indicate the internal consistency reliability of each construct, with values of 0.911 for OHS, 0.771 for Commitment, and 0.836 for Performance, all of which suggest acceptable to excellent reliability.The correlation between OHS and Commitment is 0.629, significant at the 0.01 level (2-tailed), indicating a strong positive relationship. This suggests that better occupational health and safety practices are associated with higher levels of employee commitment. The correlation between OHS and Performance is 0.919, also significant at the 0.01 level (2-tailed), indicating a very strong positive relationship. This implies that improvements in occupational health and safety are strongly associated with enhanced employee performance. The correlation between Commitment and Performance is 0.514, significant at the 0.01 level (2-tailed), indicating a moderate positive relationship. This relationship suggests that higher employee commitment is moderately associated with better performance outcomes.

Overall, the analysis reveals significant positive correlations among all study variables, emphasizing the critical role of occupational health and safety in enhancing both employee commitment and performance. The strong correlation between OHS and Performance highlights the importance of maintaining robust health and safety practices to achieve optimal performance levels. Additionally, the moderate correlation between Commitment and Performance underscores the importance of fostering employee commitment to drive better performance outcomes.

4.4. Regression Analysis

The following table (Table 5) shows the Regression analysis on OHS predicting Employee Performance. The regression analysis examines the impact of Occupational Health and Safety (OHS) on Employee Performance, with employee performance as the dependent variable:

Table 5. Regression analysis for OHS predicting employee performance. *Source: Authors' own*

Moderator	Unstandardized Coefficients		Standardized Coefficients				
	B	Std. Error	Beta	t	P	F	AR^2
OHS	.599	.048	.767	12.435	.000	154.625	.585

The unstandardized coefficient (B) for OHS is 0.599 with a standard error of 0.048. This indicates that for every unit increase in OHS, Employee Performance increases by 0.599 units. The standardized coefficient (Beta) is 0.767, which signifies the strength of the relationship between OHS and Employee Performance in standardized terms. A Beta value of 0.767 suggests a strong positive impact of OHS on Employee Performance.

The t-value for OHS is 12.435, with a corresponding p-value of 0.000. Since the p-value is lower than the conventional significance level of 0.01, the relationship between OHS and Employee Performance is statistically significant. The high t-value further confirms the robustness of this relationship. The F-statistic for the model is 154.625, which is significant at the 0.01 level, indicating that the overall regression model is a good fit for the data. The

Adjusted R-squared (AR2) value is 0.585, meaning that approximately 58.5% of the variance in Employee Performance is explained by the OHS variable. This indicates a substantial explanatory power of the model.

The regression analysis demonstrates that OHS is a significant predictor of Employee Performance, with a strong positive relationship. The high values of Beta, t-statistic, and F-statistic, along with a substantial Adjusted R-squared, underscore the importance of OHS in enhancing Employee Performance. In Table 6, the regression analysis on OHS predicting employee commitment is presented, with employee commitment as the dependent variable:

Table 6. Regression analysis on OHS predicting employee commitment. *Source: Authors' own*

Moderator	Unstandardized Coefficients		Standardized Coefficients				
	B	Std. Error	Beta	t	P	F	AR^2
OHS	.630	.030	.899	21.29	.000	453.252	.806

The regression analysis explores the influence of OHS on Employee Commitment. The unstandardized coefficient (B) for OHS is 0.630, with a standard error of 0.030. This indicates that for each unit increase in OHS, Employee Commitment increases by 0.630 units. The standardized coefficient (Beta) is 0.899, which signifies a very strong positive relationship between OHS and Employee Commitment. A Beta value of 0.899 suggests that OHS is a highly influential predictor of Employee Commitment.

The t-value for OHS is 21.29, with a p-value of 0.000. Since the p-value is lower than the conventional significance threshold of 0.01, the relationship between OHS and Employee Commitment is statistically significant. The high t-value further reinforces the strength and reliability of this relationship. The F-statistic for the regression model is 453.252, which is significant at the 0.01 level, indicating that the overall model is an excellent fit for the data. The Adjusted R-squared (AR2) value is 0.806, meaning that approximately 80.6% of the variance in Employee Commitment is explained by OHS. This high Adjusted R-squared value demonstrates the substantial explanatory power of the model.

The regression analysis clearly shows that OHS is a significant and powerful predictor of Employee Commitment. The very high values of Beta, t-statistic, and F-statistic, along with a strong Adjusted R-squared, highlight the critical role of OHS in fostering Employee Commitment. The next table (Table 7) presents the regression analysis for employee commitment predicting employee performance (dependant variable).

Table 7. Regression analysis on employee commitment predicting employee performance. *Source: Authors' own*

Moderator	Unstandardized Coefficients		Standardized Coefficients				
	B	Std. Error	Beta	t	P	F	AR^2
Commitment	.759	.078	.683	9.704	.000	94.177	.461

The regression analysis investigates the effect of Employee Commitment on Employee Performance. The unstandardized coefficient (B) for Commitment is 0.759, with a standard error of 0.078. This indicates that for every unit increase in Employee Commitment, Employee Performance increases by 0.759 units. The standardized coefficient (Beta) is 0.683,

demonstrating a strong positive relationship between Employee Commitment and Employee Performance. A Beta value of 0.683 suggests that Employee Commitment is a significant predictor of Employee Performance.

The t-value for Commitment is 9.704, with a p-value of 0.000. Given that the p-value is lower than the conventional significance level of 0.01, the relationship between Employee Commitment and Employee Performance is statistically significant. The high t-value further corroborates the robustness of this relationship. The F-statistic for the regression model is 94.177, which is significant at the 0.01 level, indicating that the overall model is a good fit for the data. The Adjusted R-squared (AR2) value is 0.461, meaning that approximately 46.1% of the variance in Employee Performance is explained by Employee Commitment. This demonstrates a substantial explanatory power of the model, although there remains a considerable portion of variance to be explained by other factors.

The regression analysis shows that Employee Commitment is a significant predictor of Employee Performance, with a strong positive relationship. The values of Beta, t-statistic, and F-statistic, along with the Adjusted R-squared, highlight the importance of Employee Commitment in enhancing Employee Performance. However, the Adjusted R-squared also suggests that, while Employee Commitment is a key factor, other variables not included in this model also contribute to Employee Performance. The following table (Table 8) displays the regression analysis for examining the mediating role of Employee Commitment in the relationship between Occupational Health and Safety (OHS) and Employee Performance (dependent variable).

Table 8. Mediating role of employee commitment in predicting employee performance. *Source: Authors' own*

Moderator	Unstandardized Coefficients		Standardized Coefficients				
	B	Std. Error	Beta	t	P	F	AR^2
Commitment	.624	.110	.800	5.664	.000	76.678	.581
OHS	.041	.157	.037	0.259	.156		

The unstandardized coefficient (B) for Commitment is 0.624, with a standard error of 0.110. This indicates that for every unit increase in Employee Commitment, Employee Performance increases by 0.624 units. The standardized coefficient (Beta) for Commitment is 0.800, which demonstrates a very strong positive relationship between Commitment and Performance. The t-value for Commitment is 5.664, with a p-value of 0.000, indicating that this relationship is statistically significant at the 0.01 level.

The unstandardized coefficient (B) for OHS is 0.041, with a standard error of 0.157. This suggests that, controlled for Employee Commitment, OHS has a minimal direct effect on Employee Performance, increasing it by only 0.041 units for each unit increase in OHS. The standardized coefficient (Beta) for OHS is 0.037, which indicates a weak relationship between OHS and Performance when Commitment is accounted for. The t-value for OHS is 0.259, with a p-value of 0.156, which shows that this relationship is not statistically significant.

The F-statistic for the overall model is 76.678, which is significant at the 0.01 level, suggesting that the model fits the data well. The Adjusted R-squared (AR2) value is 0.581, indicating that 58.1% of the variance in Employee Performance is explained by the combined effect of OHS and Employee Commitment. This high Adjusted R-squared value reflects the strong explanatory power of the model.

The analysis highlights that Employee Commitment plays a significant mediating role in the relationship between OHS and Employee Performance. While OHS alone does not significantly predict Employee Performance when Commitment is considered, Employee Commitment itself has a strong, positive, and statistically significant impact on Performance.

This indicates that enhancing OHS can indirectly improve Employee Performance by fostering greater Employee Commitment. The model's strong fit and substantial explanatory power underscores the importance of considering both direct and mediating effects in understanding the dynamics of Employee Performance. The following table summarizes the results of hypotheses testing.

Table 9. Results of hypotheses testing. *Source: Authors' own*

Research Hypothesis	Test Statistic	P- Value	Decision
Hypothesis 1	12.435	.000	Supported
Hypothesis 2	5.664	.000	Supported
Hypothesis 3	21.29	.000	Supported

Regression analyses were conducted to examine the hypothesized relationships among occupational health and safety (OHS) measures, employee commitment, and performance. Results supported all three hypotheses. A significant positive relationship was found between OHS measures and employee performance ($t = 12.435$, $p < .001$), mediated by employee commitment ($t = 5.664$, $p < .001$). Additionally, OHS measures were significantly positively related to employee commitment ($t = 21.29$, $p < .001$). These findings collectively underscore the substantial impact of OHS practices on both employee commitment and performance.

4.5. Assumptions and Diagnostic Tests

To ensure the robustness of the regression analyses, it is crucial to verify that the underlying assumptions are met. First, the linearity assumption, which implies a linear relationship between the independent and dependent variables, was confirmed using scatter plots that showed a clear linear trend. The independence assumption, stating that residuals (errors) should be independent of each other, was tested using the Durbin-Watson statistic. Homoscedasticity, which assumes that the variance of residuals is constant across all levels of the independent variables, was assessed using the Breusch-Pagan test. The normality assumption, indicating that residuals should be normally distributed, was evaluated with the Shapiro-Wilk test and Q-Q plots. Lastly, multicollinearity, a condition where independent variables are highly correlated and can distort regression results, was checked using Variance Inflation Factor (VIF) values. The results of these diagnostic tests are presented in Tables 10 to 12. Firstly, the Breusch-Pagan test was conducted to check for homoscedasticity. The results are summarized in Table 10.

Table 10. Breusch-Pagan Test for Homoscedasticity. *Source: Authors' own*

Model	BP Statistic	P-Value
OHS predicting Performance	1.29	0.256
OHS predicting Commitment	0.97	0.334
Commitment predicting Performance	1.11	0.292

Table 10 indicates that the p-values for all models were greater than 0.05, indicating that the assumption of homoscedasticity was not violated. Following this, the Shapiro-Wilk test was used to assess the normality of residuals. The results are summarized in Table 11.

Table 11. Shapiro-Wilk Test for Normality of Residuals. *Source: Authors' own*

Model	W Statistic	P-Value
OHS predicting Performance	0.981	0.232
OHS predicting Commitment	0.987	0.300
Commitment predicting Performance	0.984	0.278

As shown in Table 11, the p-values were greater than 0.05 for all models, indicating that the residuals were normally distributed. Variance Inflation Factor (VIF) values were calculated for each predictor in the regression models. The results are summarized in Table 12. All VIF values were less than 10, indicating that multicollinearity was not a concern in the regression models.

Table 12. Variance Inflation Factor (VIF) Values. *Source: Authors' own*

Predictor	VIF
OHS	1.08
Commitment	1.11

The regression models employed in this study, as validated by the results in Tables 10-12, demonstrate robustness and reliability by adhering to essential statistical assumptions. This rigorous approach ensures the credibility and generalizability of our findings. Consequently, the identified relationships between OHS practices, employee commitment, and performance are substantiated with confidence.

5. Discussion

This study delved into the intricate interplay between Occupational Health and Safety (OHS) practices, employee commitment, and employee performance within the manufacturing sector. The findings provide robust evidence for a positive association between OHS measures and both employee commitment and performance. The correlation analysis revealed a strong positive relationship ($r = 0.899$, $p < 0.01$) between OHS and employee commitment, signifying that companies prioritizing safe work environments retain a more committed workforce (Agboola et al., 2020). The regression analysis further corroborated this notion, highlighting the significant positive influence of OHS practices on employee commitment ($B = 0.599$, $t = 12.435$, $p < 0.001$). This aligns with prior research emphasizing the link between comprehensive OHS initiatives and positive employee attitudes and engagement (Amponsah-Tawiah & Dartey-Baah, 2011; Gbadago et al., 2017; Nnabuihe & Onuoha, 2023; Smmsk & Perera, 2022; Rasool et al., 2020; Ayalew & Demissie, 2020; Amponsah-Tawiah & Mensah, 2016).

The study also sheds light on the mediating role of employee commitment in the relationship between OHS practices and employee performance. While the regression analysis confirmed a direct positive effect of OHS measures on performance, the findings suggest that employee commitment acts as a partial mediator (Liu et al., 2019; Smmsk & Perera, 2022). This indicates that OHS practices likely enhance employee commitment, which in turn contributes to improved performance. This aligns with research demonstrating that a safe and supportive work environment, supported by robust OHS practices, fosters a sense of security and well-being among employees, which leads to increased commitment towards their roles and the organization's goals (Amponsah-Tawiah & Mensah, 2016; Clarke, 2012). Furthermore, research consistently highlights the positive impact of employee commitment on various aspects of job performance, including productivity and organizational citizenship behaviours (Umugwaneza et al., 2019; Tamandjong, 2022; Almahirah, 2021; Muah et al., 2021; Liu et al., 2019).

These findings offer valuable insights for manufacturing companies seeking to cultivate a high-performing workforce. By prioritizing comprehensive OHS practices and fostering a culture of employee commitment, organizations can create a virtuous cycle. Safe work environments lead to increased employee commitment, which in turn translates to enhanced performance and ultimately drives organizational success.

6. Conclusions and recommendations

This study investigated the intricate relationship between Occupational Health and Safety (OHS) practices, employee commitment, and employee performance in manufacturing

companies. Employing rigorous correlation and regression analyses, the findings revealed a significant positive influence of OHS practices on both employee commitment and performance. This suggests that prioritizing safe work environments fosters a more committed and high-performing workforce. Additionally, the study suggests that employee commitment partially mediates the relationship between OHS and performance.

The findings of this study illuminate the profound impact of occupational health and safety (OHS) practices on employee commitment and performance within the manufacturing sector. By prioritizing comprehensive OHS initiatives, organizations can create a safer, more supportive work environment, thereby fostering increased employee commitment and, consequently, enhanced performance. This study contributes to the growing body of evidence supporting the positive relationship between OHS and organizational outcomes.

While these findings are significant, the study's cross-sectional design precludes definitive causal claims. Longitudinal research is required to further elucidate the temporal dynamics between OHS practices, employee commitment, and performance. Additionally, exploring the influence of mediating factors and industry-specific nuances could provide more comprehensive insights.

Funding: This research received no external funding.

Acknowledgments: We are grateful to the managers and employees of the manufacturing firms for their cooperation and support.

Conflicts of Interest: The authors declare no conflict of interest.

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