

Enhancing Public Health: Research on Occupational Health Measures and Employee Productivity in Manufacturing

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ABSTRACT

Occupational health measures are rules and regulations designed to protect workers' physical and mental health while they are at work. These precautions consist of health exams, safety procedures, environmental modification, and stress reduction plans. This research's goal is to investigate the impact of occupational health measure (OHM), work environment, and employee productivity, to investigate the significant variable in manufacturing. A total of 54 respondents were provided. Questions were used to get the data. SPSS software is used. ANOVA, chi-square test, regression analysis test, Pearson correlation coefficient (PCC) test, and Cronbach's alpha (α) test are employed in the analysis of the outcomes. The findings indicate that OHM, employee productivity, and work environment in enhancing public health are simultaneously significant to manufacturing. OHM and employee productivity are the significant factor that affects manufacturing. By mitigating health hazards and advancing employee welfare, businesses establish more secure work environments that promote increased productivity and effectiveness. In the end, successful public health programs support both overall corporate performance and employee happiness.

1. Introduction

An organization's human resources are crucial. If the company and its workers have a good working connection, the organization as a whole can perform better. Workers are a company's most valuable resource and they contribute to all business operations [1]. When faced with a challenge at work, employees could do less well. Job performance is the amount of work that an individual completes on the tasks that are given to the person depending on their abilities, background, sincerity, and availability of time [2]. Every business constantly aspires to have outstanding staff members to help it succeed in reaching what it wants. Good performance output can be assured with quality human resources. HR management can additionally offer quality human resources since one of their responsibilities is to develop workers who will perform at the highest level for both the business and the employees [3]. Workers are a company's most valuable asset, as they are its human resources. It needs to be handled skillfully and successfully as a result. It is imperative for every business offering goods or services to prioritize service quality, requiring all personnel to possess the necessary skills to perform the tasks and obligations allocated to them [4] [13]. Occupational health and safety also include an employee's physical and mental well-being from public health that arises from mental processes or procedures that occur at work. OHS measures are essential for guaranteeing worker productivity and manufacturing settings in public health [5]. In addition to creating a positive work environment, well-managed safety procedures and disciplinary measures help to reduce occupational risks. Organizations can create a workforce that becomes more enthusiastic, involved, and capable of attaining maximum operational outcomes by establishing a healthy and secure place to work [6]. This study aims to evaluate the major variable in manufacturing by analyzing the impact of employee productivity, work environment, and OHM in enhancing public health.

2. Related works

Nnubia [14] looked into how financial incentives affected employee's performance in manufacturing companies. It was used to ascertain the correlation between employees' performance in manufacturing enterprises under investigation and their compensation, wages, commissions, and additional benefits. It concluded that financial incentive stigma was a crucial human resource management that significantly impacts an organization's growth and productivity [7]. Rasool et al. [8] were to examine the relationships between long-term job performance, workplace aggression, and occupational stress.

It examined several aspects of workplace violence, including assault, harassment, exclusion, and stalking. The study's conclusions showed that workplace violence has an adverse effect on sustainable work performance in both direct as well as indirect connections. New information about employees' opinions of their workplace and health was presented by Thorvaldsen et al. [9]. The study was based on information gathered from 447 respondents to a phone survey and 35 qualitative interviews were done. While physical and ecological vulnerabilities were the most common, some workers also reported psychological exposures, such as stress and an absence of authority over their work.

As regards staff performance in controlled organizations, Prasetyo et al. [10] attempted to examine and assess the impact of work environment and discipline. The method consists of merely describing and testing the relationship between work environment and disciplinary variables on worker efficiency variables so that the exact amount of effect that each has on the variables could be determined. The occupational health and safety (OHS) practices of building firms were shown to be inconsistent in Duryan et al. [11], which also emphasized the significance of fostering an environment of safety to assist in the dissemination of knowledge gained from events, missed opportunities, and failures throughout schemes, initiatives, and supply chains. It adopted an interpretive technique to include implicit components of knowledge application and transfer. The purpose of the study by Rivaldo et al. [12] was to ascertain the degree to which job discipline, education, training, and experience influence employees' performance inside the organization. The epidemic was impeding research and the limited number of factors that need to be assessed. It added to the examination of the management field and offered insights that were widely accessible.

Hypotheses development

H1: Occupational health measures have a significant effect on manufacturing in enhancing public health.

H2: Work environments have a dominant effect on manufacturing in enhancing public health.

H3: Employee productivity has a significant effect on manufacturing in enhancing public health.

Figure 1 shows the conceptual framework for enhancing public health.

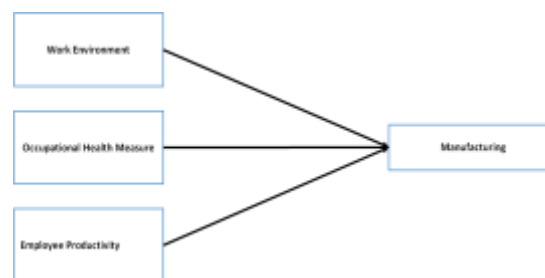


Figure 1. Conceptual framework

3. Methodology

Respondents included 54 even workers. All 21 questions were answered by all responders. The OHM variable has 6 questions, the work environment variable has 5, manufacturing has 4 and the employee productivity has 6. The indications that are present for each variable are described in each question. Respondents are presented with many alternatives for each question. 4 point Likert scale was employed in this survey. Both independent and dependent variables were included in this investigation. Manufacturing is a dependent variable, whereas work environment, employee productivity, and OHM are independent variables in enhancing public health. SPSS software was used to process the gathered questionnaire and evaluate the instrument test, which includes the PCC test, α test, regression analysis test, Chi-square test, and ANOVA test.

Work environment

Productivity and worker satisfaction in manufacturing are greatly impacted by the work environment.

It includes things like equipment quality, security, cleanliness, and aesthetics. A safe, productive workplace that improves worker satisfaction and performance is guaranteed by competent management. Sustaining an ideal work environment requires regular checks and enhancements.

OHM

Manufacturing workplace health initiatives prioritize the safety and public health of employees by establishing in place appropriate safety procedures, supplying personal protective equipment, carrying out frequent physicals, and giving instruction in risk assessment and hazard identification. These programs aim to reduce the use of hazardous substances, prevent accidents at work, and provide a secure and healthy working environment.

Employee productivity

Work productivity in the manufacturing sector refers to how quickly raw materials are converted into final goods. Simplifying processes, reducing waste, and increasing worker productivity are necessary to raise total production rates. Working conditions, technology advancements, and training are all significant considerations. Enhanced productivity is followed by increased profitability and competitiveness.

4. Results An Discussion

ANOVA, α test, chi-square test, PCC test, and regression analysis test are used in this study to enhance public health in OHM and employee productivity.

Table 1 displays the findings of an ANOVA that looked at many factors and how they affected manufacturing. The table includes F-values, sums of squares (SS), p-values, degrees of freedom (df), and mean squares (MS) for each variable. When it comes to productivity, OHM has a significant influence ($F= 6.00, 0.025$) with an SS of 1200. When two factors related to the work environment are taken into account, the SS value is 800, and an effect that is slightly significant is shown by the F-value of 4.00 and the corresponding marginal p-value of 0.055. Its significant p –value is 0.012 for employee productivity, F-value of 8.00, and SS of 1600, suggesting that the factors taken into account as a whole have a significant impact on productivity. This finding highlights the significance of OHM and manufacturing in enhancing public health.

Table 1: ANOVA test

Variables	SS	df	MS	F-value	p-value
OHM	1200	1	1200	6.00	0.025
Work environment	800	2	400	4.00	0.055
Employee productivity	1600	3	533.33	8.00	0.012

Table 2 presents statistical significance in the links between the manufacturing hypotheses H1, and the hypotheses H3. The influence of OHM on manufacturing is the subject of hypothesis H1, which has a χ^2 of 10.12 and a p-value of 0.027, providing an important connection at the 0.05 level. Similarly, H3 investigates how employee efficiency affects manufacturing and possesses a χ^2 value of 14.56 and a p –value of 0.012. As opposed to H1 and H3, H2, which examines the relationship between the workplace and manufacturing, has a p –value of 0.039 and χ^2 of 5.67 indicating significance but less strength.

Table 2. Chi-square test

Hypotheses	Variable	χ^2	df	p-value
H1	OHM → Manufacturing	10.12	4	0.027
H2	Work environment → Manufacturing	5.67	3	0.039
H3	Employee productivity → Manufacturing	14.56	5	0.012

The reliability statistics for four variables each tested using a different set of questions are shown in Table 3. The Cronbach’s alpha (α) for the six-question of OHM assessment is 0.85, suggesting excellent internal consistency and reliability. This implies that the variable items evaluate an identical

basic concept consistently and have a strong correlation with one another. The five-question work environment has α of 0.78, which is significantly lower than OHM but yet indicates adequate reliability. In comparison to OHM, this suggests a greater level of variability among the items but rather an acceptable level of consistency. 6 questions are used to assess employee productivity, and the results reveal α of 0.82, which is also recognized as strong and indicates a credible assessment of the construct. Finally, the 4 questions for manufacturing have α of 0.74.

Table 3. α test

Variable	No of questions	α
OHM	6	0.85
Work environment	5	0.78
Employee productivity	6	0.82
Manufacturing	4	0.74

The Pearson correlation coefficients and p-values for the various variable correlations with manufacturing are shown in Table 4. The connection between manufacturing and with an OHM of 0.68 and a p-value of 0.003, there is a clear and substantial positive correlation. With a p-value of 0.015 and an even higher correlation of 0.73 with manufacturing, the work environment likewise demonstrates a strong positive connection. A moderate but statistically significant positive connection between employee productivity and manufacturing is shown by its 0.55 correlation and 0.007 p-values. Enhancements in these factors could lead to better manufacturing results because all correlations are statistically significant.

Table 4. PCC test

Hypotheses	Variable	Pearson correlation coefficient (r)	p-value
H1	OHM \rightarrow Manufacturing	0.68	0.003
H2	Work environment \rightarrow Manufacturing	0.73	0.015
H3	Employee productivity \rightarrow Manufacturing	0.55	0.007

The findings of a regression study evaluating the effects of work environment, employee productivity, and OHM on manufacturing outcomes are shown in the Table 5. Improvement in OHM significantly increase manufacturing performance, as indicated by the high positive impact of the coefficient for OHM (0.45), which has a significant t-value (4.50) and 0.001 as the p-value. The relationship between worker productivity and industrial performance is also extremely positive (0.52), with a p-value of 0.002 and a t-value of 4.73 indicating significance in statistics. The impact of the work environment is favorable (coefficient of 0.18), although it becomes fewer significant but indeed noticeable at a t-value of 1.50 and an elevated p-value of 0.014. Overall, the results highlight how crucial efficient OHM and employee productivity are to maximum public health.

Table 5. Regression analysis test

Variables	Standard error	coefficient	t-value	p-value
OHM \rightarrow Manufacturing	0.10	0.45	4.50	0.001
Work environment \rightarrow Manufacturing	0.12	0.18	1.50	0.014
Employee productivity \rightarrow Manufacturing	0.11	0.52	4.73	0.002

5. Conclusion

This study was to look at the relationship between worker productivity, the work environment, and occupational health measures (OHM) to identify key variables in manufacturing to enhance public health. For this study, data was submitted by 54 respondents in total. The data was obtained using questionnaires. SPSS software was used. The data are analyzed using ANOVA, PCC test, chi square testing, regression analysis test and α test. The findings demonstrate the related significance of OHM, worker productivity, and work environment to manufacturing. OHM and worker productivity are the key factors influencing manufacturing. The findings generalizability could be limited by the study's failure to take industry-specific variances in productivity indicators or occupational health procedures

into consideration. Subsequent investigations could investigate the effects of innovative health technology and customized wellness initiatives on productivity in other manufacturing industries.

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