Journal of Vocational Health Studies

https://e-journal.unair.ac.id/JVHS

THE EFFECT OF OCCUPATIONAL SAFETY AND HEALTH IMPLEMENTATION ON WORK MOTIVATION AND PRODUCTIVITY IN XYZ FURNITURE PRODUCTION IN SLEMAN REGENCY

PENGARUH PENERAPAN KESELAMATAN DAN KESEHATAN KERJA TERHADAP MOTIVASI KERJA DAN PRODUKTIVITAS PADA PRODUKSI MEBEL XYZ DI KABUPATEN SLEMAN

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Original Research Article
Penelitian

A B S T R A C T

Background: *The XYZ furniture in Sleman Regency has three workstations: (1) Measuring and cutting, (2) Refining, and (3) Finishing. The production process in Micro, Small, and Medium Enterprises (MSMEs) still needs to implement OSH principles fully.* ***Purpose:*** *To determine how implementing occupational health and safety measures affects work motivation and productivity.* ***Method:*** *In this research, the Structural Equation Modeling (SEM) method was used, and all six employees were involved in the production process, aged 22 to 32 years.* ***Result:*** *The research demonstrates a significant positive impact of OSH implementation on work motivation (t_{count} = 3.477, p-value = 0.000), highlighting its substantial influence in enhancing employee motivation. Furthermore, a notable positive association is found between OSH implementation and work productivity (t_{count} = 3.653, p-value = 0.000), confirming the significant contribution of OSH practices to overall work productivity improvement. Additionally, the investigation reveals that work motivation significantly influences increased work productivity (t_{count} = 2.641, p-value = 0.008), underscoring the importance of cultivating motivation for enhancing workplace productivity. The highest influence value of the ten indicators (X24) is 9.18, which indicates work quality.* ***Conclusion:*** *The direct application of OSH substantially impacts on both work motivation and productivity. Moreover, a significant relationship is observed between work motivation and work productivity. Considering the utmost importance of work quality, improvements are recommended to enhance workstation design through a participatory ergonomics approach, and implementing the 5S concept in the furniture production area can effectively increase work quality.*

A R T I C L E I N F O

Received 16 April 2023
Revised 23 May 2023
Accepted 25 January 2024
Available Online 22 November 2024

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Keywords:
Occupational safety and health, Path analysis, Structural Equation Modeling (SEM), Work motivation

A B S T R A K

Latar belakang: Proses produksi mebel XYZ di Kabupaten Sleman memiliki 3 stasiun kerja yaitu (1) Pengukuran dan pemotongan, (2) Penghalusan, dan (3) *Finishing*. Proses produksi di MSMEs belum sepenuhnya menerapkan prinsip K3. **Tujuan:** Untuk mengetahui pengaruh penerapan keselamatan dan kesehatan kerja terhadap motivasi dan produktivitas kerja. **Metode:** Penelitian ini menggunakan metode *Structural Equation Modeling* (SEM) dan seluruh enam karyawan terlibat dalam proses produksi, berusia 22 hingga 32 tahun. **Hasil:** Adanya pengaruh positif yang signifikan penerapan K3 terhadap motivasi kerja (t_{hitung} = 3,477; *p-value* = 0,000), yang menunjukkan pengaruh substansial dalam meningkatkan motivasi kerja karyawan. Selain itu, terdapat hubungan positif yang penting antara penerapan K3 dan produktivitas kerja (t_{hitung} = 3,653; *p-value* = 0,000), yang menegaskan kontribusi signifikan praktik K3 terhadap peningkatan produktivitas kerja secara keseluruhan serta motivasi kerja berpengaruh signifikan terhadap peningkatan produktivitas kerja (t_{hitung} =2,641, *p-value* = 0,008), yang membuktikan pentingnya menumbuhkan motivasi untuk meningkatkan produktivitas di tempat kerja. Nilai pengaruh tertinggi dari sepuluh indikator (X24) sebesar 9,18 yaitu faktor kualitas kerja. **Kesimpulan:** Penerapan langsung K3 mempunyai dampak besar terhadap motivasi kerja dan produktivitas. Selain itu, terdapat hubungan yang signifikan antara motivasi kerja dan produktivitas kerja. Mengingat pentingnya kualitas kerja, maka disarankan untuk melakukan perbaikan desain tempat kerja melalui pendekatan ergonomi partisipatif dan menerapkan konsep 5S di area produksi furnitur dapat secara efektif meningkatkan kualitas kerja.

Kata kunci:
Keselamatan dan kesehatan kerja, Analisis jalur, *Structural Equation Modeling* (SEM), Motivasi kerja

Journal of Vocational Health Studies p-ISSN: 2580–7161; e-ISSN: 2580–717x
DOI: 10.20473/jvhs.V8.I2.2024.84-90

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INTRODUCTION

The Implementation of *Occupational Safety and Health* (OSH) in the work environment has a significant influence on the motivation and productivity of employees. When a company implements effective OSH practices, it creates a safer, more secure and healthier working environment, generating self-confidence, and a sense of value in employees (Prasetyo *et al*., 2017). When employees feel that the company cares about their well-being and works hard to protect them from the risk of work-related injury or illness, this motivates them to contribute more actively and dedicatedly to their work (Kultsum, 2017). In addition, implementing OSH helps reduce uncertainty and anxiety related to safety and health aspects at work, reducing stress levels. Employees who feel safe and protected tend to be more focused, enthusiastic and concentrate better on carrying out their tasks. This ultimately positively impacts productivity, where employees tend to be more efficient, produce better quality work, and even take more initiative in improving work processes by creating a work environment that supports and prioritizes OSH, the company not only enhances employee safety and health but also simultaneously increases motivation and productivity, which, in turn, can positively impact the overall achievement of organizational goals. A study by Aldini (2019), shows that the occupational safety and health management system significantly affects employee performance. According to Law No. 1 of 1970 concerning occupational safety, this law has yet to be fully implemented. Safety regulations, rules, and principles must be observed during work activities, workers and work.

Oravec *et al*. (2018) argued that the primary obligation of employers is to protect and maintain the health conditions of their employees and carry out regular preventive measures so that there are no accidents at work and no damage to health and work-related illnesses. Investigate the role of attitudes, norms, and perceived control on OSH behavior and motivation (Sawhney and Cigularov, 2019). Safety participation can begin with safety-oriented changes or those that motivate safety initiatives (Curcuruto *et al*., 2019).

Motivation can be defined as the level of individual willingness to exert and sustain efforts toward organizational goals. It can be influenced at various levels: (1) Individual, (2) Organizational, (3) Health sector, and (5) Society. The determinants of individual-level motivation are individual goals, self-concept, expectations, and worker experiences (Khim, 2016). A study by Afolabi *et al*. (2018) shows that, in developing countries, the core organizational factors influencing worker motivation include career development, occupational safety and health, a good work environment. Another study by Gołembski *et al*. (2017) financially motivated OSH compliance is perceived by employees mainly as a source of financial gain. Widhiastuti *et al*. (2020) show that the OSH management system, OSH management work stress and motivation have a good predictive level of human resource management performance. In this research, researchers used path analysis. Path analysis is used to analyze the pattern of relationships between variables to determine the direct or indirect effect of a set of independent (exogenous) variables on the dependent (endogenous) variable.

In the furniture production process in the category of small and medium enterprises, they have not fully implemented OSH in their production process, it is important to know the effect of OSH implementation on worker motivation. Previous study related to the effect of OSH on work motivation has been conducted by Denik *et al*. (2017), Kartikasari and Swasto (2017), Salman (2016), Santoso and Sitohang (2017). A preliminary study conducted in several *Micro, Small and Medium Enterprises* (MSMEs) in Sleman district found that MSMEs furniture XYZ had the highest number of minor accidents, around 4 times a month. The MSMEs explained that this was due to the low level of application of OSH in its production process and minor accidents, including scratches, abrasions, minor bruises, and cuts. However, there are no researchers who link the implementation of occupational safety and health with the work motivation in furniture production the category of small and medium enterprises using the *Structural Equation Modeling* (SEM) methods, namely path analysis. Thus, this research focuses on intervention studies related to the development and implementation of OSH programs in the furniture production process at the micro, small and medium enterprise level, as well as measuring the level of their impact on motivation and productivity, as well as providing further insight into the effectiveness of OSH practices in improving employee performance.

MATERIAL AND METHOD

Research subjects and objects

The research subjects were workers in a small and medium enterprise, XYZ Furniture in Sleman Regency. The inclusion criteria were workers aged 20 to 50, healthy, and with a minimum of one year of work experience. The object of the research is the effect of implementing OSH on work motivation

Population and sample

This research's population consists of 6 workers spread across three workstations: (1) Measuring and cutting, (2) Refining, and (3) Finishing. These workers are the sample because XYZ furniture has the most injury accidents in Sleman Regency.

Types of research

In this research, researchers used path analysis. Path analysis is a statistical technique used to research the relationships among variables. It is a type of *Structural Equation Modeling* (SEM) that allows researchers to investigate the direct and indirect effects of multiple independent variables on a single dependent variable. The exogenous variable is the application of OSH, and the endogenous variable is work motivation and productivity. A study by Kock and Moqbel (2017) explained that when the relationship between variables in the research model is complex and interrelated, SEM can help identify and test this complex relationship model. Even though the number of samples is limited, SEM can help parse and understand the relationships between these variables, enabling researchers to analyze many variables with a more integrated approach.

Research protocol

In the preparatory phase, the first thing to do was that the researcher asked permission from the XYZ furniture owner. After obtaining consent, a work motivation and OSH questionnaire was prepared. After the questionnaires were distributed to the respondents, the researcher explained the procedure for filling out the questionnaires to the respondents and tabulated the results of the questionnaire data. This research has obtained research approval from the code of ethics with the number EC/FT-UIM/2024/001.

***Structural Equational Modeling* (SEM)**

Seven steps must be carried out in testing the SEM model (Harahap, 2020), namely the development of theoretical models and the development of flowcharts (path diagrams). The proposed input matrix and model estimation have two choices, measurement model estimation or equation structure model (Rappaport, 2019). After selecting the model, possible problems will be identified, and a very high correlation will appear between the estimated coefficients obtained (e.g., ≥ 0.9).

The next step is to carry out an evaluation of the goodness of fit criteria test, namely with several statistical tests, including fit tests and statistical tests such as the *Likelihood*-ratio *Chi-square* statistic ($\chi 2$), Root *Mean Square Error Approximation* (RMSEA), *Goodness of Fit Index* (GFI), *Adjusted Goodness of Fit Index* (AGFI), *The Minimum Sample Discrepancy Function or Degree of Freedom* (CMIN/DF), *Tucker Lewis Index* (TLI), and *Comparative Fit Index* (CFI), then perform a reliability test using the construct reliability test and variance extracted as well as the validity test. Test results with SEM can be assumed in SEM assumptions, namely in normality sample size, outliers, multicollinearity, and singularity. The final stage is to perform interpretating test results and model modifications.

Data analysis

In data analysis, the first step is to make a model specification according to a predetermined theory, determine how to measure the construction, collect data, and then enter the data into IBM SPSS AMOS 23. with IBM SPSS AMOS 23, it will adjust the data into the specified model, then provide results that include all model suitability statistics and parameter estimates. Finally, the data were entered in the form of a covariance matrix of the variables measured according to the indicators of each variable, which are summarized in Table 1 for indicators of work motivation variables, indicators of work productivity variables in Table 2, and Table 3 for variable indicators of occupational safety and health implementation.

Table 1. Work motivation variables

	Work motivation variables
X11	Performance
X12	Confession
X13	Incentive

Table 2. Work productivity variables

	Work productivity variables
X21	Discipline
X22	Achievement of production targets
X23	Responsibility
X24	Work quality

Table 3. *Occupational Safety and Health* (OSH) implementation variables

	OSH implementation variable
Y1	**Support and communication**
	a. Outreach about work safety
	b. Changes in work procedures are communicated effectively to employees
Y2	**Labor safety equipment**
	a. Availability of *Personal Protective Equipment* (PPE)
	b. Availability of fire extinguishers
Y3	**Physical work environment**
	a. Workplace lighting conditions
	b. Workplace noise conditions
	c. Cleanliness of the work environment
	d. Workplace air temperature and ventilation

Hypothesis

Find out the effect between variables, hypothesis testing is carried out by testing three hypotheses, including (1) Hypothesis 1, the application of OSH significantly affects work motivation, (2) Hypothesis 2, namely the application of OSH, significantly affects work productivity, and (3) Hypothesis 3, work motivation, significantly affects work productivity.

RESULT

The questionnaire results from six respondents in this research, namely workers who have worked for at least one year at the small and medium enterprises, namely XYZ furniture, aged 22 to 32 years, residing in Sleman Regency. The work motivation variable consists of three indicators, namely physical evidence achievement (X11), confession (X12), and incentive (X13). The indicator of work motivation twitched highest mean is an achievement at 8.99. Work productivity variables consist of 4 indicators, namely discipline (X21), achieving the production target (X22), responsibility (X23), and quality of work (X24), the highest indicator with a mean of 9.18. The OSH implementation variable consists of two indicators: perceived competence (Y2.1) and fairness (Y2.2), each within 4.14 and 4.01. The highest item of the satisfaction variable is trust in the provision of facilities according to promises (item from the perceived competence indicator), with a mean of 4.30. The loyalty variable consists of three indicators, namely support and communication (Y1), labor safety equipment (Y2), and physical work environment (Y3), each of which has a mean of 9.06, 9.14, and 8.95, the highest item being safety equipment, as presented in Figure 1.

Goodness of fit test

It can be concluded whether the null hypothesis can be accepted or rejected. The value in goodness of fit is obtained by inputting data through the IBM AMOS SPSS 23 software, as presented in Table 4. Based on Table 4, the model test is all indicators in this study were at normal values.

Effect of *Occupational Safety and Health* (OSH) application on work motivation

Path analysis in Table 5 depicts on how to determine the effect of implementing OSH on work motivation. Table 5 shows the beta coefficient on the relationship between the Implementation of OSH and work motivation, which is 0.18. The results of the t_{count} test obtained were 3.477 with a probability of 0.000 (*p-value* < 0.05), so the decision was that H0 was rejected. Hence, the hypothesis states that applying OSH significantly affects work motivation.

Effect of *Occupational Safety and Health* (OSH) implementation on work productivity

Path analysis in Table 5 shows how to determine the effect of implementing OSH on work productivity. Table 5 shows the beta coefficient on the relationship between the implementation of the OSH application and work motivation, which is 0.22. The results of the t_{count} test obtained were 3.653 with a probability of 0.000 (*p-value* < 0.05), so the decision was that H0 was rejected. Then, the hypothesis states that applying OSH significantly affects work productivity.

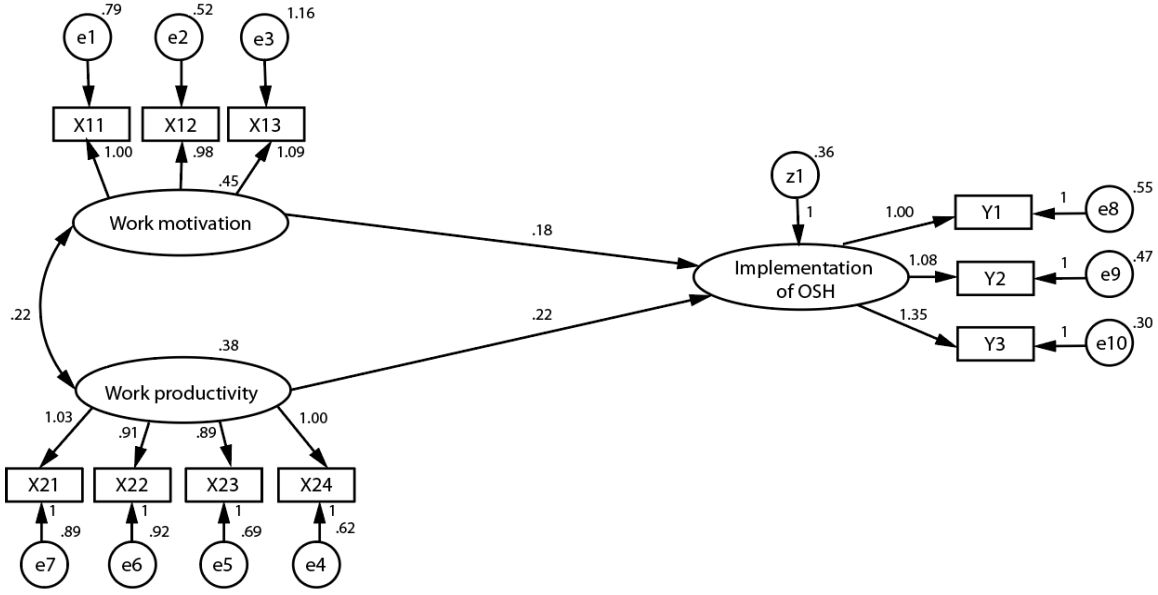

Figure 1. Path analysis

Table 4. Result of goodnesss of fit test

Goodness of fit indices	Model test results	Cut-off values	Information
Chi-square	34.245	Small expected	Good
Probability	0.360	≥ 0.05	
Goodness of Fit Index (GFI)	0.942	≥ 0.90	
Adjusted Goodness of Fit Index (AGFI)	0.900	≥ 0.91	
Tucker Lewis Index (TLI)	0.982	≥ 0.95	
Root Mean Square Error Approximation (RMSEA)	0.027	≤ 0.08	

Table 5. Path analysis result

Hypothesis	Exogenous variables	Variable endogenous	β	t_{count}	*p-values*	Information
H1	Implementation of OSH	Work motivation	0.18	3.477	0.000	Significant
H2	Implementation of OSH	Work productivity	0.22	3.653	0.000	
H3	Work motivation	Work productivity	0.22	2.641	0.008	

Effect of work motivation on work productivity

Path analysis in Table 5 to determine the effect of work motivation on work productivity. Table 5 shows the beta coefficient on the relationship between work motivation and productivity is 0.22. The results of the t_{count} test obtained were 2.641 with a probability of 0.008 (*p-value* < 0.05), so the decision was that H0 was rejected. The hypothesis states that work motivation is significant.

DISCUSSION

Effect of *Occupational Safety and Health* (OSH) application on work motivation

Implementing OSH practices in the workplace can have a positive impact on work motivation. (1) Feeling safe and secure, OSH practices help create a safe and secure work environment (Ikaningtyas *et al*., 2018). When employees feel safe at work, they are more likely to be motivated to work harder and more efficiently (Lingard, 2002). They are also less likely to experience anxiety, stress, or fear, which can negatively affect their motivation levels. (2) In health and well-being, OSH practices are designed to protect employees' health and well-being (Akbar and Kustini, 2021). Employees are more motivated to work when they are in good condition and healthy. They will have more energy, be more productive, and feel better about their job. (3) Increased job satisfaction, OSH practices help create a positive work culture where employees feel valued and respected (Saleh *et al*., 2022). When employees feel valued, they are more likely to be satisfied with their jobs, and job satisfaction is closely linked to work motivation. (4) Reduced absenteeism and turnover, when employees feel safe and secure, and their health and well-being are protected, they are less likely to work or leave work. Reducing labor and turnover is critical to maintaining a motivated workforce and ensuring smooth business operations. In summary, implementing OSH practices can positively impact the workplace by creating a safe and secure work environment, improving health and well-being, increasing job satisfaction, and reducing absenteeism and turnover.

Effect of *Occupational Safety and Health* (OSH) implementation on work productivity

Implementing OSH practices in the workplace can have a positive impact. (1) Reduced workplace accidents, OSH practices are designed to prevent workplace accidents and injuries. When employees feel safe and secure at work, they are less likely to experience accidents that can cause injury or downtime (Ayu *et al*., 2021), by reducing the number of accidents, OSH implementation can help maintain productivity levels (Lelo and Yusof, 2019). (2) Improved employee health, OSH practices also promote and maintain employee health. Healthy employees are more productive and can work more efficiently than employees struggling with health issues. OSH implementation can help reduce the number of sick days and absenteeism, which can lead to higher productivity levels. (3) Enhanced job satisfaction, OSH implementation can contribute to a positive work culture where employees feel valued and respected. This can lead to higher levels of job satisfaction and motivation, which can translate into improved productivity levels (Dedi Iskamto *et al*., 2021). (4) Better work environment, implementing OSH practices can also help create a better work environment. This includes a clean, well-maintained workspace, ergonomic furniture, and good lighting. These factors

can have a significant impact on employee comfort, which can translate into improved productivity levels (Delvika and Mustafa, 2019). In short, implementing OSH practices in the workplace can positively impact work productivity by reducing workplace accidents, improving employee health, enhancing job satisfaction, and creating a better work environment.

Effect of work motivation on work productivity

Work motivation has a significant impact on work productivity. (1) Increased effort, motivated employees are more likely to put in extra effort to achieve their goals (Johari and Jha, 2020). When motivated, employees are willing to work harder and take on new challenges, which can lead to higher productivity levels (Riyanto *et al*., 2021). (2) Improved focus, motivated employees are more focused on their work. They are less likely to get distracted or waste time on non-work-related activities. This can lead to improved productivity levels as employees can use their time more effectively. (3) Better quality of work, motivated employees tend to take pride in their work and strive for excellence. This can lead to better quality work, which can positively impact on productivity levels (Sugiarti, 2022). (4) Reduced absenteeism, employees who are motivated are less likely to miss work. This means there will be fewer disruptions to workflow, and productivity levels will remain steady. (5) Increased innovation, motivated employees are more likely to develop new ideas and solutions to problems. This can lead to increased innovation and improved productivity levels. To sum up, work motivation significantly impact work productivity by increasing effort, improving focus, producing better quality work, reducing absenteeism, and increasing innovation. Employers can encourage work motivation by providing employees with challenging tasks, recognition for their achievements, and opportunities for growth and development.

CONCLUSION

The effect of the application of occupational safety and health on work motivation and productivity in XYZ furniture production in Sleman Regency, it was found that the first and second hypotheses had a probability scale of 0.000 (p-*value* < 0.05) so that it could be concluded that the application of OSH had a significant effect on work motivation and also the application of OSH has a significant effect on work productivity. The third hypothesis has a probability scale of 0.008 (p-*value* < 0.05) so it is proven that work motivation significantly affects work productivity. Considering the importance of work quality in X24, about 9.18, improvements are recommended to enhance workstation design through a participatory ergonomics approach, and implementing the 5S concept in the furniture production area can effectively increase work quality.

ACKNOWLEDGMENTS

Thanks to those who have helped carry out this research, especially for XYZ furniture in Sleman Regency, Yogyakarta. The authors state there is no conflict of interest with the parties involved in this research.

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