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Enhancing Productivity and Innovation Through Strengthening Occupational Health and Safety Management

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Abstract

This research aims to analyze the effectiveness of occupational safety and health management in enhancing employee productivity and innovation at PT XYZ (Persero) Central Java Transmission Implementation Unit (UPT), specifically in the West Java area including UPT A, UPT B, UPT C, and UPT D. The study finds that current occupational safety and health management and achievement motivation variables have not fully contributed to employee productivity and innovation, indicating high epsilon coefficients. The research employs both quantitative and qualitative methods, using surveys and in-depth interviews. The analysis of structure 1 and structure 2 shows that the epsilon coefficient is high, suggesting that occupational health and safety management effectiveness and achievement motivation have not fully contributed to employee productivity. Additionally, these variables have not fully contributed to employee innovation, with many other factors influencing these outcomes. The findings highlight that effective occupational safety and health management positively influences employee productivity and innovation. However, other variables, such as the work environment and leadership style, also significantly impact these outcomes. The study suggests that strengthening occupational health and safety management—including management commitment, communication, monitoring, training, and implementation—can lead to better employee performance and innovation. The implications of this research are significant for improving safety and productivity in similar organizational settings. Enhanced occupational health and safety management practices can foster a more productive and innovative workforce, but attention must also be paid to other influential factors.

Keywords: *Employee Motivation, Innovation, Management Effectiveness, Occupational Safety, Productivity*

INTRODUCTION

Human resources are the main and largest asset for achieving success and increasing the efficiency and objectives of the organization. They have the ability to manage and run the organization towards achieving its goals. However, the abilities and willingness of each individual vary and are influenced by various factors. Human resource management needs to understand the efforts made by employees in managing and running the organization so that their behavior can be properly directed (Ahmad, 2015; Albrecht et al., 2015). Directed behavior allows individuals to work productively. Additionally, organizations must also be innovative to stay competitive. Innovation is necessary to keep up with the developments in science and technology, which play an important role in the development of efficient and effective work processes and support productivity (Zeebaree et al., 2020).

Productivity data at PT. XYZ (Persero) Transmission Implementation Unit A and C shows fluctuating results. The productivity of transmission execution unit A increased in 2018, decreased in 2019, rose again in 2020, and increased higher in 2021. Meanwhile, the productivity of transmission execution unit C decreased in 2018, increased in 2019 and 2020, and then decreased again in 2021. The implementation of innovation works from 2017 to 2022 was the lowest in transmission execution unit A with only 36 innovation works. In 2022, the implementation of innovation in A dropped to only 2 innovation works, making it the lowest.

Occupational safety and health management is part of the management system that includes organizational structure, planning, responsibility, implementation, application, achievement, review, and maintenance of occupational health and safety policies to control work-related risks, creating a safe, efficient, and productive workplace (PER.05/MEN/1992:2). Effective occupational health and safety management is expected to create safe working conditions, reduce workplace accidents, and improve the quality and productivity of employees. At PT. XYZ (Persero) Central Java Transmission Main Unit, occupational health and safety management has been implemented to protect the safety and health of employees. A

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safe and comfortable working environment increases employee productivity.

However, the implementation of occupational safety and health management in transmission execution unit A has not fully met the targets. In 2015, the implementation of SMK3 reached 96%, in 2016 it reached 88.63% with risk management at 51%, and in 2017 risk management reached 88%. In 2018 and 2019, the implementation of SMK3 reached the target. Occupational safety and health management includes planning (plan), implementation (do), evaluation (check), and action (act). However, in transmission execution unit A, the focus is still on planning and implementation, while evaluation and action are not optimal. Evaluation of employee compliance, knowledge maintenance, evaluation of actions to eliminate nonconformities, and corrective actions of evaluation results have not been fully implemented. To improve the effectiveness of occupational safety and health management, compliance evaluation and corrective actions are necessary. These steps include implementing the required actions, assessing the effectiveness of each corrective action, and making changes to the integrated management system if necessary, according to the impact of the nonconformities found, including quality, occupational safety and health, environmental, and security impacts.

Research related to the effectiveness of occupational safety and health management on employee productivity was reported by (Has & Susanty, 2016) and (Santiana et al., 2018) with the result that the effectiveness of occupational safety and health management has a significant impact on employee productivity. Meanwhile, most research related to the effectiveness of occupational safety and health management and employee innovation in the literature review mentions that innovation in most studies is reviewed from the technical development of new products, or modification or adoption of processes in the original product. Workplace innovation to improve the working environment is rarely studied. In these studies, workplace innovation affects the occupational safety and health of an organization (Jilcha et al., 2016). Another study reported that the adoption of occupational safety and health management can foster a long-term oriented corporate culture that can encourage an innovation climate under a long-term resource allocation strategy (Yang et al., 2021). These studies found indications of a relationship between the effectiveness of occupational health and safety management and workplace innovation where this relationship has not been studied in previous research.

LITERATURE REVIEW

Occupational Health and Safety

Occupational Health and Safety (OHS) management aims to minimize the risk of injury and illness by involving management, identifying and controlling hazards, providing PPE training, responding to emergencies, and ensuring good communication between management and employees. According to (Ardana et al., 2012), these protective efforts also include technical inspections, supervision, auditing, control, risk acceptance, training, coaching, practice, and evaluation of OHS outcomes. (Mathis & Jackson, 2012) add that OHS management creates safe working conditions through coaching, training, directing, and controlling task execution according to regulations. (Mangkunegara & Octorend, 2015) emphasizes the importance of establishing OHS system indicators, monitoring, procedure development, and employee training. (Pangkey et al., 2012) state that OHS management avoids moral and material loss risks, supporting effective and efficient performance. (OHSAS 18001, 2007) outlines an organized approach to reducing hazards, including monitoring, risk identification and control, emergency preparedness, training, and management review. (OHSAS 18001, 2007) emphasizes integrating OHS programs with organizational policies to reduce workplace accidents and illnesses. (Darmiatun & Tasrial., 2015) describe OHS management as part of overall company management to create a safe and productive workplace. (Reese, 2018) states that OHS management is an administrative function integral to safety initiatives, encompassing time and cost for safety meetings, audits, and inspections. (Hughes & Ferrett, 2011) add that OHS management involves planning, implementation, inspection, and evaluation with a focus on safety culture, stakeholder involvement, effective audits, and continuous improvement. From these various theories, it can be concluded that OHS management is an essential effort to protect workers physically and mentally, ensuring a safe and efficient workplace. The dimensions of OHS management include management commitment, communication, monitoring and identification, training, and OHS implementation.

Productivity and Innovation

Productivity, according to (Sutrisno, 2016), is the relationship between output (goods/services) and input (labor, materials, money). Productivity includes the output dimension (goods/services per unit and management effectiveness) and the input dimension (labor, materials, money, equipment, time). (Sedarmayanti, 2011) adds that productivity is the comparison

between achieved results and all resources used, including productive attitudes such as motivation and discipline. (Mathis & Jackson, 2012) define productivity as the measurement of the quantity and quality of work completed, considering the cost of resources used. Productivity consists of two dimensions: output (profit, sales, work quality) and input (labor, time, cost). (Phusavat, 2013) states productivity as the ratio of output to input, including goods, services, and limited resources. (Nordhaus. & Samuelson, 2010) describe productivity as output per unit of input, including products, volume, services, sales, and profit. (Judge & Robbins, 2013) emphasize that productivity is the transformation of input into output at the lowest cost, including effectiveness and efficiency. (Syverson, 2011)describes productivity as the amount of output obtained from a given input, with the output dimension (products, activities) and input dimension (materials, capital, labor). (Tue, 2015) and (Kalaw, 2015) consider productivity as the use of innovation and effective resources to increase added value, with the output dimension (goods/services) and input dimension (labor, materials, machines). (Martono, 2019) states productivity as the ratio between output and input, including people, materials, machines, money, and methods. Overall, employee productivity is the comparison between output (goods/services) and the input used, covering work effectiveness, added value, work quality, work quantity, and labor, cost, materials, equipment, and management support.

According to (Sedarmayanti, 2011), productivity is the comparison between the results achieved (output) with the overall resources used (input) related to productive attitudes and mentality such as motivational, disciplinary, creative, innovative, dynamic, professional and financial. Productivity consists of two dimensions, namely (A) output dimensions include work results in the form of individual performance and work environment and (b) input dimensions include total costs incurred, labor, materials, capital, energy, methods/procedures, equipment.

States that productivity is the quantitative ratio of output produced to input consumed. Productivity consists of two dimensions, namely (A) output dimensions such as goods, services, sales obtained from the work process and work results such as work manuals, standardization, inventory etc. obtained as a result of activities carried out in work and (b) input dimensions such as the use of limited resources such as labor, materials, machinery, facilities used and utilized in doing work (Phusavat, 2013).

According to (Syverson, 2011), productivity describes how much output is obtained from a given set of inputs. Productivity consists of two dimensions, namely (a) the output dimension consisting of (1) the number of products produced, (2) the number of activities (projects, jobs) carried out and (3) the number of means of work that can be utilized (functioned) and (b) the input dimension consisting of material, capital, labor, units of equipment, programs and supports used to perform work.

Innovation is the process of transforming ideas into new products, services, or processes that add value and help achieve company goals. According to Wessner (2013: 17), innovation involves design, new products, and characteristics. Harrington & Voehl (2015: 2) add that innovation creates value desired by consumers, including identifying needs, creating ideas, and entrepreneurial skills. Stefan (2018: 155) explains that innovation includes integrating external knowledge and bringing ideas to market. Shalley et al. (2015: 197) mention innovation as the implementation of new products or services to meet organizational goals. Carayannis (2013: 297) sees innovation as the introduction of new products that add value. Trott (2017: 15) states that innovation involves managing activities from idea generation to marketing new products. Philips & Philips (2018: 20) define innovation as a series of activities that create new products or services. Johnston & Marshall (2016: 11) define innovation as the willingness to think outside the box and accept change. Benlamri & Sparer (2017: 70) emphasize that innovation is a new solution used by more than one user. Machado et al. (2019: 83) see innovation as the ability to attract necessary resources.

Shalley defines innovation as the implementation of new products or services that help meet organizational goals related to financial performance, customer satisfaction, and efficient delivery. Innovation factors include (a) the process of branching and expanding to explore new directions, (b) creating ideas and strategies, (c) learning by Discovery, (d) pluralistic leadership, (e) building relationships and networks, (f) creating infrastructure for collective benefit, and (g) walking in skills. (Shalley et al, 2015).

According to (Philips & Philips, 2018), innovation is an activity or set of activities that results in the creation and use of new or significantly improved products or services; production processes or operations; ways of attracting customers by improving experiences; organizational practices, work Design, Human Resource competencies; or value-adding resources. Innovation factors include new product development, innovation through networking, innovation and creativity workshops, process innovation, product performance, increased use of products, channel innovation, brand innovation,

customer engagement and innovation, product System Innovation, Innovation laboratories, and Innovation Task Forces.

Safety and Health Management

According to (Ardana et al, 2012), Occupational Safety and health management (K3) is a protection effort aimed at ensuring that workers and others in the workplace or always in a safe and healthy state so that every source of production can be used safely and efficiently. Occupational Safety and health management consists of factors such as: (a) technical inspection, which is an examination to assess the risk of work accidents, (b) K3 supervision, which is to review K3 rules and policies, (c) K3 audit, which is an examination of activities and work results in accordance with procedures, (d) K3 control, which is to carry out accident and safety control, (e) risk acceptance: decision, (h) K3 practice, namely the implementation of K3 activities, and (i) assessment of the results of K3 implementation.

Mathis and Jackson stated that the management of Occupational Safety and health (K3) is an effort to ensure the creation of safe working conditions, avoid physical and mental disorders through coaching and training, direction and control of the implementation of the duties of employees and the provision of assistance in accordance with applicable regulations, both from government agencies and companies where they work. Occupational Safety and health management consists of factors namely (a) monitoring employee health and safety on a daily basis, (b) training employees to be safety conscious, (c) identifying accidents, (d) monitoring workplace safety, and (e) communicating with employees to identify employees potentially difficult to follow the rules. Mathis & Jackson (2012: 245).

Mangkunegara stated that Occupational Safety and health management is an effort to create conditions that are safe or safe from suffering, damage and suffering in the workplace as well as conditions that are free from physical, mental, emotional disorders, or pain caused by the work environment. Occupational Safety and health management consists of factors such as: (a) determination of indicators of the K3 System, (b) involving supervisors in the K3 Reporting System, (c) developing K3 management procedures, (d) making Occupational Safety a work goal, and (e) training employees in K3 supervision. (Mangkunegara, 2015).

Recent research related to work productivity was reported by (Jaafar & Rahim, 2022) who examined the mediating effects of work autonomy and work and family conflicts on the relationship between telecommuting and employee productivity and by (Kurdy et al, 2023) related the effect of job level mediation on the relationship between remote work and employee productivity. Recent research related to work innovation is reported by (Tamunosiki-Amadi et al., 2023) on the relationship between meaningfulness and innovative behavior of employees in the Telecommunications Industry and by (Nguyen et al, 2023) on the role of leadership, motivation for Public Service, and orientation of learning objectives towards innovative behavior of Public Sector Employees. Work productivity and innovation is a topic that is still in the spotlight and important to discuss. This study aims to obtain strategies to increase employee productivity and innovation through improving the effectiveness of Occupational Safety and health management and achievement motivation of PT XYZ (Persero). The added value of an employee can work productively and innovatively can generate effectiveness and work efficiency so that cost savings occur for the company, increasing profits. This topic is also important to discuss because along with the development of Science and Technology, of course, it needs to be balanced with high innovations by utilizing technology to help work quickly and efficiently which will certainly have an impact on company productivity globally.

Based on these theories, work innovation is the process of translating ideas into products, services, and other activities to add value and achieve company goals. Innovation factors include product innovation, creating new products, and increasing product added value. Process innovation includes new information technology, work plans, and work methods. Business innovation involves governance systems and idea development. Service innovation includes information technology communication and digital applications for customer service. Relationship innovation includes CSR, call centers, and digital communication forums. Based on the framework of thinking that has been described, the hypotheses that can be drawn from this research are:

H1: There is a positive direct influence of occupational health and safety Management Effectiveness on Productivity.

H2: There is a positive direct influence of occupational health and safety Management Effectiveness on Innovation.

METHODS

This research uses a survey method with path analysis and quadratic analysis techniques in a mixed research design (mix

method) which is explanatory-exploratory sequential in nature. The research began with a quantitative approach to test hypotheses regarding the relationship between the effectiveness of occupational safety and health management, productivity, and employee innovation through achievement motivation, using a questionnaire as a data collection instrument. Next, exploratory qualitative research was conducted to describe obstacles and strategies in increasing employee productivity and innovation. Data from qualitative and quantitative research is compared to draw comprehensive conclusions.

The research design included a quantitative survey to test the hypothesis and qualitative analysis to see whether the results were similar or different. The Delphi technique is used in qualitative analysis to reach agreement among research subjects. The population of this study were all permanent employees with technical functional positions in the Transmission Execution Unit (UPT) of PT XYZ (Persero) in the Central Java and West Java regions, with a total population of 1686 people. From the target population in the West Java region (667 people), a sample of 250 people was taken using the cluster sampling method. Descriptive analysis was carried out to find standard deviation, frequency distribution, mode, mean, median, and create a histogram of the variables employee productivity, innovation, effectiveness of occupational safety and health management, and achievement motivation. Before correlation analysis, normality, homogeneity and linearity tests were carried out to fulfill the requirements for hypothesis analysis.

DATA ANALYSIS AND RESULTS

The employee productivity instrument consists of 29 valid questions. The results of the data summary results of respondents ' answer scores related to employee productivity are presented in the data description table in Table 1

Table 1 Description of Employee Productivity Data

No	Type Description	Value
1.	Number of Responden (N)	250
2.	Highest score	116
3.	Lowest score	61
4.	Average Score	85,43
5.	Median	88,5
6.	Standard deviation	13,68
7.	Varians	187,25
8.	Modus	87
9.	Range	55
10.	Many Classes	9
11.	Class Length	5

The analysis of employee productivity data revealed an average of 85.43, a median of 88.5, a mode of 87, a standard deviation of 13.68, a variance of 187.25, a range of 55, with the lowest value at 61 and the highest at 116. The frequency distribution of classes was carried out using the Stranges rule with the formula for the number of classes being $k = 1 + 3.3\log n$, where n = the number of data points = 250, resulting in $k = 1 + 3.3\log 250 = 8.91$, which is rounded to 9. This result indicates that there are 9 class intervals with a class width of 7. The analysis of employee innovation data yielded an average of 90.68, a median of 90, a mode of 92, a standard deviation of 14.37, a variance of 206.71, a range of 74, with the lowest value at 66 and the highest at 140. The frequency distribution of classes was also conducted using the Stranges rule, resulting in 9 class intervals with a class width of 8. The analysis of occupational health and safety management effectiveness data showed an average of 100.39, a median of 108, a mode of 106, a standard deviation of 12.89, a variance of 166.14, a range of 70, with the lowest value at 73 and the highest at 143.

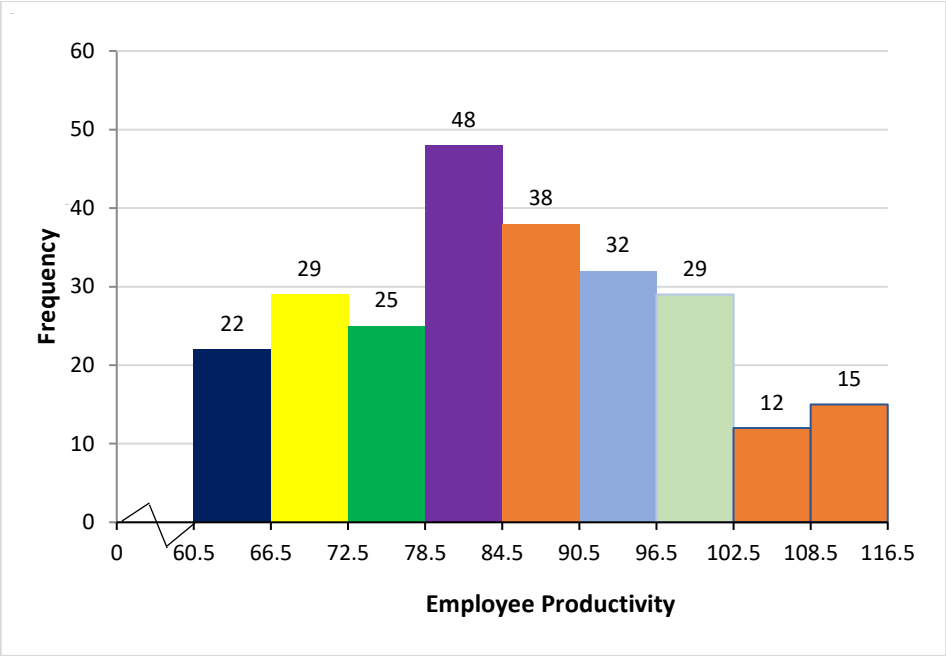

Figure 1 Histogram of Employee Productivity Variable Scores

Employee productivity instrument consists of 29 valid statements, the lowest theoretical score is (29 x 1) = 29, the highest data (29 x 5) = 145 with a theoretical median of ((29+145):2) = 87. The lowest empirical score (research results) is 61 and the highest data is 116 and obtained an empirical median of ((61+116):2) = 88,5. The results showed that the empirical median is greater than the theoretical median of 88.5 > 87, meaning that employee productivity in this study is high. The results of the average employee productivity variable score of 2.98 are included in the good category. This means that employees provide answers with a high enough perception of the aspects of the question-statement on employee productivity. The results of the average score of each indicator are presented in Table 2

Table 2 Average Score of Employee Productivity Variables

No.	Indicator	Average score	Category
1	Effectiveness of work results	2,98	Good
2	The resulting added value	3,18	Good
3	Quality of work	2,73	Medium
4	Quantity produced	2,98	Good
5	Labor	2,83	Medium
6	Cost	3,12	Good
7	Materials and equipment	2,78	Enough
8	Organizational factors	3,20	Good
Average		2,98	Good

By comparing the results of quantitative research with qualitative analysis on the variable of employee productivity, it can be concluded that there are differences between the two methods across all studied dimensions. In the dimensions of work effectiveness, value added, work quality, quantity produced, labor, costs, materials and equipment, and organizational factors, qualitative research reveals aspects not detected in quantitative research. Additionally, qualitative research strengthens the findings from quantitative research, indicating that both approaches complement each other in providing a more comprehensive view of employee productivity. Similarly, the comparison of quantitative and qualitative analyses on the variable of employee innovation shows differences between the two methods across all studied dimensions. In the

dimensions of product innovation, process innovation, business innovation, service innovation, and relationship innovation, qualitative research reveals aspects not detected in quantitative research and strengthens quantitative findings. Qualitative research provides additional insights not found in quantitative research, showing that both approaches complement each other in giving a more complete picture of employee innovation. The comparison of quantitative and qualitative analyses on the variable of occupational health and safety management effectiveness also indicates differences between the two methods across all studied dimensions. In the dimensions of management commitment, communication, occupational safety and health monitoring and identification, occupational health and safety training, and occupational health and safety implementation, qualitative research reveals aspects not detected in quantitative research and strengthens quantitative findings. Qualitative analysis indicates that employee productivity, employee innovation, achievement motivation, and occupational safety and health management effectiveness tend to show good to very good results, while quantitative research results show good categories. Despite the category differences, qualitative research uncovers findings not revealed in quantitative research and strengthens its results, making both approaches complementary.

The employee innovation instrument consists of 28 valid questions. The results of the data summary results of respondents ' answer scores related to employee innovation are presented in the data description table in Table 3

Table 3. Employee Innovation Data Description

No	Type Description	Value
1.	Number of Responden (N)	250
2.	Highest score	140
3.	Lowest score	66
4.	Average Score	90,68
5.	Median	90,00
6.	Standard deviation	14,37
7.	Varians	206,71
8.	Modus	92
9.	Range	74
10.	Many Classes	9
11.	Class Length	8

The results of the analysis of employee innovation data description obtained an average of 90.68, median of 90, mode of 92, standard deviation of 14.37, variant of 206.71, range of 74, the lowest data of 66 and the highest data of 140. Class frequency distribution is done by using Stranges rule with Formula number of classes = k = 1+3.3 logn, where n = number of data = 250 so that k = 1 + 3,3log250 = 8.91 rounded to 9. The results showed that there were 9 classes of intervals with a length of Class 8. The table and graph of the frequency distribution of employee innovations are presented as follows.

Table 4 Variable Frequency Distribution of Employee Innovation

No.	Interval Classes	Frequency	Percentage (%)
1.	66 - 74	44	17,60
2.	75 - 83	41	16,40
3.	84 - 92	70	28,00
4.	93 - 101	47	18,80
5.	102 -110	35	14,00
6.	111 - 119	11	4,40
7.	120 - 128	0	0,00
8.	129 - 137	1	0,40
9.	138 - 146	1	0,40
	Total	250	100

The results of the frequency distribution of employee innovation is known that the lowest frequency of 0% with a score of 120-128. The highest frequency was 28% with a score of 84-92. The frequency distribution of employee innovations is described as follows.

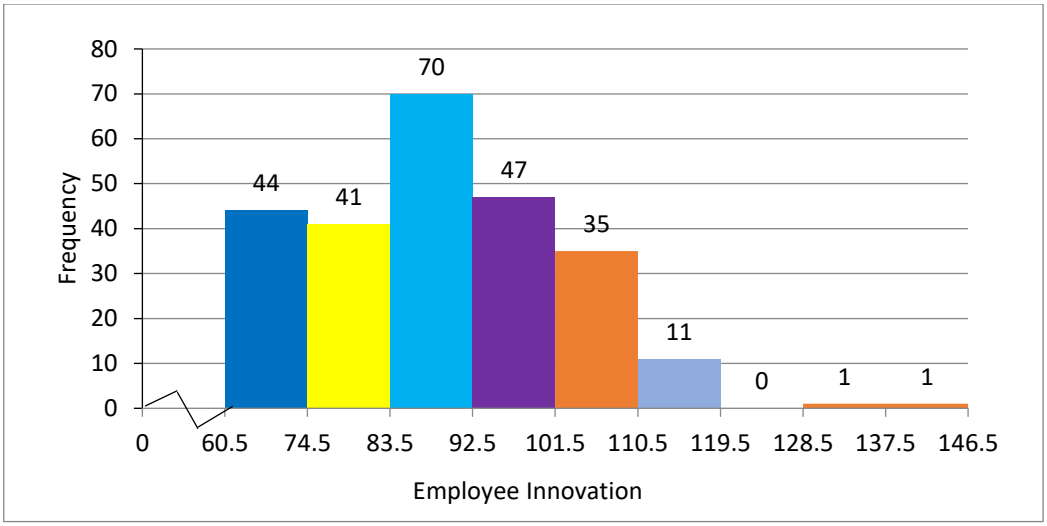

Figure 2 Employee Innovation Variable Score Histogram

The employee innovation instrument consists of 28 valid statements, the lowest theoretical score of (28 x 1) = 28 and the highest theoretical score data of (28 x 5) = 140 with a theoretical median of ((28+140):2) = 84. The lowest empirical score (research results) is 66 and the highest data is 140 with an empirical median of 90. The results of this study indicate that the empirical median is greater than the theoretical median of 90 > 84, meaning that employee innovation in this study is high.

The results of the average employee innovation variable score of 3.19 are included in the good category. This means that employees provide answers with a high enough perception of the aspects of the question-statement on employee innovation. The results of the average score of each indicator are presented in Table 5

Table 5 Average Score of Employee Innovation Variables

No.	Indicator	Average	Category
1	Product innovation	3,02	Good
2	Process innovation	3,09	Good
3	Business innovation	3,14	Good
4	Service innovation	3,39	Good
5	Relationship innovation	3,32	Good
Average		3.19	Good

The first hypothesis results indicate a direct positive effect of occupational health and safety management effectiveness on employee productivity with $\beta = 0.935$ ($p = 0.000$). This research is supported by a study conducted by Muhammad Nicky Has and Ade Irma Susanty (2016) in their research titled "Health and Safety Management Influence on employee's productivity," published in Actual Problems of Economics Vol. 3, No. 177. The product moment correlation analysis resulted in (r) of 0.891, the determinant coefficient (r^2) of 0.786, and the regression equation formed was = -0.006 + 0.979X. Additionally, the qualitative analysis results also show alignment and agreement with the quantitative analysis results, indicating a direct positive effect of occupational health and safety management effectiveness on employee productivity with "good" criteria for indicators (management commitment, communication, occupational safety and health monitoring and identification, occupational health and safety training, and occupational health and safety implementation). Based on these research results, it can be concluded that the effectiveness of occupational health and safety management positively affects employee productivity. The more positive (good) the effectiveness of occupational health and safety management applied by the company, the higher the employee productivity. Conversely, the more negative (poor) the effectiveness of occupational health and safety management, the lower the employee productivity.

The third hypothesis results indicate a direct positive effect of occupational health and safety management effectiveness

on employee innovation with β = 1.045 (p = 0.000). This research is supported by the statement that the adoption of occupational health and safety management can promote a long-term oriented company culture that fosters an innovation climate under long-term resource allocation strategies (Yang et al., 2021: 201). However, similar research in quantitative studies is lacking. Additionally, the qualitative analysis results also show alignment and agreement with the quantitative analysis results, indicating a direct positive effect of occupational health and safety management effectiveness on employee innovation with "good" criteria for indicators (management commitment, communication, occupational safety and health monitoring and identification, occupational health and safety training, and occupational health and safety implementation). Based on these research results, it can be concluded that the effectiveness of occupational health and safety management positively affects employee innovation. The more positive (good) the effectiveness of occupational health and safety management applied by the company, the higher the employee innovation. Conversely, the more negative (poor) the effectiveness of occupational health and safety management, the lower the employee innovation.

DISCUSSION

Direct influence of the effectiveness of Occupational Safety and Health Management on employee productivity

The results of the first hypothesis indicate that there is a direct positive influence of the effectiveness of Occupational Safety and health management on employee productivity with the β = 0.935 (p = 0.000). The results of this study are supported by research conducted by Muhammad Nicky Has. Ade Irma Susanty (2016) in his research entitled Health and Safety Management Influence on employee' productivity, Actual Problems of Economics Vol. 3, No. 177. Product moment correlation analysis results obtained (r) of 0.891 coefficient of determinant (r2) of 0.786 and the regression equation formed is = -0.006 + 0.979 X.

Furthermore, for the results of qualitative analysis that has been done also shows the alignment and equality in the direction of the results of quantitative analysis, namely the direct positive influence of K3 management effectiveness on employee productivity with "good " criteria for indicators (management commitment, communication, monitoring and identification of K3, K3 training and implementation of K3).

The results of the research that has been stated above, it can be concluded that the effectiveness of Occupational Safety and health management has a positive effect on employee productivity. The more positive (good) the effectiveness of Occupational Safety and health management applied by the company can increase employee productivity. Conversely, the more negative (bad) the effectiveness of Occupational Safety and health management can reduce employee productivity.

Direct influence of Occupational Safety and Health Management Effectiveness on employee innovation

The results of the third hypothesis indicate that there is a direct positive influence of the effectiveness of Occupational Safety and health management on employee innovation with ③ = 1.045 (p = 0.000). The results of this study are supported by the assertion that the adoption of Occupational Safety and health management can foster a long - term oriented corporate culture that can foster a climate of innovation under a long-term resource allocation strategy (Yang et al., 2021: 201). But there have been no similar studies in quantitative research.

Furthermore, for the results of qualitative analysis that has been done also shows the alignment and equality in the direction of the results of quantitative analysis, namely the direct positive influence of K3 management effectiveness on employee innovation with "good" criteria for indicators (management commitment, communication, monitoring and identification of K3, K3 training and implementation of K3).

The results of the research that has been stated above, it can be concluded that the effectiveness of Occupational Safety and health management has a positive effect on employee innovation. The more positive (good) the effectiveness of Occupational Safety and health management applied by the company, it can increase the innovation that employees have. Conversely, the more negative (bad) the effectiveness of Occupational Safety and health management, it can reduce employee innovation

CONCLUSION

This research has succeeded in finding ways to overcome problems and increase the productivity and innovation of permanent technical employees at PT XYZ (Persero) Central Java Transmission Main Unit, West Region through Strengthening occupational safety and health Management based on research findings which are explained as follows: a).

Increasing the effectiveness of occupational safety and health management can influence increased employee productivity, b). Increasing the effectiveness of occupational safety and health management can influence increased employee innovation.

This research was conducted on employees of PT XYZ (Persero) Central Java Transmission Implementation Unit in the West Java region which includes UPT A, UPT B, UPT C, and UPT D. The research results only apply to this population and cannot be generalized to other populations with different characteristics. The results of the analysis of structure 1 and structure 2 show that the epsilon coefficient is high. This shows that the variables of occupational health and safety management effectiveness and achievement motivation have not fully contributed to employee productivity, and there are still many other variables that influence it. Apart from that, the results of the analysis of structure 1 and structure 2 also show that the epsilon coefficient is high, which means that the variables of occupational safety and health management effectiveness and achievement motivation have not fully contributed to employee innovation, and many other variables influence it. This research only analyzes the variables of occupational health and safety management effectiveness, achievement motivation on productivity, and employee innovation. It is known that there are many other variables that can influence employee productivity, such as work environment, work discipline, and leadership style.

The findings highlight that effective occupational safety and health management positively influences employee productivity and innovation. However, there are many other variables, such as work environment and leadership style, that also significantly impact these outcomes. This study suggests that strengthening occupational health and safety management, including management commitment, communication, monitoring, training, and implementation, can lead to better employee performance and innovation. The implications of this research are significant for improving safety and productivity in similar organizational settings. Achievement motivation mediates effectively. the effect of the effectiveness of Occupational Safety and health management on employee productivity. achievement motivation is not effective on the effect of the effectiveness of Occupational Safety and health management on employee innovation

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