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THE LEVEL OF EMPLOYEE PRODUCTIVITY IN THE METAL MANUFACTURING DEPARTMENT OF PT. PUPUK KALIMANTAN TIMUR

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Abstract

The level of work productivity is quite a fatal problem because its concerns the country's economic stability. Based on data from the Badan Pusat Statistik (BPS) for 2022. Indonesia has a relatively low work productivity ranking, still around 74,4 percent, while average ASEAN productivity figure is 78,2 percent. The level of working productivity can be caused by several factors such as the work environment. One thing that can support the health of the workers is herbs. The aim of this research is to analyze the level of employee productivity in the metal manufacturing department of fertilizer company. This research was performed as an analytical observational study employing a cross-sectional design. A total of 131 individuals were chosen for the research sample using a systematic random sampling method. The data collection process includes evaluating knowledge levels using a questionnaire developed by the author, analyzing respondents' consumption habits through the Semi-Quantitative Food Frequency Questionnaire (SQ-FFQ), and assessing work productivity with the Individual Work Performance Questionnaire (IWPQ). This study utilized Spearman Correlation and Chi-Square methods for data analysis. The results showed that there was no relationship between work productivity and level of knowledge (p=0.972) and consumption patterns (p=0.553). However, there is a relationship between the level of knowledge and consumption patterns (p=0.002). The conclusion of this research is that there is no relationship between the main variables studied and the level of knowledge or consumption patterns. However, the independent variables, namely the level of knowledge and consumption patterns, have a relationship with each other. The absence of relationships can be caused by various factors that have more weight, such as motivation, work environment, support from fellow colleagues and superiors, and time management.

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INTRODUCTION

According to Undang-Undang Nomor 13 tahun 2003 which examine about employment, workers are every individual who is able to carry out work to produce goods and services or meet individual and community needs. Individuals who can officially work are residents who have entered the mature working age, namely aged 15 years to 64 years. (Stockley, 2003) States in terms of human capital that humans within the scope of the organization are considered company assets that have the same value as other physical assets in terms of contribution to organizational performance and productivity. Every form of expenditure on training, development and health insurance is no longer considered an additional cost for the company but is a long-term investment. The age of workers has a close relationship with productivity, the older a person is, the faster their productivity will erode, and vice versa.

Productivity is one of many factors that determines competitiveness, both at the individual, company, industry and national level. Every year the workforce in Indonesia experiences a significant increase. Based on data from the Central Statistics Agency (BPS) in 2022, workers in Indonesia reached 135,611,900 workers with a composition of 43.29% male workers and 36.2% female workers. The high number of productive workers cannot yet be balanced with adequate attention to the health and nutritional status of workers and can result in decreased work productivity. Insufficient technology and work equipment is also one of the issues of low work productivity in Indonesia. Many companies in Indonesia still use conventional and inefficient technology and work equipment for the reason of cost savings. A work environment that is not conducive and comfortable also causes work productivity to decrease. According to Jumliati (2020), many workers in Indonesia work in unconducive work environments, such as long working hours, low wages and inadequate social security.

Meanwhile, Work productivity of employees in a company is an endless issue to be discussed. Problems related to work productivity are also a strategic issue for companies to program human resource issues. Productivity is one of the components that an institution or company must have if it wants to achieve the desired goals. In its activities, institutions or companies must be able to increase productivity from time to time. explain that work productivity is the attitude and behaviour of workers in a company towards the regulations and standards determined by the company which have been manifested in the form of behaviour and actions within an organization or company. The process of increasing work productivity will always be improved by the leadership so that the results of these achievements can be used as corrections for achievements at the next level.

The work productivity of Indonesian employees is still a major problem because it is below the average employee productivity in each country including in the ASEAN region. According to Anwar Sanusi (2023), Indonesia's productivity is still around 74.4 percent, while the average ASEAN productivity is 78.2 percent. In 2017, Indonesia's workforce numbered 131 million, of which elementary school graduates reached 50%, but college graduates only reached 12% and secondary education graduates only 37%. The Human Development Report from the United Nation for Development Program (UNDP) in 2020 stated that Indonesia's Human Development Index (HDI) was ranked 107th out of 189 countries in the world, including in the High Human Development category. This problem occurs because the level of education and skills of the workforce is low. According to the

Central Statistics Agency (BPS), the average education level of the Indonesian population in 2022 will only be 7.2 years or only graduated from elementary school.

Work productivity has a fairly close relationship with immunity, immunity as the body's immune system is associated with the respondent's performance, fluctuating absenteeism levels and the respondent's concentration. One thing that influences immunity is fatigue, intense physical activity during work often uses up energy in the body and becomes one of the factors that trigger fatigue, starting from changes in muscle metabolism or the cardiovascular system to several comorbidities such as cancer, anemia, chronic fatigue syndrome and multiple sclerosis (Yasa, 2019). Apart from fatigue, stress factors also influence decreased immunity. Stress is a broad concept that includes challenging, difficult circumstances, physiological or psychological responses to a situation (stress response). The immune system in humans and other species responds to stress, with various aspects of the human immune system interconnected with stress responses. Acute stress increases blood levels of pro-inflammatory cytokines, whereas chronic stress lasting from days to years is associated with elevated levels of these cytokines, though with differing health consequences (Morey et al., 2015). Some sources believe that some traditional medical therapies can help overcome work productivity problems in employees, such as helping to overcome work stress due to excessive workload, including herbal drinks.

Herbal drinks have long been associated with work productivity because they contain macronutrients such as carbohydrates and protein which can increase employees' flying hours as well as improve the immune system and the body's resistance to fatigue. Carbohydrates play a crucial role in improving work productivity levels. Research indicates that they enhance muscle glycogen reserves and promote carbohydrate oxidation, thus prolonging the duration of physical exertion prior to the onset of fatigue. Furthermore, they improve performance by averting hypoglycemia and maintaining high levels of carbohydrate oxidation (Beck et al., 2015). Apart from carbohydrates, protein can also help to improve focus and concentration, this is proven by research from Xu., et al. (2023), namely that protein can improve focus and cognitive function in elderly adults. Not only protein, water is also an important factor in maintaining concentration while working, dehydration levels of more than 2% can result in decreased alertness and ability to concentrate as well as increased fatigue, drowsiness and headaches (Adan, 2012).

Traditional medicine is also used as an alternative medicine because of the high cost or unavailability of modern medicine and is supported by the belief that traditional medicine can ward off various types of diseases. This is in line with research results showing that the efficacy and effectiveness of herbal medicine - for example dandelion extract which has been proven to inhibit influenza A virus infection and reduce polymerase activity (Lin et al., 2014; Rastogi et al., 2020; Yang et al., 2020). According to Riskesdas (2018), people have begun to utilize various traditional medicines and the use of herbal plants, where the national proportion of herbal plant utilization reaches 24.6% with the Special Region of Yogyakarta as the largest user with 48.1%. Traditional herbal plants utilized by society is in the form of ready-made potions (48%) and homemade potions (31.8%).

The community often encounters challenges in the use of medicinal plants, which is typically suboptimal and largely reliant on empirical experience. This practice is deficient in detailed information regarding the efficacy, appropriate usage, and safety of the involved herbal plants. The use of traditional medicine in Indonesia not only takes place in villages far from health facilities, but also takes place in big cities (Rivandi & Yonata, 2015).

Based on the background above, the author is interested in researching the relationship between the level of knowledge and consumption patterns of herbal drinks and the level of productivity of employees of the Metal Manufacturing Department of PT. Pupuk Kalimantan Timur, this research is based on a preliminary study that employees of the Metal Manufacturing Department were only given vitamin supplements to increase endurance and to overcome fatigue without giving employees herbal drinks such as ginger tea and tamarind turmeric.

METHOD

STUDY SAMPLE & SAMPLING FLOW

This research utilized a correlational analytical observational design with a cross-sectional approach. The study population included all employees in the Metal Manufacturing Department at PT. Pupuk Kalimantan Timur from December 2023 to January 2024. The research included a sample of 131 individuals selected through a random sampling method. The minimum sample size was calculated using the Lemeshow formula. There are several inclusion criteria: 1) age between 17-64 years old, 2) have a minimum 1 year active status as a working employee on Metal Manufacturing Department, 3) willing to be a respondent by attaching an agreement to participate in the research.

On the first day, the questionnaire given to employees included respondent characteristics such as age, gender, education level and monthly income, as well as consent to take part in the research. Then the SQ-FFQ (Semi Quantitative Food Frequency Questionnaire) questionnaire was given to record food history for the last 1 month which included the types of herbal drinks consumed and the frequency of consumption of herbal drinks, 10 types of questions regarding the knowledge of herbal drinks from respondents and the last one was the IWPQ (Individual Work Performance Questionnaire) which covers employee performance in the last 1 month. After the questionnaire and data from respondents were collected into one, the data was analyzed using Microsoft Excel and SPSS version 26 to then determine the relationship between the variables. Approval of this study has been obtained from the Ethics Commission of the Faculty of Dental Health of Universitas Airlangga with number 1257/HRECC.FODM/XI/2023.

RESULTS

Table 1. The Relationship between the Level of Knowledge of Herbal Drinks and the Level of Work Productivity of Respondents

Knowledge of Herbal Drinks	Work Productivity Level						Total		Sig. (P)
	High		Middle		Low				
	n	%	n	%	n	%	n	%	
High	13	13,7	7	21,9	1	25	21	16	0,972
Middle	75	78,9	20	62,5	2	50	97	74	
Low	7	7,4	5	15,6	1	25	13	9,9	
Total	95	100	32	100	4	100	131	100	

Table 1 shows that the majority of respondents with a good level of work productivity (> 75) on average have sufficient knowledge regarding herbal drinks (78.9%). Based on statistical test results using the Spearman correlation test, the p value = 0.972, meaning the

p value > 0.05 H0 is accepted, which means there is no relationship between knowledge related to herbal drinks and the level of work productivity. Data on the relationship between herbal drink consumption patterns and the level of work productivity of respondent employees from the Metal Manufacturing Department, PT. Pupuk Kalimantan Timur is obtained by filling in the SQ-FFQ (Semi Quantitative Food Frequency Questionnaire) questionnaire and filling in the IWPQ (Individual Work Performance Questionnaire) questionnaire. The results of statistical tests on the relationship between herbal drink consumption patterns and respondents' work productivity levels can be seen in Table 2

Table 2. Relationship between Herbal Drink Consumption Frequencies and Respondents' Work Productivity Levels

Herbal Drink Consumption	Work Productivity Level						Total		Sig. (P)
	High		Middle		Low				
	n	%	n	%	n	%	n	%	
Often	1	33,3	2	66,7	0	0	3	100	0,553
Rarely	27	69,2	10	25,6	2	5,1	39	100	
Very Rarely	64	74,4	20	23,3	2	2,3	86	100	
Never	3	100	0	0	0	0	3	100	
Total	95	72,5	32	24,4	4	3,1	131	100	

In the research that was conducted, the majority of respondents were respondents who had never consumed herbal drinks, amounting to 67 respondents (75.3%) and had a good level of work productivity. For respondents who frequently consumed herbal drinks, there was a good level of productivity of 1 respondent (100%), respondents who rarely consumed herbal drinks had a sufficient level of productivity of 10 respondents (25.6%) and respondents who frequently consumed herbal drinks had a high level of productivity. enough for 2 respondents (66.7%). The chi-square test produced a p-value of 0.553. This suggests that, given p > 0.05, we accept the null hypothesis (H0). Thus, it indicates that there is no significant relationship between the consumption of herbal drinks and the work productivity levels of employees in the Metal Manufacturing Department at PT. Pupuk Kalimantan Timur. The relationship between the level of knowledge and consumption patterns of herbal drinks was obtained by filling out questionnaires related to herbal drinks which were then classified into 3 categories, namely good, sufficient, poor knowledge and the FFQ questionnaire. The results of statistical tests on the relationship between knowledge and herbal drink consumption patterns are presented in Table 3.

Table 3. Relationship between Respondents' Level of Knowledge of Herbal Drinks and Respondents' Patterns of Consumption of Herbal Drinks

Knowledge of Herbal Drinks	Herbal Drink Consumption								Total		Sig. (P)
	Never		Very Rarely		Rarely		Often				
	n	%	n	%	n	%	n	%	n	%	
High	0	0	11	52,4	7	33,3	3	2,3	21	100	0,002
Middle	3	3,1	63	64,9	31	32	0	0	97	100	
Low	0	0	12	92,3	1	7,7	0	0	13	100	

Total	3	2,3	86	65,6	39	29,8	3	2,3	131	100	

Table 3 shows that the majority of respondents with good knowledge of herbal drinks rarely consume herbal drinks (52.4%). The chi-square test performed resulted in a p-value of 0.002. This suggests that, given $p < 0.05$, the null hypothesis (H0) is rejected. In conclusion, a significant relationship exists between knowledge of herbal drinks and their actual consumption.

DISCUSSION

We've been find out that relationship between the level of knowledge of herbal drink products and the level of work productivity of respondent employees from the Metal Manufacturing Department, PT. Pupuk Kalimantan Timur used the Spearman correlation test, getting $p = 0.972$, indicating that this hypothesis is not related because $p > 0.05$ which means H0 is rejected. Knowledge is the result of human efforts in seeking the truth about the problems faced (Darsini et al., 2019). Benjamin. S. Bloom in Rahmawati (2016) Bloom's taxonomy introduces the concept of knowledge by classifying it into six distinct levels: knowledge, understanding, application, analysis, synthesis, and evaluation, serving educational purposes. This study found that employees in the metal manufacturing department rarely accessed or recognized the properties and benefits of herbal drinks. Access to information was limited due to the restricted time available, given their demanding work schedules. The Company is expected to provide insights on herbs and their relationship to work productivity levels.

Apart from that, it is known that the majority of respondents with a level of knowledge about herbal drinks that is included in the sufficient category will still have a good level of productivity. On the other hand, only a few respondents with a good level of knowledge also had a good level of work productivity. This is not correlated because there are many other factors that have a greater proportion of the level of work productivity besides the level of knowledge of herbal drinks, such as the level of working hours, leadership and work environment so that employees know the targets that must be achieved and receive clear direction (Pramono, 2020). A study conducted at Bank BJB Ciamis Branch showed that there was a relationship between work leadership and work motivation of Bank BJB Ciamis Branch employees (AkAdely, 2018). This research was carried out using qualitative descriptive research methods. Apart from the leadership aspect, the duration of working hours also has an insignificant effect on work productivity (Chi Man & Wan Ling, 2014). In the same aspect, Tuti (2014) also stated that employee overtime schedules can reduce employee productivity, in this case employees who work as construction workers, by 8.87% -11.84% and increase the number of absences due to illness.

The work environment is also one of the supporting factors that influence productivity. There is strong evidence that there is a possibility that declining levels of work productivity are also triggered by several factors related to the work environment, such as work stress, levels of tension and rewards, as well as moderate evidence regarding the relationship between work conflict and internal family, justice and social support (Arends et al., 2017). However, not all work factors are theoretically linked to work productivity, if you look at the Job Demands Resources Theory (JD-R) and Effort Reward Imbalance (ERI) models, supporting evidence can be found (Bakker & Demerouti, 2007). Apart from that, health factors also have a significant influence on continued productivity at work, many

people with health problems have difficulty adapting to their work environment and remaining productive at work (Aronsson et al., 2000). Health factors, such as chronic diseases, general health and mental stress, significantly influence productivity in the workplace, so there is a need for a multidisciplinary approach to support work productivity (Arends et al., 2017).

We've also find out that herbal drink consumption patterns and the level of work productivity of respondent employees from the Metal Manufacturing Department PT. Pupuk Kalimantan Timur used the Spearman correlation test is not correlated at all, getting p = 0.553. Consuming herbal drinks, such as herbal tea, can provide benefits to the body, especially in terms of increasing energy, strengthening the immune system as well as acting as an antioxidant, and relieving stress (Shaik et al., 2023). The same research regarding herbal tea also shows that continuous stimulation is associated with a higher effect of neutralizing sedation or fatigue when compared to regular tea or coffee (Bryan et al., 2012).

Herbal drinks are also associated with positive attitudes produced by workers who consume herbal drinks regularly and have better performance than workers who do not consume them (Zhang et al., 2022). However, on the contrary, research that took the topic of the effects of herbal drinks on endurance and cycling performance concluded that the ingredients in herbal drinks had no relationship or additional benefits to cycling endurance performance because herbal drinks only contain flavonoids and do not contain caffeine and taurine like energy drinks which are able to produce higher and consistent exercise performance, thermoregulatory responses and physiological responses (Kiew et al., 2003).

The last test we're already did also found that the level of knowledge of herbal drinks and the consumption patterns of herbal drinks among respondent employees from the Metal Manufacturing Department of PT. Pupuk Kalimantan Timur used uii chi-square, getting p = 0.002, where these things correlate with each other. The results of knowledge regarding herbal drink consumption patterns can be known by distributing questionnaires or interviews to obtain more comprehensive data. The existence of research showing that there is a relationship between the level of knowledge and consumption patterns is proven by research conducted on the Magelang community on herbal medicine consumption, where respondents' knowledge of herbal medicine consumption habits had a p-value of 0.003 (Kusuma et al., 2020). Knowledge is an indicator that comes from a person's curiosity and occurs after the individual identifies or senses an object. Knowledge is an important domain in the formation of open behavior (Donsu, 2017). Knowledge is influenced by various things, including age, education, experience and access to information (Notoatmodjo, 2014). In this research, the respondents were employees from the Metal Manufacturing Department of PT. Pupuk Kalimantan Timur does not have limited ability to access information because it can access it via cellphone, laptop or mass media such as newspapers or tabloids, however, the limitation referred to here is limited time, the thing that underlies the limited time in accessing information is the busyness of employees who are difficult to tolerate. due to the employee's responsibilities or job description, apart from that, the need to process information is also no less important because it requires time and effort for employees to understand new, quite complex information.

CONCLUSION

There was no relationship found between the level of knowledge and consumption patterns which were significantly related to the level of work productivity, this is because

there are factors that are more important than the two dependent variables above, such as environmental factors, work pressure, employee-supervisor relationships and working hours.

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