



# The Impact of Application Health Gate Sterilizer on Work Effectiveness at the Post-Covid-19 Pandemic

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**Abstract.** This study aims to examine the effect of using a health gate sterilizer on performance effectiveness during the post-covid-19 pandemic. This research was conducted on the basis that there are still cases of people exposed to the covid-19 virus, so it has an impact on several aspects, one of which is the performance of a person when working. In this study, we used a quantitative approach with a pretest-posttest group experimental design. The time required is 8 weeks with 100 employees as the subject. The treatment given during the treatment period to the subject was the use of a health gate sterilizer based on herbal disinfectants with ultraviolet light. This tool is an extension of the sterilization chamber that we have developed. The results of this study reveal that there is a significant effect on the performance effectiveness of the use of a health gate sterilizer. The conclusion of this study is that although it is currently in the post-covid-19 pandemic period, it is still necessary to maintain the Health protocol and of course the use of a health gate sterilizer because it can provide increased performance effectiveness for employees.

**Keywords:** Health Gate Sterilizer · Effectiveness · Work

## 1 Introduction

The Covid-19 virus, which has spread for several years, is the largest epidemic ever experienced in the 21st century that has occurred in the world. Thus making it a global pandemic, accompanied by a tremendous impact on all aspects of everyday life [1, 2]. In addition, when the emergence of covid-19 known as coronavirus, then it became a pandemic disease. One of the impacts felt by many regions is being isolated which has a drastic impact on the economic aspect [3]. So, many people work online to stay productive and of course try to maintain their performance as employees [4]. However, even during a pandemic, competition remains tight in the era of the global economy, thus pressing employees to remain the best in terms of performance and of course contributing significantly to the organization [5]. The COVID-19 pandemic has increasingly stimulated competition between organizations that are challenged to achieve optimal performance [6]. This is because all organizations are still required to be able to run as usual despite the limited conditions amid the COVID-19 pandemic.

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With the Covid-19 pandemic, there are several policies implemented by the government to reduce the number of transmission and spread of the Covid-19 virus. One of them is by locking, or everyone is prohibited from leaving the house and is required to do activities from their respective homes. This has a tremendous impact on several important activities, one of which is of course work that must be done as much as possible in each other's homes. Thus reducing the effectiveness of the performance of the employees who worked [7]. In addition, in adults, it will cause an impact that individually results in psychological and physiological effects. This causes a tendency to be inactive in moving due to the limitations of the lockdown policy, and in the end, the screen time that is the demand for work becomes more, or we can call it a sedentary lifestyle [8].

Most people really feel limited in carrying out their daily activities. This results in being physically inactive, causing various problems that arise individually such as mental problems, and fatigue. Of course, this is also directly related to impaired social function, work, and education [9]. As revealed by Jacobson et al. (2020) in their research on 10 million Google surveys related to the lockdown policy implemented by the government significantly caused negative reflection, restlessness, and tension, so one of the effects was on the effectiveness of working adults. Of course, these problems become very dangerous if left unchecked in the long term. Thus, it is necessary to take appropriate steps in overcoming this.

From these problems emerged various solutions involving technology as an impact also currently in the era of the industrial revolution 4.0 [11]. One of them that is very useful in controlling the spread of the covid-19 virus is the creation of a health gate sterilizer. This tool is a technology that can provide disinfectants to its users which are applied before entering the room or work building. The use of the health gate sterilizer has proven to have a positive impact. With its function to reduce the spread of Covid-19 virus transmission, but also this tool can have a significant and good effect on being used to continue to be able to carry out activities as usual. So that at this time these tools also contribute to delivering us during the post-pandemic covid-19 period.

This research is relevant to the research of Mesra et al. [12] where the results of the study show that online learning that is affected by the covid-19 pandemic greatly affects the teaching and learning process in social studies subjects.

During the current Post Pandemic Covid-19 period, it is very unfortunate that there are still cases of covid-19 that occur because many individuals are careless when it is felt that Covid-19 has started to disappear completely. But in fact, there are still people who are infected with the Covid-19 virus. This has an impact on several aspects that have started to run, as usual, one of which is the dynamics of work. Therefore, this study will reveal the effectiveness of the performance of employees who use the health gate sterilizer when entering an office building. With the use of this health gate sterilizer, it is hoped that it will provide a sense of security and comfort when working so that the work carried out is more effective [13].

## 1.1 Theoretical Framework

Performance is a standard that is measured to determine the level of work performed. Performance is the result of work done by employees and is closely related to the

achievements of an organization [14]. Then according to Shafini et al. (2016) explained that performance is a very important process or mechanism in an organization's management in explaining and carrying out performance goals. Besides that, it also aims to motivate individuals to work for the sustainability of the organization in the future.

Performance appraisal is the process of evaluating or assessing the performance of an employee's performance. This activity improves personnel decisions and provides feedback to employees regarding the implementation of their respective work [16]. Besides, according to Winarti (2018) In addition to the evaluation process, performance appraisal also aims to develop and motivate employees. More details according to [18] Performance effectiveness is a result of the management process in evaluating employees on their work. In simple terms, it is the organization that judges and employees are the objects that are judged.

#### *Purpose of Work Effectiveness Assessment*

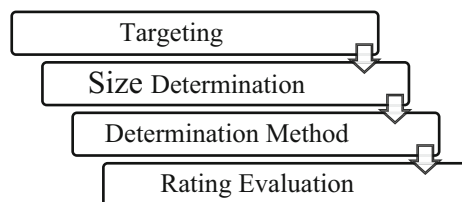
There are two important objectives in assessing employees in terms of their work effectiveness [19]:

First, the purpose of the evaluation, which is the results of performance appraisals often serves as the basis for routine evaluations of the performance of organizational members. Evaluation is divided into performance appraisal and salary review. The decisions that are most often based on evaluative objectives are compensation decisions which include increases in service benefits, employee bonuses, and other salary increases. Then, performance appraisal and promotion opportunities. Staffing decisions are the second evaluative goal of performance appraisal because managers and supervisors have to make decisions related to promotions, demotions, transfers, and dismissals.

#### *Work Effectiveness Assessment Mechanism*

Assessment of performance effectiveness basically must be related to the achievement of the expected work results, so that the objectives of each previous job should be determined, then the performance standards and measures are determined by mechanism and followed by the provisions of the assessment method, implementation, and evaluation of employee performance [20] (Fig. 1).

In the method of assessing work effectiveness, it is divided into two different orientations [19, 20] namely the Assessment Orientation in the past which is of course an assessment of the work that has been done by employees, with instruments such as ability choice techniques, achievement recording, tests, behavioral scale techniques, observations, rating scales, checklists to important event techniques. Then the orientation of the future assessment which focuses mainly on predicting the potential possessed by



**Fig. 1.** Work Effectiveness Assessment Mechanism

employees in the process of developing future performance, by disclosing the potential abilities of employees based on the results of performance evaluations. This assessment is carried out with the management by objectives instrument, psychological assessment, assessment center, and self-evaluation.

## 2 Method

By using a quantitative approach in this study, primarily in revealing the effect of the application of a health gate sterilizer on the effectiveness of employee performance and by using a one-group pretest-posttest experimental design [21].

The research subjects were 100 employees in higher education institutions. This subject was chosen because they work in one building. Then another consideration is that the health gate sterilizer is placed at the entrance of the building. Thus, we use the total sampling technique as a representative population of employees in the same building.

In revealing the effect of health gate sterilizer on performance effectiveness, researchers used an instrument adapted from Siswanto in 2007 in the form of a questionnaire containing 6-item questions that assessed the characteristics of aspects of Quality, Quantity, Reliability in Task Implementation, and Attitudes. The use of this instrument was chosen because it has performance effectiveness characteristics related to the current post-pandemic covid-19 condition.

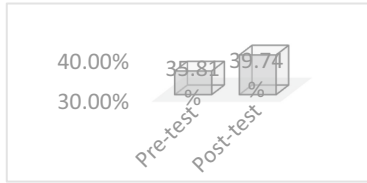
Analysis of the findings from the collected data calculated that the test item scores were converted into a standard score (z-score) of the average of the entire sample ( $n = 100$ ). The total test score for each subject is the average z-score on all of the questionnaire items. Statistical analysis is carried out through several stages, this is a prerequisite for fulfilling the t-test (effect) of using a health gate sterilizer on the effectiveness of the performance of employees in higher education institutions. Several stages, namely the normality test of the data using the one-sample Kolmogorov Smirnov test which produces a significance value of  $0.200 > 0.05$  as a probability value, means the data is normally distributed. Next, is the t-test using the paired sample t-test, which will be presented in the results section.

## 3 Results

The findings presented are data from the pretest and posttest that have been passed by the subjects. Descriptive research data have been obtained as presented in Table 1.

**Table 1.** Results of pre-test and post-test descriptive data

Test	Mean	Std. Deviation	Min	Max	Sum
Pre-	104.47	7,874	98	137	14145
Post-	116.49	6,982	107	154	16247



**Fig. 2.** Percentage of pre-test and post-test scores

**Table 2.** Hypothesis Test

Pair	T Score	df	Sig. (2-tailed)
Pretest-posttest	12,544	99	0.000

It can be seen in Table 1 presents a statistical description of the research data consisting of the mean, std. Deviation, minimum, maximum, and sum. In the post-test, the value of the mean and sum obtained is greater than the value of the pre-test. Thus, the treatment given to the subject, namely the application of a health gate sterilizer, has an impact on increasing the effectiveness of employee performance at higher education institutions. Next, state the percentage value of the pre-test and post-test scores as shown in Fig. 2.

It can be seen in Fig. 2 the percentage value of the pre-test and post-test subjects. Effectiveness of employee performance, with a percentage value of performance effectiveness of 35.81%, then after being given treatment the use of a sterilization chamber “Health Gate Sterilizer made from herbal disinfectant with ultraviolet lamp” the results had a positive impact by increasing the percentage of 3.93% to 39.74%. Thus, the application of use of this sterilization booth has a positive effect because it improves the condition of the effectiveness of employee performance. The next stage is testing the research hypothesis as presented in Table 2.

Based on Table 2, it can be seen that the results of hypothesis testing using a paired sample t-test obtained a t score of 12,544 with a sig value. (2-tailed) worth  $0.000 < 0.05$ . Therefore, there is a significant effect on the application of the sterilization booth “Health Gate Sterilizer made from herbal disinfectant with an ultraviolet lamp” on the effectiveness of employee performance in higher education institutions.

## 4 Discussion

In the current post-covid-19 atmosphere, one of the biggest influences is safe and comfortable conditions in every activity you do [22]. This is because many people experience high levels of stress due to high concerns if they are infected with the Covid-19 virus which has claimed millions of human lives around the world [23]. One of the most affected is the employees who work in the office. They are very disturbed because of the feeling of insecurity and comfort when working in the office even though the current transition period for the covid-19 pandemic has begun. However, in fact, there are still

many people who are exposed to the Covid-19 virus. So, this still causes trauma for most people, especially employees who work. Of course, the impact that is felt is the level of effectiveness of the employee's performance. Therefore, we examine the role of the application of the health gate sterilizer that we have developed in order to have a positive influence on the effectiveness of employee performance.

The health gate sterilizer that is applied is the work of research and development with the aim of contributing to suppressing the rate of spread of the covid-19 virus [24]. The way this health gate sterilizer works will make everyone who uses it sterile from various viruses when entering the area of public facilities including offices. Thus, these tools also have an impact on increasing a sense of security and comfort for employees when they will work in the office. With the condition that employees feel safe and comfortable, it will certainly be a stimulus for employees to focus more and provide maximum capabilities.

The findings of this study indicate that the application of the health gate sterilizer has a positive impact on the effectiveness of the performance of employees in the current post-covid-19 pandemic atmosphere. From these results, it is certainly very good for employees in maintaining the effectiveness of their respective performances in contributing significantly to the organization where they work. This is in line with what was revealed by Jason & S.N (2021) that in work every employee needs optimal focus so that what he does can be maximized. Then in work, safe and comfortable conditions are needed in carrying out their work activities [26]. Likewise, when performance effectiveness is required to always be optimal, of course, it must be accompanied by supportive situations and conditions [27]. This means that in maintaining or even increasing the effectiveness of employee performance, it is very necessary to have a support system from various elements.

This problem in performance effectiveness has become one of the main focuses after the impact of the COVID-19 pandemic [28]. This is because, during the COVID-19 pandemic, almost all work is done at home, which has an impact on the effectiveness of employees' performance [29]. There are several reasons for this, such as the absence of direct monitoring so that employees are not optimal in doing their work, then the limitations of various things such as tools, instruments, and materials that are not available at home [30]. However, from these problems, there are solutions that can be done by the management team in managing the performance of their employees so that they can be even better.

The factor of leadership becomes one of the important roles in increasing the effectiveness of employee performance. This is in line with what was revealed by Avolio et al. (2000) that leadership contributes to optimizing employee performance. This leadership is a paradigm that provides various opportunities to communicate directly one on one with employees or clients [32]. Then the next factor is a work-life balance where control from employees in managing work and family can increase performance effectiveness [33]. In addition, work-life balance helps in reducing stress levels from work and improving employee performance (R. et al., 2015). Another factor is of course the right motivation for employees which will certainly have an impact on increasing performance effectiveness [35]. The same thing was revealed by Pancasila et al., 2020 said

that motivation is closely related to the emergence of enthusiasm for work and better achievement in achieving work goals.

Based on the solutions described above, of course, the contribution of using a health gate sterilizer will be very significant, because indeed the conditions and situations of some of these solutions must be carried out directly in the office. So it is very necessary to apply a health gate sterilizer as a first step in carrying out the solutions that have been discussed. Therefore, even though this is a post-covid-19 pandemic, the use of a health gate sterilizer must still be used. In addition, of course, health protocol standards must be maintained by all parties.

## 5 Conclusion

This research can be concluded that the application of this health gate sterilizer has a positive impact on the effectiveness of employee performance. This research was conducted on the basis that there are still cases of people exposed to the Covid-19 virus, so it has an impact on several aspects, one of which is the performance of a person at work. Even though we are currently in the post-covid-19 pandemic, we still have to maintain the Health protocol and of course continue to use the health gate sterilizer, because it can provide increased performance effectiveness for employees.

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