Ergonomic Implementation Smile Applications Improve Employee Performance and BPJS Ketenagakerjaan Service Speed in Bali

Ni Putu Nila Lestari[1*], I Putu Gede Adiatmika[2], Made Sudarma[3]

[1)] BPJS Ketenagakerjaan Kanwil Banuspa, Indonesi
[2)] Departement of Physiology, Udayana University, Indonesia
[3)] Program Study of Electrical Engineering, Udayana University, Indonesia
[*)] Correspondence e-mail: naylalestari87@gmail.com
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Abstract

The type of service that BPJS Ketenagakerjaan participants want when accessing work accident services is that good employee performance has increased the speed of service at work. For this reason, an intervention was implemented in the form of implementing ergonomics in the SMILE application to improve service speed, improve employee performance and reduce eye fatigue rates for Bali BPJS Ketenagakerjaan employees. This research was an experimental research with treatment by subject design, which involved 16 research samples. There were two periods, namely Period I work process without intervention and Period II work process with interventions in the form of implementing ergonomics in the SMILE application through to IEMAS application. The service speeds were measured with a stopwatch and employee performances were measured by performance questionnaires and eye fatigue. An eye fatigue questionnaire measured the data. Data analysis that uses a T-paired test with a value of α 0.05 is for normally distributed data and Wilcoxon test is for data that is not normally distributed. Data obtained from the study results showed differences in employee performance with decreased eye fatigue and increased work comfort and service speed ($p<0.05$). Improved employee performance indicated the results of research in which there was a decrease in eye fatigue in employees by 8.77%, an increase in work comfort by 12.05% and service speed by 89.1%. It can be concluded that the implementation of the SMILE application reduces the rate of eye fatigue and increases the comfort of the work of employees, resulting in the speed of employee services to participants BPJS Ketenagakerjaan in Bali

Keywords: SMILE, IEMAS, ergonomic, service speed, employee performance

Implementasi Ergonomi Pada Aplikasi Smile Meningkatkan Kinerja Karyawan Dan Kecepatan Layanan BPJS Ketenagakerjaan Di Bali

Abstrak

Jenis pelayanan yang dinginkan peserta BPJS Ketenagakerjaan saat mengakses layanan kecelakaan kerja adalah kinerja karyawan yang baik akan meningkatkan kecepatan pelayanan. Untuk itu dilakukan intervensi berupa penerapan implementasi ergonomi pada aplikasi SMILE untuk meningkatkan kecepatan layanan, meningkatkan kinerja karyawan dan menurunkan angka kelelahan mata pada karyawan BPJS Ketenahakerjaan Bali. Penelitian ini merupakan jenis penelitian eksperimental dengan rancangan treatment by subject design, yang melibatkan 16 sampel penelitian.Terdapat dua periode yaitu periode I proses kerja tanpa intervensi dan periode II proses kerja dengan intervensi berupa penerapan implementasi ergonomi pada aplikasi SMILE melalui aplikasi IEMAS. Kecepatan layanan diukur dengan stopwatch, kinerja karyawan diukur dengan kuesioner kenyamanan kerja dan kuesioner kelelahan mata. Analisis data menggunakan uji T-paired

dengan nilai α 0,05 untuk data yang berdistribusi normal dan uji Wilcoxon untuk data yang tidak berdistribusi normal. Data yang diperoleh dari hasil penelitian menunjukkan adanya perbedaan kinerja karyawan dengan penurunan kelelahan mata dan peningkatan kenyamanan kerja serta pada kecepatan layanan (p<0,05). Peningkatan kinerja karyawan ditunjukkan adanya hasil penelitian dimana terjadi penurunan kelelahan mata pada karyawan sebesar 8,77%, peningkatan kenyamanan kerja sebesar 12,05% dan kecepatan layanan sebesar 89,1%. Dapat disimpulkan bahwa penerapan implementasi pada aplikasi SMILE menurunkan angka kelelahan mata dan meningkatkan kenyamanan kerja karyawan sehingga mengakibatkan kecepatan layanan karyawan kepada peserta BPJS Ketenagakerjaan di Bali.

Kata kunci : SMILE, IEMAS, ergonomi, kecepatan layanan, kinerja karyawan dan kelelahan mata

INTRODUCTION

Speed of service required technology to process information using information technology including computers, communication devices and software applications. The presence of various communication and information technologies that use today is an ongoing process of modification. Through the history of the development of communication technology and the history of the development of information technology, it is seen that the development of communication and information from time to time goes very quickly. The rapid development of communication and information technology certainly provides benefits in the information system used by the BPJS Ketenagakerjaan. Payment of work accident claims begins with the receipt of work accident reports within 2x24 hours (2 days). It takes the role of BPJS Ketenagakerjaan from front liners to financial management. In cases of work accidents where workers experience anatomical disability, before claiming payment to participants through the company, the company always asks the amount of disability compensation received by their workforce. The percentages listed in the table do not provide direct answers to the information desired by the company.

Preliminary survey at the Bali Branch Office of companies that filed claims for anatomic disability work accidents to the BPJS Employment, 10 of 9 companies, asked how their workers received many anatomic disability compensations. There were nine companies; however, only two companies want to wait for an answer simultaneously and seven companies choose to get answers via mobile phones. When the stylist answers to provide the information desired by the company, the middle steward of service must open the SMILE Application with 5-8 minutes or 33 steps, starting with the user login and password. Then select the role used as a form of employee authority in the claim process until the emergence of the calculation where the agenda process must be done first. For 5-8 minutes, the employee must also be in a sitting position staring at the focus towards the computer screen. Concentration and accuracy were needed in the process of providing that information.

Service for a company can take up to 15 minutes, out of work time according to the job description of a service stylist. Therefore, employees need additional time with the additional workload. From the preliminary survey that has been conducted, 2 of 3 service providers had watery eye fatigue in the past year. In the work time of employees with a position staring at a computer screen still found the position is not ergonomic when working. Indications of watery eyes felt by employees reduce work comfort due to eye fatigue. As a result, vigilance in the verification process has decreased.

In the analysis of ergonomic aspects, conditions related to time, condition of information and human-machine interaction are the main problems in 8 aspects of ergonomics In this situation, especially when the service of a work accident insurance claim, speed of service was the main reason to avoid the impact of service inconvenience in the form of participant

complaints. Likewise, with the information condition. The condition of the information technology impacts on participant satisfaction if a company where one of its employees has a work accident or an anatomic disability requires precise and detailed compensation information. Furthermore, the use of computers during work causes eye fatigue that interferes to the comfort of working employees. Human interaction using computer more than 8 hours with the position of staring at the screen in a focused, will cause physical fatigue particularly eye fatigue. The speed of service that employees want to provide to participants in the shorter waiting time is effective in the process of obtaining information on the anatomical disability compensation desired by the company. In addition, the effectiveness of employee services is a benchmark in improving the performance of BPJS Ketenagakerjaan in Bali.

Accelerated of service in providing information on the amount of anatomical disability compensation for workers who experience workplace accidents was done through the implementation of ergonomics in the SMILE Application. The implementation of ergonomics in the SMILE Application was conducted by changing 33 steps into only 5 steps to obtain information on the amount of anatomical disability compensation. The 5 steps are through the user login and password process, entering the labor wage, membership card number, percentage of disability and calculation processed. The implementation of ergonomics in the SMILE Application through the acceleration of the calculation of the anatomical disability compensation amount is expected to be directly proportional to a faster service time, reduce employee eye fatigue and improve the work comfort of BPJS Ketenagakerjaan employees.

RESEARCH METHOD

This research used treatment by subject design. This research was conducted at the Bali Nusa Tenggara Regional Office of Papua BPJS Ketenagakerjaan in Bali, from April to May 2020. There were 16 respondents, chosen based on multistage random sampling technique. The variable speed of service was measured using a stopwatch, work comfort and eyes fatigue were measured using a questionnaire that has been validated with 14 questions. Data were analyse using SPSS Program version 24.0 to examined the hypotheses that have been determined with the following: 1) Subject characteristics data were analyzed descriptively with mean and standard deviations, 2) Shapiro-Wilk test for normality test, 3) Comparable test data of the difference between periods I and II at the significance level $\alpha = 0.05$.

RESULT AND DISCUSSION

The age range of the subjects was 25 to 50 years, with a mean of 31.87±6.56 years. The average age was classified as a productive age for work, in accordance to Republic of Indonesia Ministry of Health (2015). Several studies in ergonomics (Indrawati et al., 2015 and Dinata et al., 2015) also used a range of productive ages between 20 to 45 years with an average age of 34.89 years. The age ranges of both studies were productive and had optimal muscle strength for working.

The results of measurements on body weight and height found a mean bodyweight of 58.00±1.26 kg in the range of 56-61 kg. In contrast, the mean height of 158.0±2.04 cm, in the range of 158-164cm. The value was similar to research in the ergonomics field, such as research conducted by Suarjana (2018) in research on weight that was 60.64±7.83 kg in range, between 53-61kg, while the average height: 157.50±7.17 cm in range of 158-168cm.

The average duration of work in this study was 7.25±5.54 years in a range of 3 to 25 years; from this work period's average value, workers were classified as skilled and reliable. Furthermore, based on the calculation of body mass index (BMI), it was found that the average BMI value was 22.38±0.87 kg / m2 and the average BMI value was in the range of 21,10 to

22,80. So, that respondent was included as standard bodied categories of workers and indicated a healthy physical condition at the study time (MOH, 2015).

Working environment conditions included temperature, humidity, lighting intensity and noise. This data is shown in Table 1.

Table 1
Workplace Environmental Conditions

Variables	Period I		Period II		P-Value
	Average	SD	Average	SD	
Temperature (°C)	27.80	1.30	27.20	1.30	0.501
Humidity (%) Lighting	63.20	0.83	64.20	0.83	0.189
Intensity (Lux)	335	0.83	335	0.83	1.000
Noise (dBA)	62.20	1.30	62.40	1.34	0.749

SD = Standard Deviation

The results of temperature measurement in Period I with an average of 27.80±1.30°C and mean in Period II of 27.20±1.30°C. This condition was a comfortable condition for doing work. According to Manuaba (2004), the comfortable temperature for an area in the tropics was 22 to 28°C. The results of the measurement of the working temperature were in the quality standard of the working temperature threshold in offices, at a temperature of 23°C to 28°C in low to high works level, Permenkes No. 48 Tahun 2016. Obtained relative humidity in Period I with an average of 63.20±0.24% and the average in Period II was 64.20±0.83%. The average humidity in this research was almost the same as the research conducted by Suarjana (2018), where the average humidity in the workplace was 60,29±2.06%. The results of relative humidity measurements in the workplace were in quality standard humidity threshold in offices at 40% to 70% in low to high of works level, Permenkes No. 48 Tahun 2016.

The results of lighting intensity measurements of workplace obtained the average result in the first Period was 335±0.83 lux and in the second Period 335±0.83 lux. The source of lighting for the workplaces from sunlight and artificial lighting (installation of lamps). The lighting produced was in quality standard threshold level of lighting in offices that was >300 Lux from Permenkes No. 48 Tahun 2016. Measurement of noise at workplace obtained the average results in Period I was 62.20 ± 1.30 dBA and in the second Period was 62.40±1.34 dBA. This noise level corresponds to the highest threshold that an individual can still accept without causing a permanent hearing loss for 8 hours a day which was 85 dBA (Suma'mur, 2009). The result of noise was in noise level threshold quality standard in offices of 55 to 65 dBA from Permenkes No. 48 Tahun 2016. Based on Table 1 showed the results of the average difference test on all work environment variables did not have a significant difference in the two periods. Therefore, it was mean that both Periods had the same workplace environment.

The work comfort variable was not normally distributed. Then it continued to non-parametric test by using the Wilcoxon test to analyze differences in the value of work comfort in Periods I and II. The average difference analysis data on work comfort was presented in Table 2.

Table 2. shows a comparability test. The analysis of the difference in meaning of work comfort in Period II was increased the average value and obtained p-value was <0.05, which indicated that there were significant differences between the two periods. Based on the above analysis, the improvement that occurs was due to the intervention that had been given. The difference in average points between Period I and II was equal to 5.31 or 12.05%.

Table 2
Work Comfortability Analysis

Variables	Period I		Period II		P-value
	Average	SD	Average	SD	
Work comfortability	44.06	9.02	49.37	10.60	0.038

SD = Standard Deviation

The effect of increasing work comfort on respondents occurred because of the interventions given by using the I-EMAS application program. Provision of interventions provided an impact on comfort for respondents in terms of the speed of service using the application to be more efficient in terms of work time. I-EMAS application had advantages in the acceleration of service time, which was designed to resemble the part needed to provide information on the amount of compensation for workers with disabilities who had work accidents. The I-EMAS application also used the Human Computer Interaction (HCI) approach because there was a reciprocal relationship or interaction between humans and computers in the service process.

The results of this study was in line with research conducted by Fitria (2016), in which it was found that both libraries had a level of work comfort that was equally very strong after being given intervention in the circulation system in the library system namely R for UPT. UIN Ar-Raniry Library, namely 0.905 and R for UPT. Unsyiah Library 0.9486833, so that the services provided to librarians were good and the results of this research were UPT Library of UIN Ar-Raniry and UPT. Unsyiah Library equally provides comfort to librarians.

Eye fatigue was analyzed by performing a difference test of significance in both periods. Eye fatigue data were normally distributed, so the mean significance test was performed using a parametric test using the Paired T-Test. The results of the analysis of the differences in the significance of eye fatigue can be seen in Table 3.

Table 3
Analysis of Eye Fatigue

Variables	Period I		Period II		p-Value
	Average	SD	Average	SD	
Eye Fatigue	22.12	4.54	20.18	2.48	0.037

SD = Standard Deviation

Table 3 shows the eye fatigue data obtained p-value =0.037, meaning that there were significant differences in Period I and II, which mean eye fatigue score in Period II is lower than the average eye fatigue period I. There was a difference in mean points between Period I and Period II, which was 1.94 or the difference was 8.77%. The difference in eye fatigue in Period I and Period II can be said to occur because of the intervention that has been given.

Research conducted by the American Optometric Association (AOA) survey institute in 2004 found that many office workers complained of eye fatigue due to prolonged exposure to the computer and the presence of electromagnetic radiation by the monitor screen. In addition to visual disturbance problems arising from computers for too long, computer users will get headaches, neck pain and shoulder pain. AOA suggested that workers were able to work more

efficiently in terms of working time at the computer. Providing interventions can reduce eye fatigue due to the acceleration of work services for respondents when using the I-EMAS application to be more efficient in terms of work time. Research conducted by Setiawan (2010) found that workers can reduce the amount of eye fatigue felt due to using a computer after being given an intervention program in the form of reduction and regulation of the length of time worked by using a computer.

The service speed variable was not normally distributed. Then it continued to a non-parametric test that used Wilcoxon test, to analyze the difference in the value of service speeds in periods I and Period II. Data analysis of the mean difference in service speed was presented in Table 4.

Table 4
Analysis of Service Speed

Variables	Period I (Minute)		Period II (Minute)		P-Value
	Average	SD	Average	SD	
Service Speed	9.51	0.21	1.03	0.18	0.000

SD = Standard Deviation

Based on parametric tests for service speed data obtained $p < 0.05$, this showed that there was a significant difference between Period I and Period II. The average point difference between Period I and Period II was 8.48 minutes or experienced a difference of 89.1 %. The difference in the value of work service speed between Period I and Period II occurred because of the intervention given.

The effect of increasing the speed of work services to respondents occurred because the interventions that have been given are in the form of an I-EMAS application program. The provision of interventions provided had an impact on the speed of service work using the I-EMAS application and greatly facilitated the work of respondents in working to be more efficient in terms of working time because workers ware very easy to use the I-EMAS application. This is due to the programs on the I-EMAS application were designed under technological development. The results of this study were in line with research conducted by Suarjana (2018), based on the time needed to grate coconut in satay industry, in the control group, time needed to grate 15 coconut was 23.63 minutes, wherein the treatment group the time required was 16.40 minutes. So the difference in time of coconut grater between the control group and the treatment group was 7.23 minutes. It can be seen that there was a saving of working time in the grating process by 30.61 %**.**

CONCLUSION

The implementation of ergonomics in the SMILE Application increases work comfort by 12.05%, increases service speed by 89.15%, and improves eyes fatigue by 8.77%.

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