



RESEARCH ARTICLE

Ergonomic Participatory in Halal Assurance System (HAS) Implementation to Reduce Boredom and Fatigue in Workers in the Sate Bandeng Processing Industry

Wahyu Susihono

Industrial Engineering Department, Faculty of Engineering, University of Sultan Ageng Tirtayasa, Banten, Indonesia.

Abstract

Every processing industry that has obtained a halal certificate from LPPOM MUI is obliged to maintain and maintain the implementation of Halal Assurance System (HAS), as well as sixteen halal certified milkfish satay processing industries from LPPOM-MUI Banten Province. However, in general the implementation of HAS-23000 has been carried out, but there are still weaknesses that need to be fixed. This weakness lies in the awareness of meeting the criteria and data updates by the company's internal halal management team. This weakness is due to the fulfillment of HAS that does not concern the human factors that carry out activities in the company. Humans are still considered as a complementary part of the company's business processes, not used as part of the main factors in the implementation of HAS-23000. Ergonomic Participatory Intervention needs to be done to improve employee performance seen from a decrease in work boredom and work fatigue. The subjects in this study were workers in 16 processing industries that were randomly selected; the sample fulfilled the inclusion criteria of the study. The design of this study was experimental research (treatment by subject design). Subjects in 16 processing industries, prior to the ergonomic participatory intervention, the initial observation (group I) was conducted, then the subject became an intervention group (application of ergonomic partitioning) referred to as group II. Result: The results showed that after an intervention in the form of ergonomic participatory implementation in the implementation of Halal Assurance System (HAS) in 16 milkfish satay processing industries, the mean of work boredom in group I was 89.44 ± 4.53 and group II was 65.69 ± 4.69 or decreased 26, 64%, the average general fatigue in group I was 93.69 ± 10.85 and group II 83.13 ± 12.28 or a change of 11.27%, general fatigue felt by workers in 16 industries there were significant differences after an ergonomic participatory intervention ($p < 0.05$), while fatigue in the aspect of activity experienced a change of 5.30%, fatigue in the aspect of motivation experienced a change of 24.38%, fatigue in the physical aspect experienced a change of 12.58%. Fatigue in the aspects of motivation and physical aspects there is a very significant change, but in the fatigue aspect of the activity changes that occur is not significant ($p > 0.05$). Intervention with ergonomic participatory can improve employee performance in halal certified satay milkfish food processing industry, seen from the decrease in the level of boredom and work fatigue (general fatigue, activity fatigue, motivation fatigue and physical aspect fatigue). Decreased boredom also occurs (26.64%), indicating that there has been an increase in employee performance as indicated by an improvement in employee mental perceptions. Improved employee performance shows an improvement in the implementation of the criteria in the Halal Assurance System (HAS).

Keywords: HAS-23000, Halal, Participatory ergonomics, Boredom, Fatigue.

Introduction

In general, the business processes in the milkfish satay processing industry are still relatively simple. This food is used as one of the special foods of Banten province. The production of satay milkfish has so far been carried out by the industry from micro to medium. In general, milkfish satay when consumed directly requires a relatively complicated cooking process, because it

requires the disposal of relatively many thorns, as well as the process of softening the thorns. Milkfish satay is made using real ingredients that are easily found in the field, namely raw materials such as milk fish, cooking oil, spices, banana leaves for fish coatings, charcoal for the combustion process. Because the process is very easy, in general the milkfish satay processing industry in

submitting halal certification has no problems. However, the audit process to the field to obtain halal product certification is still carried out by LPPOM MUI Banten Province. Halal certification has become a necessity among the industry. Halal certification guarantees that raw materials, facilities and product names do not conflict with Islamic Sharia. For the industry, in general the purpose of halal certification for the product is for the product to be accepted in a wider market [1], people do not hesitate to consume [2]. Food is a basic human need [3]. The implementation of Halal Assurance System (HAS) can be known from periodic audit reports conducted by internal industries. Although the satay milkfish processing industry is classified as a small industry, the internal audit must be carried out regularly.

From this report, LPPOM then obtained an overview related to the implementation of the Halal Assurance System (HAS), outlined in eleven criteria. Some fundamental changes that must be reported to LPPOM MUI Banten Province as part of control over the implementation of halal process guarantees include changes in halal management that affect halal policy, changes in the Halal Assurance System (HAS) manual components (SOPs, documents, personnel), changes factory location, material changes (manufacturers, suppliers, type of material), changes in formulas and new product development. Conditions that occur in the industry, updates on business process changes are often ignored, so that between what has been set at the beginning with the realization in different industries.

The difference between these procedures or policies has an impact on the value of the Halal Assurance System (HAS) status that has been issued by the LPPOM MUI as part of the initial requirements before the halal certification and product certification is issued. This condition is almost experienced by the entire industry, especially in the category of home or small industry. Efforts should be made to integrate the policies and procedures set by the company itself by considering human factors or the level of education in the industry. Procedures that are carried out based on needs, will have a better impact when compared to procedures that are based solely on meeting halal certification requirements.

An approach is needed that can provide sufficient opportunities for all employees to jointly complement and exchange ideas, experiences, ideas, so that the implementation of Halal Assurance System (HAS) can become a culture in the industry. The concept of ergonomic participatory is one approach that can be used to maximize the participation of workers in the industry. The successful implementation of ergonomic participatory can be felt together [4, 9]. Workers are given the opportunity to issue ideas, ideas and solutions to the optimization of the implementation of the Halal Assurance System (HAS). Formulation, design including the implementation of Halal Assurance System (HAS) is carried out on the basis of the active participation of all employees so that they have a feeling of being needed by the company.

Presence as a cleric is part of a shared need. Ergonomic participatory provides space for interacting between employees, company management, knowledge for improvisation, ergonomic methods in completing work processes carried out every day. Employees must be involved because they understand the work done every day, know the most comfortable ergonomic solutions, be directly involved in industry changes every year, including employees who have a great opportunity to build a work culture that is efficient, safe, comfortable, healthy, effective in work. The concept of ergonomic participatory aims to accommodate the sharing of input or ideas issued by employees, with the ultimate goal of improving employee performance and company productivity.

Indicators of increased performance in employees are a decrease in fatigue. Work fatigue occurs due to 3 aspects, namely aspects of activity, aspects of motivation and physical aspects. These three aspects intersect and interact with each other. Work losses can lead to potential workplace accidents or product defects. The average production process carried out in the milkfish satay processing industry is manual; fatigue will cause unnatural movements and have an impact on productivity. Some of the causes of this fatigue include the fulfillment of insufficient nutritional intake, a mental burden due to production processes that are not in accordance with the target,

dehydration or lack of fluids, undisciplined with working hours or working hours too loose. Because of the home industry, it is possible to have bad working hours. Fatigue is also caused by excessive activity, lack of rest, stress or depression that can disrupt emotional and physical conditions. Because of this fatigue, the impact on the lack of work motivation resulting in decreased work productivity, lack of morale or increased productivity. Concentration difficulty will also appear which will result in work boredom.

Work boredom occurs because of the feeling of fatigue that continues to occur; there is no anticipation for recovery of stamina. This work boredom is an indicator of the body getting bored doing activities. Workers in the satay milkfish processing industry need ergonomic intervention through ergonomic participatory in the implementation of Halal Assurance System (HAS), so that the industry in the business process continues to ensure the implementation does not deviate from halal procedures and policies that have been made by the industry, also workers can improve their performance in terms of decreased work fatigue and work boredom. The ergonomic approach has been developed from several studies and has provided more applicative results for improving performance conditions [10, 14].

Method

The design of this research is experimental research (treatment by subject design). The research object consisted of 16 satay milkfish processing industries that already have halal certification from LPPOM MUI Banten Province. Workers from each industry were randomly drawn to represent porpositive questionnaire discharge and boredom. Criteria for inclusion of research objects are a) the industry has been running its business processes for at least 1 year. B) employs more than 3 people, c) has obtained halal product

certification by LPPOM MUI Banten Province, d) has a minimum Halal Assurance System (HAS) status Good category, e) active production and sale of milkfish satay products, f) has Halal Assurance System (HAS) in manual form. Before the ergonomic participatory intervention is carried out initial observation (group I), then the subject becomes an intervention group (application of ergonomic partitioning) referred to as group II.

Adaptation time to new work attitudes (ergonomic participatory intervention), given adaptation time for 3 weeks, after working conditions are stable, data in group II are taken. The measurement of subjective fatigue (subjective feelings of fatigue) was carried out using a questionnaire developed by the Subjective Self Rating Test of the Japanese Industrial Fatigue Research Committee (IFRC), 15consisting of 30 items of rating scale consisting of 3 categories; work impairment activity, decreased motivation, physical exhaustion [15].Measurement of work boredom using instruments developed by Anoraga modified by Susihono [16].

Result

Halal certification is to protect and guarantee products that are produced are not contaminated with illicit substances or materials which are not allowed to be consumed in Islamic law. Until now many consumers have chosen halal products [17]. This is done so that what is eaten really has been protected from substances that should not be eaten, in the end it will disrupt the health of the body [18].

Halal Assurance System (HAS)

The implementation of Halal Assurance System (HAS) can be seen from the audit report conducted by the company's internal halal team. From 16 companies we can map the Halal Assurance System (HAS) report.

Table 1(a): Internal Audit Results of the Implementation of Halal Assurance System (HAS) in 8 satay milkfish processing industries in Banten Province

Kriteria HAS	F1	F2	F3	F4	F5	F6	F7	F8
Halal Policy		√			√			√
Halal Management Team		√			√			√
Training and Education	√	√	√	√	√	√	√	√
Material	√	√	√	√	√	√	√	√
Products	√	√	√	√	√	√	√	√
Production Facilities	√	√	√	√	√	√	√	√
Written Procedures for Critical Activity		√			√			√

Search Capability	√	√	√	√	√		√	√
Handling of Products That Do Not Meet Criteria		√						√
Internal Audit	√	√	√	√	√	√	√	√
Management Review		√			√			√

Table 1b: Internal Audit Results of the Implementation of Halal Assurance System (HAS) in 8 satay milkfish processing industries in Banten Province

Kriteria HAS	F9	F10	F11	F12	F13	F14	F15	F16
Halal Policy			√			√		√
Halal Management Team			√			√		√
Training and Education	√	√	√	√	√	√	√	√
Material	√	√	√	√	√	√	√	√
Products	√	√	√	√	√	√	√	√
Production Facilities	√	√	√	√	√	√	√	√
Written Procedures for Critical Activity			√			√		√
Search Capability	√	√	√	√	√	√	√	√
Handling of Products That Do Not Meet Criteria			√			√		√
Internal Audit	√	√	√	√	√	√	√	√
Management Review			√			√		√

F1 through 16 are the object of research (milkfish satay processing industry)

Ergonomic Participatory

Ergonomic participation begins with the commitment of company leaders to give authority to some or all employees in improving business processes, especially the Implementation of Halal Assurance System (HAS). Forming a team becomes a necessity and very important, because authority and responsibility become an inseparable part. The stages of this ergonomic participatory are:

- The formation of a team that involved multiple disciplines and representation from each division.
- Identifying problems Implementing Halal Assurance System (HAS) is associated with comfort in the process and working conditions
- Revealing questions from all team members, based on negative sentence questions (-) then converted to positive sentences (+)
- Conduct an audit of the Implementation of Halal Assurance System (HAS) together with investigations of work conditions and work processes that are not ergonomic

- Determine alternative solutions to solve the problem
- Conduct a trial of the design results deemed most relevant to the work being done at this time
- Evaluate ergonomic interventions
- Standardize new stages or processes that are mutually agreed upon
- Monitoring and continuing to make improvements taking into account human performance.

The condition after ergonomic intervention was measured using a questionnaire instrument fatigue and boredom. These two instruments are indicators of the success of ergonomic interventions carried out in nine stages.

Boredom

The boredom questionnaire was tested for validity with the results showing all items valid ($r_{count} > r_{table}$) where the r_{table} at $\alpha = 5\%$ was 0.458 or significance < 0.05 while the reliability of the questionnaire obtained Cronbach's Alpha value = 0.756 (above 0.6). So the questionnaire is valid and reliable.

Test for Normality of Work Boredom Data

Boredom score data after the activities of Group I and Group II obtained a value ($p > 0.05$) which means the data is normally distributed. Because there is normally distributed data, the mean difference testing uses a paired simple t-test parametric test. Table 2 shows that the mean boredom score after activity in Group I was 89.44 ± 4.53 and in Group II it was 65.69 ± 4.69 . Significance

analysis using paired simple t-test showed that the value of $t = -10,679$ and $p = 0,000$ so that H_0 was rejected, meaning that the mean boredom scores after activity in the two groups were significantly different ($p < 0.05$). This value shows that ergonomic participatory intervention can improve performance as seen from the decrease in employee boredom in the satay milkfish processing industry or changes in boredom by 26.64%.

Table 2: Boredom Data in Group I and Group II (n = 16 industries)

Variable	Group I		Group II		t value	p value	R (%)
	A	SD	A	SD			
Boredom scores after activity	89.44	4.53	65.69	4.69	-10.679	0.000	26.64

SD=Standard deviation; A= Average; R= Reduction

Work Fatigue

Subjective fatigue was measured using a 30 Items of Rating Scale questionnaire before and after work activities. The questionnaire was tested for validity with the results showing all items valid ($r_{count} > r_{table}$) where table r at $\alpha = 5\%$ was 0.458 or significance < 0.05 while the reliability of the

questionnaire obtained Cronbach's Alpha value = 0.757 (above 0.6). So the questionnaire is valid and reliable. After testing the data normality, it is concluded that general fatigue data, as well as fatigue data from the aspect of activity, aspects of motivation and physical aspects are normally distributed ($p > 0.05$).

Table 3: Paired Samples Test

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence interval of the difference				
			Lower	Upper			
-86.91	15.28	2.71	-92.42	-81.39	-32.17	31	.000

Table 4: Data on worker fatigue in Group I and Group II (n = 16 industries)

Variable	Group I		Group II		R (%)
	A	SD	A	SD	
General Fatigue	93.69	10.85	83.13	12.28	11.27
Fatigue from activity aspect	29.063	5.59	27.60	5.08	5.30
Fatigue from motivation aspect	31.50	7.813	23.82	3.789	24.38
Fatigue from physical aspects	34.75	6.48	30.38	5.54	12.58

SD=Standard deviation; A= Average; R= Reduction

Based on Table 3, it was concluded that H_0 was accepted, meaning that the mean fatigue in the two groups was significantly different ($p < 0.05$). This value indicates that the application of ergonomic participatory can improve performance as seen from the reduction in employee fatigue in milkfish satay processing.

Table 5: Paired samples test

	Paired Differences					t	Sig. (2-tailed)
	Mean	SD	SEM	95% Confidence interval of the difference			
				Lower	Upper		
Ka1 – Ka2	-1.50	5.24	1.31	-4.29	1.29	-1.16	.270
Km1 – Km2	7.69	7.68	1.90	3.59	11.79	4.01	.001
Kf1 – Kf2	4.38	8.08	2.02	.07	8.68	2.17	.047

Note: KA1 = fatigue activity of group 1, Ka2 = fatigue activity of group II; Km1 = fatigue motivation of the group 1 Km2 = fatigue motivation of the group II; Kf1 = physical fatigue group 1, Kf2 = physical fatigue group II. SD= Std. Deviation; SEM= Std. Error Mean Based on Table 5, when viewed from the three aspects of fatigue (a) Activity fatigue, (b) motivation fatigue, (c) Physical fatigue, it can be concluded that the activity fatigue aspect has no significant difference ($p > 0.05$), while the aspect there is a difference in motivation and physicality after an ergonomic participatory intervention, has a value ($p < 0.05$) meaning that the average fatigue is significantly different.

Discussion

The implementation of Halal Assurance System (HAS) can be seen from the audit report conducted by the company's internal halal team. From 16 companies we can map the Halal Assurance System (HAS) report. Companies in the fulfillment of eleven criteria are very varied. Based on Table 1 it can be seen in the criteria a) Halal Policy, b) Halal Management Team, c) Written Procedures for Critical Activities, d) Management Review, e) Handling of Non-Fulfilling Criteria as much as 37.5% of the industry, whereas in the criteria a) Training and Education, b) Materials, c) Products, d) Production Facilities, e) 100% Internal Audit or the whole company has implemented it. In the search capability criteria of 93.7%, it means that there is still one company that has not documented the search capability criteria such as the absence of proof or purchase memorandum, the absence of written procedures for the process of material exploration and product distribution.

Another obstacle is non-technical factors, which means that company management has not been able to integrate together against some of the demands of quality standards, this problem occurs in several industries. Imperfections in implementing Halal Assurance System (HAS) can also be caused by lack of technology adoption. One of the characteristics of halal certified products is the labeling of the product packaging. Label is an identity that is affixed to a product [19]. In general, the company's products have a halal logo, but education needs to be given to develop a more ergonomic packaging design.

Ergonomic Participatory

The concept of ergonomic participatory has been developed since 1999 and has benefited various improvements with an ergonomic approach [20, 21]. Evaluation and improvement of work with an ergonomic approach has provided benefits in various fields [22].

The ergonomic participatory approach provides a platform for employees to contribute to the implementation of the Halal Assurance System (HAS). Several stages that are passed provide a framework for completing the company's quality assurance process. Forming a team is generally easy to do, however, the team leader is advised to be

Muslim, while the members' requirements are not specific. Forming a team will be easier if the company's leadership gives full freedom. The process of identifying problems The implementation of the Halal Assurance System (HAS) is associated with comfort in the process and working conditions in general are easy to run, because this is routine work carried out by each member. Each member is given the same opportunity to express questions, ideas or opinions, then based on negative sentence questions (-) then converted to positive sentences (+), so that problems will arise and priority improvements can be chosen.

The difference after the ergonomic partitioning intervention lies in the audit process of the implementation of Halal Assurance System (HAS) which was previously without considering the comfort of workers, through this ergonomic intervention, the audit process together with the investigation of working conditions and work processes that are not ergonomic so that it can also test the Standard Operating Procedure (SOP) based on the process that has been running.

If the investigation has been completed, the next step is to determine alternative solutions to solve the problem because the problem needs to be mapped, so that it is possible to use the Ishikawa diagram to determine the root cause of the non-optimal implementation of the Halal Assurance System (HAS) in this milkfish satay industry. After alternative solutions are adopted, the next step is to test the results of the design (economic intervention) that is considered most relevant to the work being done at this time, and then proceed with evaluating the ergonomic intervention. If there are no more obstacles, and guarantee the implementation of the Halal Assurance System (HAS) can be more productive in terms of employee performance, it is necessary to standardize the new stages or processes that are agreed to together.

Boredom

Boredom is one of the body's signals for immediate rest caused by fatigue. Boredom needs to be avoided, because it impacts on decreasing performance. Work boredom needs to be analyzed in order to improve employee performance [23]. Based on Table

1, the Boredom Data in Group I and Group II with a total industry of 16, the average boredom score after activity in Group I was 89.44 ± 4.53 and in Group II 65.69 ± 4.69 . This shows that there is a decrease in boredom caused by ergonomic interventions in the Implementation of Halal Assurance System (HAS). Workers feel to be a valued part of the company, the idea of applying the ideas of each member into one solution. Strengthened again by the results of the statistical test which states that the average score of boredom after activity in the two groups is significantly different ($p < 0.05$) or change in boredom by 26.64%.

Work Fatigue

Fatigue in principle contains 2 meanings, namely actual fatigue or apparent fatigue. Fatigue really is fatigues caused by the muscles of the body are no longer able to accept the burden from outside the body. Fatigue analysis can provide a picture of work improvement [24, 25]. The results of the study showed that general fatigue, fatigue from the aspect of activity, aspects of motivation and physical aspects were normally distributed ($p > 0.05$). Based on table 2, it can be explained that the average fatigue in the two groups is significantly different ($p < 0.05$).

This value indicates that the implementation of ergonomic participatory in the Implementation of Halal Assurance System (HAS) can improve performance as seen from the reduction in employee fatigue in milkfish satay processing. In detail in table 3 it has been explained that there is a change in fatigue. In general fatigue changes in fatigue as a result of ergonomic interventions amounted to 11.27%; Fatigue from the activity aspect is 5.30%; Fatigue from the motivational aspect is 24.38%; and Physical fatigue of 12.58%. Based on Table 4.

It was shown that the results of the "Paired Samples Test" on fatigue aspects of activity there was no significant difference ($p > 0.05$), while the motivation and physical aspects were significant differences ($p < 0.05$) after ergonomic participatory intervention was carried out. Fatigue and boredom occur due to the influence of unnatural work attitudes, uncomfortable posture causing various physiological disorders of the body [26, 31].

The evaluation of work fatigue and boredom is a part that must be integrated in the implementation of the Halal Assurance System (HAS), because the government is currently preparing a set of laws and regulations to regulate halal products [32]. The regulation referred to is law no. 33/2014.

Conclusion and Recommendation

The conclusion that can be obtained from this research is that after an intervention in the form of ergonomic participatory application in the implementation of Halal Assurance System (HAS) in 16 milkfish satay processing industries, the mean of work boredom in group I was 89.44 ± 4.53 and group II was 65.69 ± 4.69 or a decrease of 26.64 %, the average general fatigue in group I was 93.69 ± 10.85 and group II 83.13 ± 12.28 or a change of 11.27 %, general fatigue felt by workers in 16 industries there were significant differences after an ergonomic participatory intervention ($p < 0, 05$), while fatigue in the aspect of activity experienced a change of 5.30%, fatigue in the aspect of motivation experienced a change of 24.38%, fatigue in the physical aspect experienced a change of 12.58%. Fatigue in the aspects of motivation and physical aspects there is a very significant change, but in the fatigue aspect of the activity changes that occur is not significant ($p > 0.05$).

Intervention with ergonomic participatory can improve employee performance in halal certified milkfish satay food processing industry, seen from the decrease in the level of boredom and work fatigue (general fatigue, activity fatigue aspects, motivation fatigue aspects and physical aspects fatigue). Decreased boredom also occurs (26.64%), indicating that there has been an increase in employee performance as indicated by an improvement in employee mental perceptions. Improved employee performance shows an improvement in the implementation of the criteria in the Halal Assurance System (HAS).

The recommendations that can be given in this study are that the implementation of the Halal Assurance System (HAS) needs to make humans a major factor in improvement. Ergonomic participation is one method to make the desires or needs of people who work in the industry can be channeled. Implications of the

Implementation of Halal Assurance System (HAS) using participatory ergonomic approaches, increased employee productivity

which is marked by a decrease in fatigue and work boredom.

References

- David O, John L (1997) Text Book on Consumer Law. London: Blackstone Press Limited.
- Apriyantono A Hermanianto, J Nurwahid (2003) Halal Production Guidelines. Ministry of Religion of the Republic of Indonesia.
- Rezai G, Zainalabidin M, Mad NS (2012) Non-Muslim Consumers' Understanding of Halal Principles in Malaysia. *Journal of Islamic Marketing*, 3 (1): 35-46.
- Manuaba A (1998) Implementation of Ergonomics to improve the Quality of Human Resources and Productivity. Ergonomic books. 1. Denpasar: Postgraduate Program. Udayana University.
- Manuaba A (1999) Application of Participatory Ergonomics in Improving Industrial Performance. (Paper). Presented at the National Ergonomics Seminar, Evaluating the Implementation of Ergonomics in Improving Industrial Performance. Surabaya, 23.
- Manuaba A (2003) Total Ergonomic Approach to Enhance and Harmonize The Development of Agriculture, Tourism and Small Scale Industry, with Special Reference to Bali. In: Purwanto, W., Sugema, L.I. and Ushada, M. editors. Proceedings of the National Ergonomics Seminar. Yogyakarta: Indonesian Ergonomics Association and the Faculty of Agricultural Technology, Gadjah Mada University, h. 16-21.
- Manuaba A (2000) Ergonomics Improves Workforce and Company Performance. In: Hermansyah. Editor. Proceedings of the 2000 Indonesia Ergonomics Symposium and Exhibition. Bandung: ITB Press.
- Manuaba A (2005a) Total Ergonomic Enhancing Productivity, Product Quality and Customer Satisfaction. Paper. Presented at the Second National Seminar on Quality Improvement of Manufacturing Systems and Services, Industrial Engineering Communication Forum, Yogyakarta
- Manuaba A (2005b) To Achieve A Better Life Thought Total Ergonomic SHIP Approach Technology. Presented at the 2nd National Seminar: "The Application of Technology towards a Better Life". University of Technology Yogyakarta. Yogyakarta 10th December.
- Manuaba, A (2006) A Total Approach in Ergonomics Is A Must To Attain Humane, Competitive And Sustainable Work System And Products. In: Adiatmika and Putra, D.W. editors. Ergo Future Proceeding 2006: International Symposium on Past, Present and Future Ergonomics, Occupational Safety and Health. 28-30th August. Denpasar: Department of Physiology at Udayana University - School of Medicine, 1-6.
- Kee D, Karwowski W (2007) A Comparison of Three Observational techniques for Assessing Postural loads in industry. *International Journal of Occupational Safety and Ergonomics (JOSE)*, 13 (1): 3-14.
- Kilbom A (1990) Measurement and Assessment of Dynamic Work. In John R. Wilson and E. Corbett Nigel (Ed.), *Evaluation of Human Work: A Practical Ergonomics Methodology*. London: Taylor & Francis.
- Kroemer KHE (2009) Workload and Stress. In *Fitting the Human, Introduction to ergonomics*. USA: Taylor and Francis, 235-245.
- Molen HFV Marti, K Paul, FM Kuijer, Monique HW Frings-Dresen (2011) Evaluation of the effect of a paver's trolley on productivity, task demands, workload and local discomfort. *International Journal of Industrial Ergonomics*, 41: 59-63.
- Sadra N, Abarghouei H, Hosseini N (2012) An Ergonomic Evaluation and Intervention Model: Macro ergonomic approach. *International Journal of Scientific & Engineering Research*, 3 (2):1-7.

16. Susihono W (2016) Ergonomics in the Metal Casting Industry. Untirta Press. Serang.
17. Lada S, Harvey G Amen (2009) Predicting Intention to Choose Halal Products Using Theory of Reasoned Action. International Journal of Islamic and Middle Eastern Finance and Management, 2 (1): 66 - 67
18. Bungin Burhan (2007) Qualitative Research Second Edition. Kencana Prenada Media Group. Jakarta
19. Angipora (2007) Marketing Basics. Second Edition. Second printing. PT. Raja Grafindo Persada. Jakarta.
20. Sutjana IDP, Sutajaya IM, Suardana EIPG, Tunas K (2005) Improvement of anthropometric lift and transport design reduces musculoskeletal complaints, Workload and Fatigue for Workers at PT SR Blahbatuh, Gianyar Bali. National Seminar on Product Design; Collaborative Product Design. Atmajaya University Industrial Engineering. February 16-17. Yogyakarta.
21. Adiputra IN (1997) Participatory Ergonomics in Agriculture; Case Study in the Stone Village of Bali Indonesia. In Khalid, H.M editor. Proceeding of the 5th SEAES Conference. Kuala Lumpur November 6-7. IEA Press, 463-467
22. Susihono W (2014a) Ergonomics Approach Analysis as the Basis for Identification and Improvement of Working Conditions in the Induction Kitchen Metal Casting Industry; Case Study at PT. X Ceper Klaten. Proceedings of the National Industrial Engineering Conference Seminar. Department of Industrial Engineering Sebelas Maret University. Surakarta, 284-290. ISBN 978-602-70259-2-9.
23. Susihono W (2014b) Analysis of Work Fatigue, Work Boredom, Job Satisfaction as a Basis for Recommendation to Improve Worker's Physiology. Proceeding Industrial Engineering National Conference (IENACO). Industrial Engineering Study Program, FT Muhammadiyah University, Surakarta, 99-105. ISSN 2337-4349.
24. Sutjana IDP Adiputra, N Manuaba, A Neill DO (1999) Improvement of Quality Sickle through the Ergonomic Participatory Approach at the Village of Tabanan Regency. Journal of Occupational Health (JOH), 41: 131-135
25. Chavalitsakulchai P, Shahnavaz H (1991) Musculoskeletal Discomfort and Feeling of Fatigue among Female Professional Workers: The Need for Ergonomics Consideration. Journal of Human Ergology, 20: 257-264.
26. Corlett EN (1992) Static muscle loading and evaluation of posture. From Wilson, J.R and Corlet, E.N (eds). Evaluation of Human Work, a Practical Ergonomics Methodology. Taylor and Francis Great Britain, 544-570.
27. Gooyers CE, Stevenson JM (2012) The impact of an increase in work rate on task demands for a simulated industrial hand tool assembly task. International Journal of Industrial Ergonomics, 42: 80-89.
28. Grandjean E (1993) Fitting the Task to The Man. 4 th edition. London: Taylor & Francis.
29. Grandjean E Kroemer (2000) Fitting the Task to the Human. A Textbook of Occupational Ergonomics 5th. Philadelphie Edition: Taylor and Francis.
30. Grandjean E (2000) Fitting the Tasks to the Man. A Textbook of Occupational Ergonomics. London: Taylor and Francis.
31. Yoshitake H (1971) Relations between the Symptoms and the Feeling of Fatigue. In Hashimoto, K; Kogi, K and Grandjean, E. (Eds). Methodology in Human Fatigue Assessment. London: Taylor and Francis Ltd.
32. Soesilowati E S (2010) Business Opportunity for Halal Products in Global Market: Moslem Consumer Behavior and Halal Food Consumption. Journal of Indonesian Social Science and Humanities, 3: 151-160.