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Implementation of 6S in Convection MSME to Increase Worker Productivity

Febiola Andarista Putri, Kamila Aurellia, Hersa Ajeng Priska*, Ahmad Zaidan, Chanchard Basumerda

Industrial Engineering Department, Faculty of Industrial Technology, Indonesian Islamic University, Kaliurang St. No. Km 14,5 Yogyakarta 55584, Indonesia. Tel. +62 274 895287, Fax. +62 274 895007.

Corresponding author*
19522023@students.uii.ac.id

Abstract: In this time of economic growth, productivity becomes one of the main factors in competition in the manufacturing industry. Good performance and high efficiency are the keys for companies to be able to compete. The purpose of this study is to identify the layout of the facility and provide improvement recommendations. Analysis was conducted using the 6S Method (Sort, Set in order, Shine, Safety, Standardize, and Sustain) to find out the problems that occurred, manage the work area, increase efficiency, productivity and reduce the danger and risk of accidents in convection XYZ engaged in convection. The results of the 6S calculation show that the work area is currently in poor classification. The conclusion of this study is the design of the layout of the work area in convection and the provision of recommendations in the form of proposed improvements to provide closets and first aid tools in the work area.

Keywords: 6S, Ergonomic, Productivity.

Introduction

Clothing is one of the needs that must be met by humans (clothing needs). Therefore, many convection businesses are developing around us. Especially small and medium enterprises (MSMEs) in the convection sector, this makes one of the factors of competition between MSMEs. And increasing productivity is one of the factors for a company to develop and be able to progress (Supriyanto & Tri Bodroastuti, 2013). Productivity of workers in a company must be considered, this is intended to maintain effectiveness and efficiency during work (Maizir *et al*., 2020).

In Indonesia, micro, small and medium enterprises (MSMEs) have a very important role in the economy. In addition, MSMEs are one of the efforts made to overcome poverty, because through empowering MSMEs it has been proven to have strong resilience to face the economic crisis that Indonesia has ever experienced (Niode, 2009).

MSMEs according to Law 20 of 2008 are Micro, Small and Medium Enterprises. MSMEs are trading businesses managed by individuals or business entities which in this case are included as criteria for small or micro businesses (Maizir *et al*., 2020). The growth of MSMEs continues to increase, in 2013 the growth of MSMEs is this big, the growth of MSMEs in Indonesia is around 3.7% (Filbert *et al*., 2018).

In XYZ convection, the use of work stations is still not precise and efficient, as well as the lack of order in the placement of existing goods and also storage of goods that has not been carried out regularly because there is no storage method applied. Therefore, workers need time when looking for goods or finished products. Therefore, we need a method so that the equipment contained in the tailor's workspace is stored properly and can avoid difficulties in finding and retrieving goods or even damage due to improper storage (Prawibowo *et a*l., 2016). As it is known that in a company, the storage system has an important role. Good and regular arrangement will increase the efficiency of space use in the company(Sofyani & Syarifuddin,

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2015). Based on the problems above, it is necessary to apply a method to make it easier for workers to find and store goods properly, to increase productivity and work efficiency of workers at XYZ convection. The main purpose of the 6S concept is to improvise human capabilities and to increase industrial productivity (Milan *et al*., 2017). One method is 6S (Seiri, Seiton, Seiso, Seiketsu, Shitsuke, Safety). The 6S method is a development of 5S which was popularized by Hiroyuki Hirano in 1990 as a work environment control and control method designed to reduce waste and optimize productivity (Prasetyo & Ekawat, 2019).

Materials and Methods

Data collection method

This research was conducted at the XYZ Convection, which is located in Balikpapan, the initial research was carried out by making direct observations at the XYZ Convention, to find out the real conditions of the environment and the operator at work, then conducting interviews with one of the employees, and the results of direct observations and interviews were filled in. by researchers in a subjective way.

6S method

6S is a method to identify existing problems with 6 variables used. By collecting data, namely filling out the 6S Assessment Form which is assessed based on the detailed state of the object. Then identify using the 6S identification form related to improvements and also the solutions that will be provided. The use of this 6S method to increase productivity and work efficiency, based on research conducted by (Maizir *et al*., 2020) the results of the application of 6S obtained are that there is an increase in time efficiency of 15.31%, therefore it can be concluded that the implementation of 6S can increase worker productivity. According to research conducted by Dewi *et al* (2013) by applying the optimal layout using the 6S method, there was an increase in productivity of 117%, where the average comparison results showed an increase in productivity from 2.93 to 6.35 (from a maximum value of 10).

Results and Discussion

Prefix Layout

Prefix Layout is the prefix layout at the research site or layout before repairs are made. The prefix layout for XYZ convection can be seen in Figure 1.

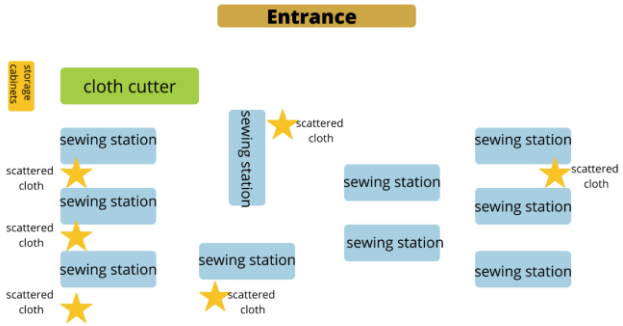

Figure 1. Prefix layout.

In Figure 2. you can see the layout of the work station before repairs are made. The prefix layout is made according to the real conditions of the work station in XYZ convection during direct observation. This prefix layout is useful for providing an initial overview before repairs are made. And a live state image is useful for viewing live conditions in XYZ convection.

Score 6S

Data was collected through an Assessment Form involving 6S variables. Starting from seiri, seiton, seiso, safety, seiketsu, and shitsuke. The questionnaire was filled in according to the real conditions of XYZ convection. The following is a 6S classification table. the result is the calculation of the total points based on the 6S assessment form. It was found that the value for the Seiri variable was 2.3, Seiton was 1.6, Seiso was 1.75, Safety was 1, Seiketsu was 1, and Shitsuke was 1. Based on the scores on each of the variables above, the highest score is Seiri, which is 2 ,23. This is because all equipment as needed and damaged tools are separated, but items that are not used are not marked with a redtag. Seiso has a value of 1.75 this is because the cleaning equipment is sufficient and

there is no dust. The lowest value is Safety of 1, Seiketsu of 1, Shitsuke of 1.87 this is because many convection owners are not provided to maintain worker safety such as fire extinguishers, evacuation routes, and the absence of personal protective equipment. Besides that, there is also no habituation for employees to do 6S and there is no periodic audit by the convection owner

6S Analisis Analysis

Figure 2. Workspace conditions

On the serial variable the total score is 6, and as many as 3 aspects are assessed on this aspect. The highest score is with a value of 3 on the material aspect, this is because the items needed for sewing are appropriate and the lowest score with a score of 1 is on the aspect of office stationery and filing. The total score on the seiton variable is 8 with 5 aspects being assessed. In this seiton variable, the highest score is on documentation with a score of 3, this is because the document is easily accessible in some places and the lowest score is in 3 aspects, namely storage, materials and tools, and number indicator. In the seiso aspect, the total score is 7 with 4 aspects being assessed. And the highest score on the aspect of the floor, wall, ceiling is with a score of 3, this is because there is no dust, stains on the walls or floor. And the lowest score on the aspect of cleaning equipment and responsibility with a score of 1, due to the lack of cleaning equipment and responsibility by the workers. The total score on the Safety variable is 16 with 8 aspects (16 reviews) assessed. All of these safety variables have a score of 1 due to the lack of security implementation such as the absence of a first aid kit, fire extinguisher, and evacuation route. On the seiketsu variable, the total score is 2 with 2 aspects being assessed. Both of these reviews have a score of 1 due to the absence of awareness of applying 6s, and on the shitsuke variable a total score of 2 with 2 aspects assessed. Both of these aspects have a score of 1 due to the absence of periodic audits.

Recommendation

The following are recommendations that are illustrated with a comparison of the initial layout and the final layout

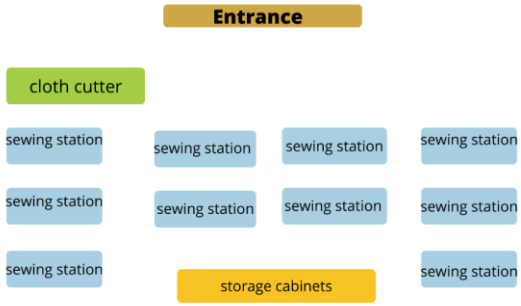

Figure 3. Final layout

Based on the results of the 6S evaluation and the comparison of the initial and final layouts, recommendations for XYZ convection can be drawn as follows:

1. Make a storage cupboard for clothes that have been sewn
2. Change the direction of the tailor's table towards the entrance to make the work station more effective
3. Provide first aid, PPE for worker safety
4. Cleaning unused cloth

Then, recommendations for the implementation of 6S by socializing to employees about self-awareness of the use of PPE, good work posture at work and the importance of work safety at work (Prasetyo and Ekawati, 2019). Provide more knowledge about 6S and conduct a 6S inspection or evaluation in the company by placing a 6S poster on a large wall and providing audit text every routinely, as well as providing trash bins with the aim of workers being able to maintain cleanliness and comfort in the workplace.

Conclusions

Based on the research that has been done, it can be concluded that from the assessment form of the application of 6S in XYZ convection still falls into the low category because the score of 6S is 1.28. The results of the evaluation of the application of 6S in XYZ convection are still lacking some variables, especially safety, seiketsu, and shitsuke, because in these 3 variables the value of all aspects still has a value of 1. So the recommendation for repairing 6S in XYZ convection that can be given is to make storage cabinets, provide personal protective equipment (APD) or first aid for workers, and tidy up unused fabrics.

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