ABSTRACT

CV XYZ is a company engaged in the textile industry where the company produces woven sarongs. The production process of woven sarongs at CV XYZ consists of six processes, namely the hani process, the nyusuk process, the weft spinning process, the weaving process, the sewing process as well as the inspection and packing process. The main process in producing woven sarongs is carried out in the weaving process. CV XYZ uses machine looms in the weaving process. Based on data on the production of woven sarongs for the period January 2020 to April 2021, it is known that defects often occur due to the weaving process because the number of product defects is high in the process compared to other processes. In the production data of woven sarongs for the period January 2020 to April 2021, it is known that in the weaving process there are 280 pcs of wrinkled woven sarong surface defects. This number is the highest number compared to other processes, namely in the hani process there are 55 pcs of inappropriate weaving sarongs pattern defects, in the sewing process there are 163 pcs of neci sewing thread defects, and in the inspection and packing process there are types of defects in the form of 118 pcs of dirty woven sarongs. While in the nyusuk process, there are no types of defects. These defects can occur due to the non-fulfilment of the CTQ process at each stage of the process in each of the existing processes.

To solve this problem, the DMAI method is used which consists of define, measure, analyse, and improve. The define stage is carried out by identifying the CTQ of the woven sarong product, the existing processes in the production of the woven sarong, and the CTQ of the woven sarong production process so that the problems that occur in the woven sarong production process can be identified. The measure stage consists of calculating process stability based on production data of woven sarong for the period January 2020 to April 2021 and calculating process capability to determine the existing sigma value of the woven sarong production process at CV XYZ. The analyse stage is carried out by analysing the root problems that occur in the production process of woven sarongs using tools in the form of cause-effect diagrams (fishbone diagrams), 5 Why's analysis, and risk

assessment with Failure Mode and Effect Analysis (FMEA) to determine the root problems that will be overcome in the next step. In the improve stage, a proposed design is carried out to minimize defects in the production of woven sarongs based on the risk priority number (RPN) contained in the FMEA. The design proposal made is scheduling preventive maintenance for weaving machines. The design is made to minimize defects that occur in the weaving process. The design of preventive maintenance scheduling for weaving machines is carried out by calculating the Mean Time to Failure (MTTF) value and the Mean Time to Repair (MTTR) value as a method for preventive maintenance.

The calculation result of the Mean Time to Failure (MTTF) value is 17,29 days and the calculation result of the Mean Time to Repair (MTTR) value is 3,10 hours. Based on these results, it is known that preventive maintenance must be carried out before 17,29 days from the last damage to avoid other damage and preventive maintenance is carried out for 3,10 hours. The results of the preventive maintenance scheduling design are then verified to see their conformity with the specified specifications. Then an evaluation of the design results in the form of preventive maintenance scheduling for weaving machines is carried out. The results of the design are expected to reduce the number of defects in the weaving process by 75% of the number of defects in the weaving process and the overall production process can reduce the number of defects from 616 pcs of products to 406 pcs of products. With the decrease in the number of defects, the sigma value will also increase where previously it was worth 3,985 sigma and is expected to increase to 4,094 sigma.

Keywords: Sarong weaving, DMAI, Weaving Process, CTQ, Preventive Maintenance