

ABSTRACT

Small and medium enterprises or SMEs have an important role in helping the growth of Indonesian economy. West Java Province has produced 2,000,224 cassava or cassava plants according to 2015 Central Statistics Agency data, the total production of all Indonesian provinces is 21,801,415 tons. Cassava production has the potential to be processed into various types of food, in Rajamandala Kulon Village, UKM Posyantekdes is involved in processing cassava plant products into cassava chips. This business has the potential to be able to develop in the market on the island of Java and outside the island. This study aims to solve the problems faced by one of the Posyantekdes, operator in Rajamandala Kulon Village. Where one of the tools in the production of cassava chips, namely the dough cutter, has a problem for the operator who uses the tool which can cause Musculoskeletal disorders (MSD) where injury or muscle disorders can occur. In addition, the accumulation in the dough cutting process can also reduce the productivity level of cassava chips. This study uses the Ergonomic Function Deployment (EFD) method, which is a method for facilitating the design process, making decisions in the form of matrices. By using the EFD approach, it is expected to add ergonomic aspects in the form of EASNE or what is called Effective, Comfortable, Safe, Healthy and Efficient in related tools. In addition to this, hoped the problems that arise in the form of the possibility of Musculoskeletal disorders (MSDs) can be resolved in this study and increase the productivity of the process of making cassava chips at UKM Posyantekdes Ikhlas Ramaku.

The product development carried out in this study uses the Ergonomic Function Deployment (EFD) method, which is a method to facilitate the design process, making decisions in the form of matrices. By using the EFD approach, it is expected to add ergonomic aspects, EASNE or what is called Effective, Comfortable, Safe, Healthy and Efficient on related tools. In addition to this, it is expected that problems that arise in the form of the possibility of Musculoskeletal disorders (MSDs) can be resolved in this study and increase the productivity of the cassava chips making process at UKM POSYANTEKDES Ikhlas Ramaku. The mechanism used in this research is to conduct a study of product development literature and observations made at UKM POSYANTEKDES. The study focuses on one of the tools in the process of making cassava chips, namely cassava chips dough cutting tools. Risk Assessment is used to help identify the impacts and existing risks, so that they can minimize the risks of this product design project. Risk Assessment contributes directly to project and product design success by creating transparency regarding existing risk situations. In answering ergonomic problems, the Rapid Upper Limb Assessment (RULA) is used to test tool on the operator's posture when using

existing tools and the design of the proposed cassava chip dough cutting tool. So, based on the results of the assessment, it can be proven that the changes in the RULA score that occurred after using the proposed product design and before.

The results obtained from this study are in the form of a concept design tool for the proposed dough for cassava chips dough. Based on the results of the research to answer the problems in the cassava chip dough cutting tool, the concept design of the tool is given the development of the quantity of dough that is cut so that it can increase the result of cutting in one cutting process the time needed before using the design tool is 23.52 minutes in one production of cassava chips, to 13.44 to complete the reduction in one production of cassava chips. Thus, it proves that using the proposal tool design can increase productivity. In addition, the new cutting tool design uses stainless steel thread, proving that the thread can be safer from corrosive properties and withstand the stresses applied to each dough cutting process. The design of the tool design proves that there is a decrease in the RULA score to 2 where the number is safe for operator activities to avoid MSD risks and improve the ergonomics aspect of EASNE with the results of EFD processing and measuring tools using human anthropometry to produce ergonomic tools.

The benefits of this research for UKM POSYANTEKDES are getting input and designing the concept of tools to help answer the problems experienced by SMEs. For the authors of this study, it can provide an opportunity to implement the knowledge that has been previously studied in universities, so that it can be useful for the community as the implementation of the tri dharma of higher education.

Keyword— Musculoskeletal disorders, Ergonomic Function Deployment, House of ergonomic, Rapid Upper Limb Assessment, EASNE