Lean manufacturing is the most convenient way to eliminate unnecessary waste and can provide what customers demand. This paper presents possibilities and sustainability of application of lean manufacturing method by using a virtual simulation of the workers' performance in a line production of small and medium industry. Actual case study and Witness simulation were used in this study to find the waste that exists in the production and identified the performance of workers in the production line. Lean manufacturing concept has identified and rectified problems related to low productivity in the assembly line. The case study is involved a line production for electronic part assembly. The result of this preliminary study should illustrate the relationship of worker’s performance by lean manufacturing method as well as the productivity improvements which help to reduce cost for manufacturer. Lean manufacturing method has been used during the study to reduce the cost when waste is eliminated by reducing the workstation without reducing the performance of the production. The performance of the production is increased when allocating the labor in a needed working area. Lastly, the study also proves that the new layout has improved the process to be used for future production process.