Abstract: In this study, the dynamic performance of lean manufacturing systems is investigated, involving U-shaped cells using the concept of chained labor flexibility. Labor forms a major constraining resource alongside machine resources, and many of the advantages from Lean systems arise from labor flexibility and cross-training, a dual-resource-constrained system context is assumed, with both machine and labor components, alongside several dimensions of labor flexibility such as labor assignment and scheduling rules, and labor cross-training. In addition, the relatively new concept of *skill chaining* is investigated. We draw insights from queuing models, followed by simulation investigation of a larger shop setting and statistical analysis of the simulation data. We assume several levels of *chained labor flexibility*, in addition to other relevant factors such as lot size, setup reduction, and labor assignment rules. The impact of chained cross-training and its differential impact on the performance of Lean systems are summarized.