

Project Reliability Evaluation of a Restaurant under Time Constraints And Customer Demands

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Abstract

Every restaurant strives to maintain the quality of its service while simultaneously attracting new customers. Thus, restaurant managers face the dual challenges of adhering to time constraints and fulfilling customer demands. To investigate this issue in the present study, cooking was regarded as a project and was analyzed using a work breakdown structure. Since many real-world projects can be described by network models using arcs and nodes, we also evaluated restaurant performance by analyzing its project network. In general, a project network mainly consists of activities, and in this case, the capacity of each cooking appliance and the duration of each activity involved in the cooking process were also accounted for in the calculations. The main purpose of this study was to evaluate the project reliability, the probability that a restaurant can produce a demanded number of meals within a certain time. A restaurant multistate project network (RMPN) was constructed based on information provided by a restaurant about the cooking process. We then measured the time spent on each activity to generate the duration distribution. An algorithm was subsequently developed to assess the project reliability of the RMPN. This algorithm can be used by restaurant managers to assess the service qualities of their restaurants.

Keywords: Project network, project reliability, restaurant, duration distribution, work breakdown structure.

1. Introduction

Symons [38] described the word “restaurant” not by relating it to a dining establishment, but rather in terms of the meal that a restaurateur offers (service). Besides supplying meals, the basic role of a restaurant, providing the customer service is also significant. Has proven to be critical to the success of a restaurant (Cheng et al. [5]; Ha and Jang [10]; Jung et al. [18], Sularto et al. [37]), and it is also the dining experience factor that most significantly affects customer satisfaction (Lee [21]; Liu and Jang [35]). Xiao and Yang [40] discussed two capacities of a restaurant: the seating capacity and the capacity of the servers. In order to evaluate restaurant performance in this study, we considered the capacities of the kitchen, i.e., the capacities of the cooking appliances