



Statistical Analysis of Demand and Supply in a Distributed Problem Solving Platform of Software Development

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Abstract

An emerging business model in application software development in large enterprises is to employ a flexible workforce, or a resource pool, which consists of vetted freelancers, to support the application development process, including software design, coding, and application testing. This so-called crowdsourcing model is facilitated by a service platform where work items are posted with detailed requirements and where proposals are solicited from members of the resource pool. After evaluating the proposals and previous work history of the participants, the best candidate is selected to perform the task. The success of this model depends crucially on having the right participants at the right time when their skills are needed. However, the need for each set of skills fluctuates over time, depending on the software development activities of the business; the number of participants also fluctuates because participation is entirely voluntary and performed via self-selection of work. Therefore, maintaining the appropriate capacity, or supply, of the resource pool is an important and challenging problem for the service provider who utilizes this type of delivery platform. Undersupply of talent can impact project deliveries and cause work to go unstaffed, and oversupply reduces the effectiveness and commitment of the participants, causing them to lose interest when the work is not plentiful enough. In this paper, we present some results of a statistical analysis of the demand and supply in a resource pool operation in IBM's Global Business Services business unit. The analysis enables a data-driven strategy for capacity planning and management.

Keywords: capacity planning; freelancing; staffing; crowdsourcing; survival analysis; logistic regression.