

# THE IMPACT OF INCREASING TEAM SIZE ON PROJECT PRODUCTIVITY

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## Abstract

Enterprises must increase operational efficiency to gain competitive advantage in this stiff global competition, and operational efficiency is resulted from fast problem resolution and opportunity creation. Project management has been regarded as an effective and efficient approach to quickly solve current problems and create future opportunities. Speed is the most vital factor when facing with problems and opportunities; slowness will breed a small problem to a huge one, even unmanageable, whereas a not quick enough pace will lead to opportunity untouchable and fade away. Therefore, the challenge facing a project manager in this era is how to complete a project quickly, and one of the most commonly used methods is crashing, which implies shortening the project duration by increasing the number of workers and equipment, and by working overtime. Traditionally, it is a common believe that increasing the number of workers can certainly reduce the project length; even the law of diminishing return is widely recognized. Thus, this study intends to explore the interaction of number increase and diminishing return, and develop a quantitative model to concurrently consider the number of workers, worker experience, worker training and level of team work to obtain the most suitable number of worker increase, to avoid waste of human resources and optimize personnel utilization.

To demonstrate the applicability of the proposed model, this study uses two examples to illustrate the solution procedures. The results indicate that although the project productivity can increase along with the increase of workers, when the number of workers reaches a certain level, even the worker is further increased, the project cannot be positively benefited; therefore, the increased workers are not only wasted, but also decrease the entire project productivity.

Keyword : project, project management, crashing, law of diminishing return, productivity