

# Human Biases in Forecasting of Work-Effort: Differences in Effect Sizes in Laboratory and Field Settings

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A frequently reported reason for IT-project failures is the inability of software professionals to provide accurate work-effort forecasts. Inaccurate work-effort forecasts lead to poor investments, unrealistic plans and unsatisfactory software quality.

Software development work-effort forecasts are typically based on judgmental forecasting processes vulnerable to human biases. The information about a client's unrealistic, low cost expectation has for example been found to lower the work-effort forecasts provided by software professionals, even when the professionals are informed about the irrelevance of that information.

Previous studies on work-effort forecasting biases are based on more or less artificially created (laboratory) situations with characteristics likely to increase the use of surface indicators. The high forecasting time pressure of many laboratory experiments may, for example, increase the use of easily available, surface information deliberately introduced by the experimenter to manipulate the forecasts.

This lack of controlled experiments on work-effort forecasting biases in field settings led us to design the presented study, with the goal of assessing the robustness and effect sizes of previous findings in typical software development work-effort forecasting field settings. We invited forty-six software development companies from different European and Asian countries to forecast the work-effort of the same five projects in typical forecasting conditions. The companies were randomly allocated to a group that received manipulated forecasting information, such as unrealistic cost expectations, or a control group. Our main result is that the impact of totally irrelevant information seems to be strongly reduced, although not fully removed in the studied field setting. When, however, the information is relevant for the software development work but nevertheless misleading for the work-effort forecast, the impact in field settings can be large. A possible consequence is that the forecasting process improvement emphasis should be on neutralizing misleading, but relevant forecasting information, and less on removing totally forecasting-irrelevant information.