

FORECASTING OF SOFTWARE DEVELOPMENT WORK EFFORT: EVIDENCE ON EXPERT JUDGEMENT AND FORMAL MODELS

FINDINGS

- The review does not support the view that we should replace expert judgement with models in software development effort estimation situations.
- On the other hand, neither does it support the view that software development effort estimation models are useless.
- The average accuracy of the experts was better than that of the self-developed models in five out of the eight studies.
- None of the analyzed studies reported large differences in accuracy related to the use of models and expert judgement in estimating software development effort. That is, there is no large difference between models and experts.
- Using formal rules (e.g., the rule-based induction algorithms) to select the best model does not yield the desired result.
- Among twenty experienced software professionals with similar skill levels and backgrounds, the correlation between the estimation accuracy of previous and future programming tasks was 0.40, and that

using the previous estimation errors to predict the most overoptimistic estimator (out of two) for future tasks would yield a 68% success rate.

- When experts and models judgment are combined, an improvement in accuracy is observed compared to the use of either models or expert judgement alone.
- One study (Study 13) found that expert judgement-based effort estimates were slightly better than those based on a mechanical combination of estimation methods.
- One study (Study 14) found that expert judgement, regression analysis-based models, and case-based reasoning-based models complemented each other well, i.e., when one method was not very accurate, it was likely that at least one of the other models was significantly more accurate.
- In three studies the experts were more accurate than the models, even when they possessed the same information.
- The main benefit of estimation models is to avoid large overruns in situations known to induce a strong degree of overoptimism.

Keywords:

Software productivity

Who is this briefing for?

Software engineers practitioners who want to make decisions about software development estimation based on scientific evidence.

Where the findings come from?

All findings of this briefing were extracted from the systematic review conducted by Jørgensen.

What is a systematic review?

cin.ufpe.br/eseg/slrs

What is included in this briefing?

The main findings of the original systematic review.

What is not included in this briefing?

Additional information not presented in the original systematic review.

Detailed descriptions about the studies analysed in the original systematic review.

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