

**THE UTILITY OF UNCERTAINTY INFORMATION
IN DECISION-MAKING**

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ABSTRACT

Despite strong theoretical reasons why indications of uncertainty should be valuable to decision-making, Uncertainty Information (UI) is arbitrarily utilised in practice. Moreover, it's unclear whether UI improves decisions. This thesis seeks to understand under what conditions UI has utility by defining a contingent model of UI utility, and testing part of the model. This will help establish whether UI should be used more in practice, and if so, how.

Theoretical and empirical literature was reviewed to develop a model of contingent effects summarising the contingent utility of UI, which was used to design three paper-based laboratory experiments.

Experiment 1 investigated UI utility with a capital investment task. For several investment opportunities participants determined whether achievement of a target level was at least 75% certain. Those participants provided with UI in the form of a 75% confidence level accompanied by a forecast made better decisions. Those with UI had performance compromised when separation of the target level and 75% confidence level was minimal. This may have been caused by: the forecast-confidence level range indicating the decision objective was being threatened; perception the UI contained some error; or, indifference to the situation.

Using a similar task, Experiment 2 introduced a fourth treatment group, which received UI without a forecast, and included an additional factor by varying task uncertainty. Results agreed with Experiment 1. The decision performance of the group receiving UI without a forecast improved as task

uncertainty increased, probably because the main decision rule used in that group was dependent upon the visual distance between the 75% confidence level and target level. Those with UI had better calibrated decision confidence.

Experiment 3 was identical to Experiment 2, except presentation scale was varied to investigate against the effects of task uncertainty. Results agreed with Experiment 2, and presentation scale had no impact on UI utility.

The main findings of this thesis demonstrate that UI has practical value given the right circumstances. These findings provide justification to those disciplines already utilising UI, and emphasise that those disciplines not utilising UI, such as management and accounting, do so against normative value and practical evidence.

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