

## Aim

Deciding how to decide is a perpetual challenge in every organisation. Not everyone involved in the process is trained in decision sciences or is confident with applying formal techniques while making decisions. Those who do try are often deterred by the hidden complexities in common and seemingly simple techniques. This has kept the use of formal techniques limited to specialists. The aim of this research is to find methods to remove barriers to wider, largescale adoption of such techniques.

## Method

Sample users from insurance, manufacturing and supply-chain management industries were offered a prototype decision-making tool to try. Based on feedback and observations of how they handled the tool, two issues were recognised as the key impediments in its adoption. The first was the lack of mistake-proofing. This undermines the utility of even straightforward techniques like Pareto Analysis. Capturing defects or customer complaints can allow spelling mistakes and semantically identical categories to creep in; and since most decision-making tools cannot identify, let alone rectify such oversights, the construction of frequency table ends up error-prone and tedious. The second concern stems from the users' varying levels of competence in statistics. Professionals who are unfamiliar with statistics found themselves at a disadvantage when they were faced with the task of interpreting graphs or number-heavy results. Consequently, they were intimidated by techniques such as Box Plot and Linear Regression where inferences need to be drawn from graphs and computations.

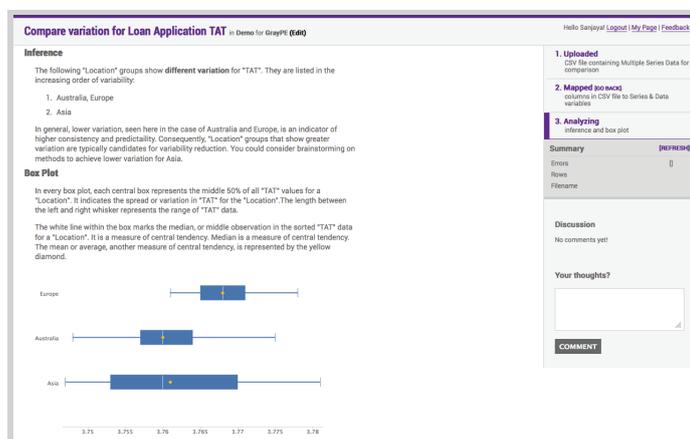


Figure 1 - Compare Variation: Tool generated inference for Box plot

A new system called Decisively was designed to address these issues. It achieves mistake-proofing and deskilling by implementing text mining, fuzzy inference system and automated workflow in tandem with a comprehensive set of decision-making tools. As a result of this unique combination, Decisively masks the complexities of common techniques and refines data using its built-in intelligence. It translates the results of statistical computations into easy-to-understand inferences, and takes over the onus of basic analysis from the user.

Decisively also automates the steps required to run every tool—automatically clustering similar categories in Pareto Analysis or highlighting outliers in Linear Regression. All these interventions reduce the chance of human error and give useful assistance to non-specialists.

Decisively's tool set, comprising of Brainstorming, Voting, SPAN, AHP, TOPSIS, Box Plot, Pareto Chart and Linear Regression, has been chosen after careful study and analysis of day-to-day business decision making needs. Instead of presenting these tools under their technical names, descriptive titles that can be understood by the layperson are used; Box Plot is called Compare Variation, for instance, and Pareto Chart is referred to as Discover Vital Few. This makes Decisively more approachable and navigation within its tool set more intuitive.

A web-based system, Decisively makes near real-time and asynchronous collaboration possible, making it an ideal platform for teams and subjectmatter experts to work together. Its consistent and user-friendly interface further simplifies decision-making.

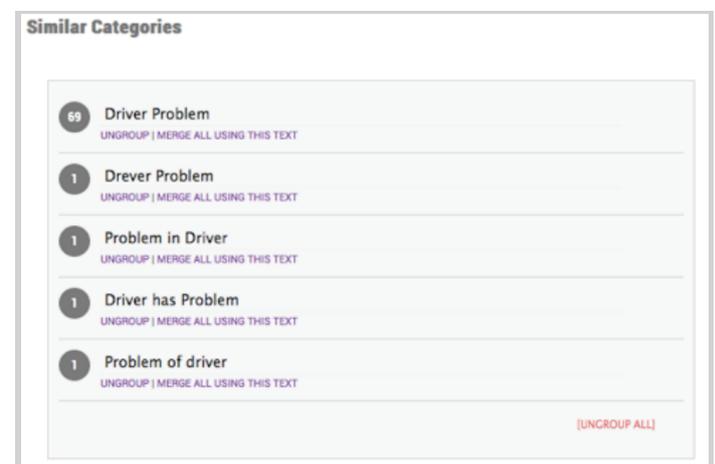
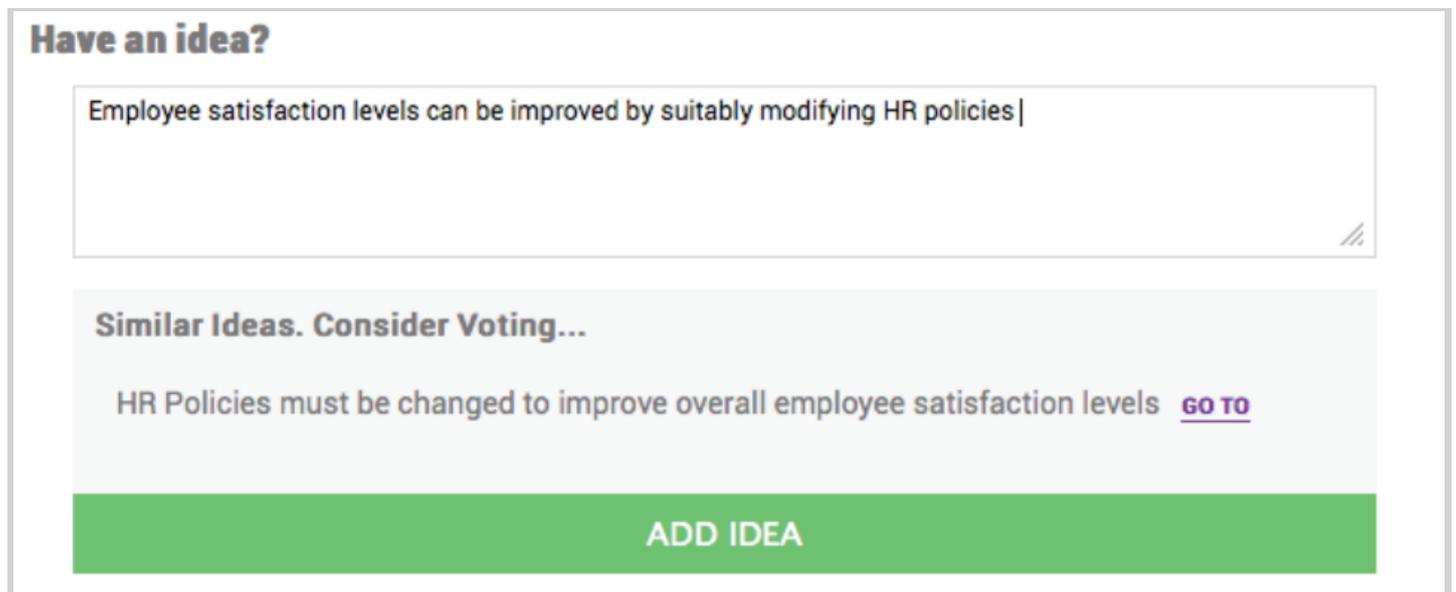


Figure 2 - Automatic identification of similar categories during Pareto Analysis workflow

## Results

The response to pilot tests has been positive. Users have expressed their delight with how well the built-in intelligence understands the input data and recommends likely actions. They also highlighted further use-cases where intelligent data-handling could enhance the tool's usability.

During the tests, the tool's automated workflow and easy-to-understand inferences motivated non-specialists to apply formal techniques in their decision-making process. It was suggested that workflow automation could be taken a step further by triggering next steps on the basis of the tool-generated inference. Users felt that the quality of decision-making improved with Decisively because the team could be involved. The system's user experience was also appreciated; some participants went as far as comparing its clarity and ease of use to web-based email.



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Figure 3 - Brainstorming: Automated recommendation in real time to vote on similar idea

## Conclusions

The lack of decision-making tools for non-decision science professionals has deprived them of the benefits of using formal techniques. It is also an indication of the limited attention this problem has received from specialists. Feedback during this project is strongly in favour of devising tools that nonspecialists can successfully use, and Decisively is a promising start towards this goal.

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