

CONTEXTUAL EFFECTS IN DECISION MAKING UNDER UNCERTAINTY

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ABSTRACT

Decision making under uncertainty and how people deal with uncertainties are of key interest in academia and to practitioners. This study replicates and extends previous research on stochastic dominance violation and uncertainty framing, investigating whether people's decisions can be influenced (or improved) if the choices are framed under a different context. Results of this study found that by providing an alternative context to the same task, it can influence how the uncertainty information is processed, which subsequently influenced decision choice.

Keywords: Decision making, Uncertainty context, Stochastic dominance theory

INTRODUCTION

Decision making under uncertainty has been a key topic of interest surrounding research in academia and practitioners. Over these years, different approaches and techniques have been discovered, studied, experimented, and improved to help people cope with uncertainties; and thereby improve their decision quality (accuracy) [3]. However, there is still no perfect method to deal with uncertainties when making decisions. While tools and approaches are available for people's disposal, it is still dependent on the decision maker to make the choice guided by the tool that helped to cope with the uncertainty. Moreover, how the uncertainty is framed [4] [7] can also influence one's interpretation and the decision made. Thus, a key element of this research is to understand how people actually use uncertainty information, whether such information has any influence over the decision outcome, and whether the widely acclaimed stochastic dominance theory (SDT) still holds in decision making under certain uncertainty conditions.

The main objectives of this research are to investigate whether uncertainty context influences decision making, and whether violations of SDT differ from previously experimented gambling type decisions. Past studies [1] [2] have shown significant (choice) violations of stochastic dominance (about 70% on average) when making decisions under risk (i.e. gambling type choice decisions) whereas others [5] reported a more subdued (choice) violation of approximately 40% under similar uncertainty condition. By altering the uncertainty context, this study aims to replicate and extend previous stochastic dominance violation [1] [2] [5] and uncertainty framing studies [4] [7].

RESEARCH METHODOLOGY

The subjects in this study were 252 business students recruited via a subject pool. Each subject performed 2 tasks; framed as a gambling choice (G) task and a product market launch choice (M) task under similar uncertainty condition. The uncertainty condition used in this study was adapted from Birnbaum's study [1]. The objective of each task is for the subjects to choose between 2 alternatives given their corresponding uncertainty information. Each subject was randomly placed into either the MG or GM group. In the MG group, subjects completed the M task followed by the G task, and vice versa

for the GM group. The choice orders within the tasks were also switched to account for any potential judgmental order effects. Upon completion of their first task (either a G or M task) and prior to completing the second task, a filler-task was included as a distraction to limit any potential decision carry-over effects. The Expected Value Analysis (EVA) was deemed to be a normatively appropriate procedure in deriving the “correct” choice classification; consistent with SDT [6].

RESULTS AND DISCUSSION

Preliminary examination on subjects’ choice indicated choice violations (SDT) do occur in both M (MG = 24.6%; GM = 17.5%) and G (MG = 23%; GM = 40.5%) tasks. However, the percentage of violations were much lower compared to the results reported in Birbaum’s previous studies (approximately 70%) but more consistent with Levy’s (approximately 40%) under similar uncertainty and context (framed as gambling tasks only) conditions [1] [5]. Under similar uncertainty conditions, the MG group performed significantly better (making the right choice) in the M task compared to the GM group in the G task (Chi-square = 7.231, $p = 0.007$). The MG group reported consistent performance in both tasks (Chi-square = 0.088, $p = 0.767$) whereas the GM group performed significantly better in the latter M task (Chi-square = 16.2, $p = 0.000$). Further analysis using logistic regression (using the groups’ first task) showed that the odds of making the right choice compared to the wrong choice are increased by a factor of 2.084 by completing the M task rather than the G task (Wald = 7.119, $p = 0.008$).

CONCLUSION AND FUTURE DIRECTION

Through this study, uncertainty context was found to influence decision choice; where the context can frame the decision maker’s mind. While violations in SDT were also evident in this study, they were not as high as the results previously reported in Birbaum’s studies under similar uncertainty conditions [1]. Framing the task in a different context (Marketing task in this study) further reduced the choice violations. A change in context may add relevance, hence more focused in the uncertainty information processing. Thus, while this study supported the notion that people are not always rational when making decisions, it has found that uncertainty context does play a role in decision influence. Several limitations in this study include the use of similar uncertainty conditions in both task contexts even though the intention is to make the tasks comparable for analysis. And the use of a filler task in-between may not have totally eliminated the carry-over effects. Future considerations include varying the uncertainty conditions in both contexts to minimize any carry-over effects, and incorporating risk-taking measures as a potential decision moderating variable.

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