Chapter X
A Meta-Analysis Comparing the Sunk Cost Effect for IT and Non-IT Projects

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ABSTRACT

Escalation is a serious management problem, and sunk costs are believed to be a key factor in promoting escalation behavior. While many laboratory experiments have been conducted to examine the effect of sunk costs on escalation, there has been no effort to examine these studies as a group in order to determine the effect size associated with the so-called "sunk cost effect." Using meta-analysis, we analyzed the results of 20 sunk cost experiments and found: (1) a large effect size associated with sunk costs, and (2) stronger effects in experiments involving information technology (IT) projects as opposed to non-IT projects. Implications of the results and future research directions are discussed.

INTRODUCTION

The amount of money already spent on a project (level of sunk cost), together with other factors, can bias managers' judgment, resulting in "escalation of commitment" behavior (Brockner, 1992) in which failing projects are permitted to continue. Project escalation can absorb valuable resources without producing the intended results. While escalation is a general phenomenon occurring with any type of project, software projects may be particularly susceptible to this problem (Keil et al., 2000a).

Prior research has identified psychological as well as other factors that can promote escalation (Staw & Ross, 1987). The sunk cost effect is a psychological factor that can promote escalation and refers to the notion that people have a greater

tendency to continue a project once money, time, and effort have been invested (Arkes & Blumer, 1985).

There are several possible explanations for the sunk cost effect. Chief among these is prospect theory (Brockner, 1992; Kahneman & Tversky, 1979), which suggests that people will choose to engage in risk-seeking behavior when faced with a choice between losses. According to prospect theory, people will prefer to make additional investments (even when the payoff is uncertain) rather than terminating a project and "losing" all of the monies already spent.

In the context of software projects, the intangible nature of the product (Abdel-Hamid & Madnick, 1991) can make it difficult to estimate the amount of work completed. This difficulty manifests itself in the "90% complete syndrome"[1], which may promote the sunk cost effect by giving a false perception that most of the required money, time, and effort have already been expended.

To investigate the sunk cost effect, researchers have conducted many role-playing experiments in which sunk cost levels are manipulated to determine if they have an effect on decision-making (e.g., Garland, 1990;Garland & Newport, 1991). These published experiments suggest that there is broad agreement that sunk cost increases commitment to projects. However, there are a couple of unanswered questions. First, while prior studies have conducted statistical significance testing, they do not provide much information about the magnitude of the sunk cost effect. Second, although there have been claims that IT projects are more prone to the sunk cost effect, there have been no prior studies to determine if the magnitude of the sunk cost effect is larger in an IT project context than it is in a non-IT project context.

Meta-analysis, a literature review method using a quantitative approach, is very good at assessing a stream of research, discovering the consistencies, and accounting for the variability. Therefore, in this study, we conduct a meta-analysis to determine the mean effect size of sunk cost on project escalation and examine variability of effect sizes across experiments. We also examine whether the effect size of the sunk cost effect on project escalation is different for IT vs. non-IT project contexts.

LITERATURE REVIEW

Experiment Studies on Sunk Cost Effect on Project Escalation

Arkes and Blumer (1985) conducted a series of 10 experiments demonstrating that prior investments in an endeavor will motivate people to continue commitment, although rationally people should only consider incremental benefits and costs in decision making. Many researchers have conducted similar experiments based on one of the Arkes and Blumer scenarios (Garland, 1990; Heath, 1995; Moon, 2001; Whyte, 1993). These experiments consistently showed that when facing negative information, subjects with a higher sunk cost level have a greater tendency to continue a project than subjects with a lower sunk cost level. Based on these experiments, escalation has been linked to the level of sunk cost.

Although project escalation is a general phenomenon, IT project escalation has received considerable attention since Keil and his colleagues began studying the phenomenon (Keil et al., 1995a). Survey data suggest that 30 to 40 percent of all IT projects involve some degree of project escalation (Keil et al., 2000a). To study the role of sunk cost in software project escalation, Keil et al. (1995a) conducted a series of lab experiments in which sunk costs were manipulated at various levels, and subjects decided whether or not to continue an IT project facing negative prospects. This IT version of the sunk cost experiment was later replicated across cultures (Keil et al., 2000b), with group decision makers (Boonthanom, 2003) and under different de-escalation situations (Heng et al., 2003). These experiments demonstrated