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Abstract

Explanations for hindsight effects in the context of managerial decision appraisal are described and classified into two categories: cognitive and motivational. Within the latter category, a further distinction is drawn between a "knew-it-all-along" and an "escalation-of-commitment" explanation. The viability of each explanation is investigated in an experiment in which subjects evaluated a committee's decisions to invest in one of two competing projects. The prior commitment of the evaluator and the valence of the project's outcome were manipulated. Experimental results based on the performance appraisals fully support the cognitive explanation, but provide little support for the motivational explanations. Theoretical implications, as well as implications for performance appraisal systems design, are discussed.

An Experimental Investigation of Cognitive and Motivational Explanations For Hindsight Effects in Managerial Decision Appraisals

Research investigating performance appraisal within organizations indicates that such evaluations often are affected by personal, contextual and psychometric factors (see Feldman, 1981 and DeNisi, Cafferty and Meglino, 1984 for reviews of this literature). One potentially significant contextual factor is that performance appraisals generally are made in varying degrees of hindsight (i.e., after outcomes of performances are at least partially known). Another such factor is that evaluators often have been involved previously with the evaluatee's decision process. This paper describes an experimental investigation of cognitive and motivational explanations for hindsight effects (i.e., the effects of outcome knowledge) on managerial decision appraisals when the evaluator is not independent of the evaluatee and/or the course of action being evaluated.

Judgment and decision making studies, usually involving tasks other than performance appraisal, generally report that the probability subjects assess for an event when outcomes are not known (foresight) is significantly smaller than the "prior" probability that subjects assess for the same event when it is known to have occurred (hindsight) (see Christensen-Szalanski and Fobian (1988) for a meta-analysis of research hindsight effects). Mitchell and Kalb (1981), extending hindsight research into a performance appraisal context, found that reporting an outcome (particularly when negative) significantly increased its perceived probability. Evaluators also were found to make more causal attributions to evaluatees in hindsight performance appraisals than in foresight. In Mitchell and Kalb (1981), however, evaluators had no prior

involvement with, or commitment to, either the evaluatee or the alternative courses of action. Subsequent studies have begun to investigate the impact of such prior evaluator involvement/commitment on hindsight performance appraisals (see Schoorman, 1988; Brown and Solomon, 1987; Bazerman, Beekun and Schoorman, 1982).

In the present experiment (more fully described below), subjects were both an advisor to the evaluatee while the evaluatee was making his (her) decision and subsequently, an evaluator of the evaluatee's decision. Consider the following possibilities: 1) the evaluator could either agree or not agree with the evaluatee's decision as to the ex ante best course of action, and 2) subsequent outcomes could indicate that the action which the evaluatee decided to take either was or was not the ex post best action. The evaluator's prior advice concerning courses of action, including recommendation of a particular course of action, induces his (her) commitment to that course of action. When the evaluatee adopts such advice, the evaluator becomes committed to the evaluatee (through agreement on the ex ante best decision) as well as to the advised course of action. However, when the evaluatee does not adopt the evaluator's advice (thus, they disagree on the ex ante best decision), the evaluator is not committed to the evaluatee (but is still committed to his [her] advised course of action). Within such a context, not only is it possible to distinguish between cognitive and motivational explanations for hindsight effects on performance appraisals, but it also is possible to separate the motivational explanation into two versions: a "knew-it-all-along" explanation and an "escalation-of-commitment" explanation.

Explanations for Hindsight Effects

A Cognitive Explanation

Cognitive explanations are exemplified by Fischhoff (1975) and Hogarth (1980) in which it is speculated that memory may be restructured by outcome information such that past uncertainties are not salient. Einhorn and Hogarth (1981) also suggested that hindsight effects may be due to individual's "fluency of diagnostic thinking." That is, outcome information may facilitate development of a coherent story and, once developed, forward inference (i.e., prediction of outcomes) appears less uncertain because the multiplicity of causation has been reduced (i.e., the number of alternative outcomes are reduced by diminishing those that do not involve the coherent story). Similarly, in hindsight, causal schema for alternative outcomes may be considerably less available for recall than the schemata for the reported outcome (see Nisbett and Ross, 1980).

Considering evaluator involvement, evaluators who have been involved with the evaluatee's decision process prior to knowing the outcome could have causal schema that are more developed (i.e., schema that contain more detail and stronger relations) than uninvolved evaluators. This, in turn, could increase the availability of alternative causal schema and increase the perceived multiplicity of causation. Thus, the propensity for hindsight effects would be <u>decreased</u> in performance appraisals made by an involved evaluator.

When the evaluator's prior involvement includes a <u>commitment</u> to a particular target (a course of action and/or an evaluatee), such commitment requires additional cognition to justify target choice. In such situations, the evaluators' schemata for his (her) target of commitment would continue to

be developed, but such development could inhibit further development of schema for alternatives that are not targets of commitment. Assuming that the evaluatee's choice of action focuses the evaluator's attention when appraising the evaluatee's performance, a less-developed schemata will be activated by the evaluator when the evaluatee has adopted a course of action to which the evaluator was not committed. Activating a less-developed schemata, together with interference by the more-developed schemata for the committed target and the propensity for elements of less-developed schema to be forgotten, could cause hindsight effects to be <u>increased</u> in performance appraisals made by an evaluator who is both involved and committed. Thus, in the present experimental context the cognitive explanation predicts that (also see Figure 2):

> Performance appraisals will be different in hindsight than in foresight only when the evaluator does not agree with the evaluatee's decision. In such situations, performance appraisals will be:
>
> a. More positive in hindsight than in foresight when the reported outcome indicates that the evaluatee's decision is the <u>ex post</u> best decision, and
> b. More negative in hindsight than in foresight when the reported outcome indicates that the evaluatee's decision is <u>not</u> the <u>ex post</u> best decision.

<u>A Knew-It-All-Along Motivational Explanation</u>

Some researchers have suggested that to maintain their sense of control and to enhance both their self images and how they are perceived by others, judges in hindsight are motivated to act as if they always knew what was going to occur (see Campbell and Tesser, 1983; Ross and Sicoly, 1982; Snyder, 1981; Ebbsen, 1981; Wong and Weiner, 1981). Thus, when the evaluator is not committed previously to the evaluatee nor to the evaluatee's course of action, the evaluator is motivated to act as if he (she) knew all along whatever outcome is reported. However, when the evaluator is committed to the evaluatee and/or the evaluatee's course of action, the prior commitment should inhibit

the evaluator from adopting the knew-it-all-along position when the reported outcome is less than desirable, but not when the reported outcome is desirable. In the present experimental context the knew-it-all-along explanation predicts that (also see Figure 2):

> Performance appraisals will be different in hindsight than in foresight only when the reported outcome indicates that the evaluator's advised course of action is the ex post best decision. In such situations, performance appraisals will be:
>
> a. More positive in hindsight than in foresight when the evaluator agrees with the evaluatee's decision, and
> b. More negative in hindsight that in foresight when the evaluator does not agree with the evaluatee's decision.

An Escalation-of-Commitment Motivational Explanation

Bazerman, Beekun and Schoorman (1982) reported that subsequent to negative outcomes, evaluatees were rated more favorably when the evaluator had prior commitment to the evaluatee than when the evaluator had no such commitment. This result was interpreted as a performance evaluation analogue to the "escalation phenomenon" (see Staw, 1976) in which the evaluator is motivated to increase his (her) appraisals in order to justify his (her) prior commitment. Schoorman (1988) extended the escalation effect by suggesting that when an involved evaluator disagrees with the evaluatee's decision, subsequent performance appraisals would be more negative, presumably because the evaluator is motivated to justify the initial disagreement. The motive to escalate commitment, therefore, would be present only when outcomes are negative with respect to the target of the evaluator's commitment (the evaluatee and/or a course of action). Otherwise, the evaluator either has no prior commitment to escalate or no motive for escalating prior commitment. Thus, in the present experimental context the escalation-of-commitment explanation predicts that (also see Table 2):

Performance appraisals will be different in hindsight than in foresight only when the reported outcomes indicate that the course of action to which the evaluator is committed is not the ex post best decision. In such situations, performance appraisals will be:

a. More negative in hindsight than in foresight when the evaluator does not agree with the evaluatee's decision, and
b. More positive in hindsight than in foresight when the evaluator agrees with the evaluatee's decision.

Method

Subjects

Ninety-three subjects, predominately senior undergraduates who were enrolled in a cross-section of the disciplines in the business college of a major state university, served as voluntary participants in a "business decision appraisal case." To encourage participation, subjects were told that experts had solved the case and that each of the ten participants with advice closest to that of the experts would be awarded $25.

The subject had two roles in the experiment. First, the subject was an advisor to a division capital budgeting committee which was responsible for determining funding priorities for capital expenditure proposals made by the various manufacturing groups within the division. Second, the subject was an evaluator of the division committee's funding priority decisions. Such evaluations were input to a corporate committee that was responsible for evaluating and monitoring capital expenditure projects within the company's numerous divisions (as well as determining the allocation of capital between divisions).

Materials

The decision evaluation case, developed by the researchers, described two capital expenditure projects that were being proposed by different manufacturing groups with a company's division. One proposal (project A) involved addition of a new product line and the other proposal (project B)

involved expansion of the group's production capacity. The case included background information on the company, the division and the manufacturing groups, and additional information on the subject's experimental roles.

Abstracts for each capital expenditure proposal, prepared by the respective group managements, also were contained in the case. Each abstract consisted of information on potential market growth, competition, and return on investment (described as an internal rate of return [IRR]). Additionally, a listing was included of critical factors to achieve success (with prior probability assessments) and a graphic presentation of estimated IRRs given alternative market shares as well as the prior probabilities of achieving those market shares.

A series of questions asked of the subjects (see Table 1) was designed to give them advisory input into the division capital budgeting committee's funding priority decisions for the two proposals (i.e., prior involvement with the evaluatee's decision process). The subjects were told that the committee would consider the subject's advice in making its funding priority decisions. This involvement also was designed to induce subject commitment to the proposal that he (she) recommended for the highest funding priority.

Insert Table 1 About Here

Manipulations

Two between-subjects independent variables were employed. One variable, at two levels, was the relationship between subjects' advice and the division capital budgeting committee's (i.e., the evaluatee's) funding priority decisions. In one level of this variable the subject and the committee agreed

on the ex ante best proposal (i.e., the subject's advice was adopted by the committee). In the other level the subject and the committee did not agree on the ex ante best proposal (i.e., the subject's advice was not adopted by the committee). In the former level, after learning of the committee's agreement, the subject should be committed to the committee as well as to the advised (and adopted) proposal. In the latter level, however, after learning of the committee's disagreement, the subject should not be committed to the committee nor to the proposal adopted by the committee but should remain committed to his (her) advised proposal.

The second variable, at three levels, was the relationship between the division capital budgeting committee's funding priority decisions and the outcomes for both projects. The outcomes either were not reported (i.e., foresight), the committee's decision was the ex post best decision (i.e., one hindsight version), or the committee's decision was not the ex post best decision (i.e., a second hindsight version). In the ex post best level, the subject was told that the proposal to which the division committee assigned higher funding priority had an IRR substantially above that expected, and the other (non-funded) proposal had an IRR substantially below that expected. In the level that was not ex post best, the subject was told that the proposal to which the division committee assigned higher funding priority had an IRR substantially below that expected, and the other (non-funded) proposal had an IRR substantially above that expected. In all instances, the proposal to which the division capital budgeting committee assigned the highest funding priority was the only project funded by the corporate committee.

Definitions for the levels of the independent variables are presented in Figure 1. Examining, for example, the "Evaluator Agree/Committee Decision is

Ex Post Best" cell in Figure 1, subjects either could advise that project A or project B be given greater funding priority. If the advice were that project A be given greater funding priority, the subjects in this treatment were told that the division capital budgeting committee had decided to assign higher funding priority to project A. Additionally, the subjects were told that after five years project A's IRR was substantially greater than expected, and that project B, undertaken by a competitor, appeared to have an IRR that was substantially less than expected. If the advice, on the other hand, were that project B be given greater funding priority, subjects in this treatment were told an analogous story to that above except that the division committee assigned higher funding priority to project B, and that project B's IRR was substantially greater than expected while project A's IRR was substantially less than expected.

Insert Figure 1 About Here

Procedure

The subjects were randomly assigned to the experimental conditions with the constraint that cell sizes were approximately equal. The background information was presented in the form of a written booklet which the subjects received approximately one-week prior to the experiment. Additional instructions and experimental stimuli and tasks were presented on video displays connected to personal computers located in a 20-machine laboratory.

Following the instructions, subjects first responded to the series of induced commitment questions. These questions were asked by the division capital budgeting committee prior to the subjects' either knowing or evaluating

that committee's funding priority decisions. The order of presentation for the first five questions (as presented in Table 1) within each proposal were randomized over subjects; the last question within each proposal remained the same (also the last question in Table 1). The presentation order of the two capital expenditure proposals was randomized over subjects.

The subjects then were told: 1) which of the two proposals the division capital budgeting committee had assigned higher funding priority (together with the committee's justification), 2) the corporate committee's funding decision (again, the proposal assigned higher funding priority by the division committee always was the only project funded) and 3) for hindsight subjects only, the project outcomes (both for the funded project and for the proposal that was not funded, but supposedly was undertaken by one of the company's competitors). Finally, the corporate committee, as part of its capital expenditure evaluating/monitoring function, asked the subjects to evaluate the division capital budgeting committee's funding priority decision using the following question:

> How strongly do you believe that the division capital budgeting committee's decision to recommend funding priority for [proposal A or B, depending upon treatment assignment], AT THE TIME THEY MADE IT, was the best possible judgment?

The response was elicited on a 20-point scale (-10 to 10) in which the end points were labeled "worst possible judgment" and "best possible judgment." For analysis this scale was transformed to an 100-point scale (0 to 100).

Results

Planned comparisons were used to analyze hindsight effects on the performance appraisals. The relevant performance appraisal contrasts are based on differences in evaluations between the two reported outcome (hindsight) levels and the no reported outcome (foresight) for each level of the

evaluator's agreement with the evaluatee's decision variable. These four comparisons, presented in Table 2 together with descriptive statistics, indicate that significant hindsight effects did not occur when the evaluator agreed with the evaluatee's decision, but did occur when the evaluatee did not agree. When the evaluator did not agree, performance appraisals were significantly: a) more positive in hindsight than in foresight when the reported outcome indicated that the evaluatee's decision was ex post best and b) more negative in hindsight than in foresight when the reported outcome indicated that the evaluatee's decision was not the ex post best.

Insert Table 2 About Here

Figure 2 compares these results with the predictions of the cognitive and motivational explanations. Examining the predictions within the individual experiment treatments, only one treatment results in unambiguous predictions (i.e., each of the three explanations making a different prediction): when the evaluator does not agree with the evaluatee's decision and the reported outcomes indicate that the evaluatee's decision was ex post best. In this treatment, the cognitive explanation predicts positive hindsight effects, the knew-it-all-along explanation predicts no hindsight effects and the escalation-of-commitment explanation predicts negative hindsight effects. The results for this treatment indicate that the hindsight effects are significantly positive (see Table 2). Further, the predictions based on the cognitive explanation are confirmed in all the other treatments, whereas only some of the predictions based on the motivational explanations are confirmed (one out of four for each of the two motivational explanations).

Insert Figure 2 About Here

Discussion

Potential explanations for hindsight effects in the context of managerial decision appraisal were identified and classified into two categories: cognitive and motivational. Generally, the results of the experiment supported the cognitive explanation, and little support for either of the motivational explanations (knew it all along and escalation of commitment) was evident in the performance appraisals. Other research, however, has reported support for the motivational explanations, especially escalation of commitment. What, then, could account for the difference between the findings of the present and prior studies? Two factors suggest possible explanations: the normativeness of the evaluatee's decision process and the extremeness of the reported outcomes.

More specifically, to the extent that the evaluatee's decision process is considered to be normative (i.e., the process is generally accepted as the way in which such decisions should be made), the impact of motivational causes of hindsight effects could be diminished. That is, when a decision process generally is considered to be "correct," there is less need in the face of negative outcomes to justify the decision and less basis for maintaining that one knew it all along. Similarly, reported outcomes that imply degrees of success, rather than success versus failure, could diminish motivational causes of hindsight effects. When outcomes imply a lower degree of success than expected, there is less need to justify the decision (relative to a reported failure) and less need for maintaining that one knew it all along.

In the present study, the normativeness of the evaluatee's decision process was relatively high, especially when compared, for example, to a personnel hiring decision (i.e, the justifications given by the division committee for its funding priority decisions were couched in terms of internal (time-adjusted) rates of return and estimated risks of such returns, both of which are generally accepted [normative] methods of evaluating capital expenditures). Further, the reported outcomes implied degrees of success (i.e., the reported outcome that was not the ex post best outcome was still a marginally successful outcome). Therefore, in the present experiment, motivational causes of hindsight effects in the managerial decision appraisals could be diminished relative to the experimental contexts of predecessor studies.

In addition to providing a means of distinguishing between the viability of the various hindsight effect explanations, the experimental data have implications for the design of performance appraisal systems. In particular, the performance appraisal process may be designed by management, intentionally or unintentionally, such that either decision process quality or outcome valence is the major basis for appraisal. Within the context of capital expenditure evaluation, arguements have been made that in general, evaluation of any single expenditure (i.e, short-run evaluation) should focus primarily on decision process quality, whereas evaluation of a series of such decisions (i.e., long-run evaluation) also must focus on outcome valences. However, consistent with prior research, our results suggest that without management attention to process design issues, outcome valence, even in the short-run, can significantly affect performance appraisals.

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Author Notes

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Table 1

The Series of Questions Designed to Induce Subjects' Commitment to Their Advised Course of Action

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For each proposal, the division capital budgeting committee asked subjects to:

1) Assess the probability that the IRR would be equal to or greater than X% if the proposal were to be implemented (where $p[IRR \geq X\%] = 0.25$),
2) Indicate the extent of their agreement with group management's estimate of the chance that the IRR would be below the company's desired minimum if the proposal were to be implemented,
3) Indicate the extent of their agreement with group management's estimate of the most likely IRR if the proposal were to be implemented,
4) Indicate the extent of their agreement with group management's estimate of the most likely incremental market share if the proposal were to be implemented,
5) Assess the overall reliabililty that should be placed on the estimates and assessments contained within the proposal abstract, and indicate estimates or assessments (if any) contained within the proposal abstract that the subject thought to be unreliable, and
6) Indicate the funding priority that [the subject recommends] the division capital budgeting committee assign to the proposal.

Table 2

Hindsight Effects on Performance Appraisals

DESCRIPTIVE STATISTICS:

Ex Ante Decision Agreement[a]	Reported Outcome[b]	Mean	Standard Deviation	n
Agree	None	85.16	18.48	16
Agree	Ex Post Best	92.67	7.53	15
Agree	Not Ex Post Best	86.67	11.75	15
Not Agree	None	43.44	22.86	16
Not Agree	Ex Post Best	62.33	21.03	15
Not Agree	Not Ex Post Best	26.56	11.79	16

PLANNED COMPARISONS:

Hindsight Treatment		Comparison[c]			
Agreement	Reported Outcome[b]	Mean	Standard Error	t(87)	p<
Agree	Ex Post Best	7.51	6.45	1.165	.24[d]
Agree	Not Ex Post Best	1.51	6.45	0.234	
Not Agree	Ex Post Best	18.89	6.45	2.930	.01[d]
Not Agree	Not Ex Post Best	-16.88	6.34	-2.660	.01[d]

[a]Ex ante agreement is between the decision advised by the evaluator and the decision made by the evaluatee.

[b]Reported outcomes are with respect to the evaluatee's decision. The "None" level is foresight.

[c]Hindsight appraisal - Foresight appraisal.

[d]One-tailed.

Figure Caption

Figure 1. Experimental Independent Variables.

Figure Caption

Figure 2. Hindsight effects on performance appraisals: Predictions based on cognitive and motivational explanations compared with experimental results.

EVALUATOR'S EX ANTE AGREEMENT WITH EVALUATEE'S DECISION	REPORTED OUTCOME: NO OUTCOME REPORTED	REPORTED OUTCOME: COMMITTEE'S DECISION IS THE EX POST BEST DECISION	REPORTED OUTCOME: COMMITTEE'S DECISION IS NOT THE EX POST BEST DECISION
AGREE	If Advice = $FP_A > FP_B$ Then: Committee Decision: $FP_A > FP_B$ Reported Outcomes: None --- If Advice = $FP_B > FP_A$ Then: Committee Decision: $FP_B > FP_A$ Reported Outcomes: None	If Advice = $FP_A > FP_B$ Then: Committee Decision: $FP_A > FP_B$ Reported Outcomes: IRR_A > Expected IRR_B < Expected --- If Advice = $FP_B > FP_A$ Then: Committee Decision: $FP_B > FP_A$ Reported Outcomes: IRR_B > Expected IRR_A < Expected	If Advice = $FP_A > FP_B$ Then: Committee Decision: $FP_A > FP_B$ Reported Outcomes: IRR_A < Expected IRR_B > Expected --- If Advice = $FP_B > FP_A$ Then: Committee Decision: $FP_B > FP_A$ Reported Outcomes: IRR_B < Expected IRR_A > Expected
NOT AGREE	If Advice = $FP_A > FP_B$ Then: Committee Decision: $FP_B > FP_A$ Reported Outcomes: None --- If Advice = $FP_B > FP_A$ Then: Committee Decision: $FP_A > FP_B$ Reported Outcomes: None	If Advice = $FP_A > FP_B$ Then: Committee Decision: $FP_B > FP_A$ Reported Outcomes: IRR_B > Expected IRR_A < Expected --- If Advice = $FP_B > FP_A$ Then: Committee Decision: $FP_A > FP_B$ Reported Outcomes: IRR_A > Expected IRR_B < Expected	If Advice = $FP_A > FP_B$ Then: Committee Decision: $FP_B > FP_A$ Reported Outcomes: IRR_B < Expected IRR_A > Expected --- If Advice = $FP_B > FP_A$ Then: Committee Decision: $FP_A > FP_B$ Reported Outcomes: IRR_A < Expected IRR_B > Expected

NOTE: FP = Funding Priority; A = Project A (Expanded Production Capacity);

B = Project B (New Product Line); IRR = Internal Rate of Return.

EVALUATOR'S EX ANTE AGREEMENT WITH EVALUATEE'S DECISION	REPORTED OUTCOME: EVALUATEE'S DECISION IS EX POST BEST	REPORTED OUTCOME: EVALUATEE'S DECISION IS NOT EX POST BEST
AGREE	EXPLANATION PREDICTION: COGNITIVE 0 KNEW-IT-ALL-ALONG + ESCALATION 0 EXPERIMENTAL RESULT 0	EXPLANATION PREDICTION: COGNITIVE 0 KNEW-IT-ALL-ALONG 0 ESCALATION + EXPERIMENTAL RESULT 0
NOT AGREE	EXPLANATION PREDICTION: COGNITIVE + KNEW-IT-ALL-ALONG 0 ESCALATION - EXPERIMENTAL RESULT +	EXPLANATION PREDICTION: COGNITIVE - KNEW-IT-ALL-ALONG - ESCALATION 0 EXPERIMENTAL RESULT -

Prediction/Result legend:

0 = performance appraisals not different in hindsight than in foresight,

\+ = performance appraisals more positive in hindsight than in foresight, and

\- = performance appraisals more negative in hindsight than in foresight.