The Deaf Effect Response to Whistle-Blowing in Information Systems Projects

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ABSTRACT

Project escalation is known to frequently occur in the context of information systems (IS) projects. The reluctance to hear bad news—a phenomenon that has been labelled the “deaf effect”—has been suggested as a possible reason for why projects are allowed to escalate for as long as they sometimes do. The deaf effect response to whistle-blowing has received little research attention, yet may account for many cases of project escalation. The research reported here provides a definition and description of conditions under which the deaf effect is likely to occur. The theory of how the deaf effect occurs is articulated based on Miceli and Near’s theory of whistle-blowing effectiveness and further elaborated using insights from the cognitive psychology literature of decision-making and source credibility. The extended theory was then tested experimentally using a role-playing experiment. Results suggest that when a decision maker perceives a relevant message, s/he is willing to de-escalate the project. Whistle-blower credibility and the salience of the message were found to be key factors in the determination of message relevance.

Keywords

Project management, deaf effect, whistle blowing, source credibility, decision making.

INTRODUCTION

Information systems project failures typically exhibit ample warning signs of impending failure, but for reasons that are not well understood, these warning signs are frequently ignored. In many cases, there are team members or even a single individual that seek to call attention to critical issues and ask for a delay or change of course in the project direction. In those cases, it is important to know why senior management did not heed the “whistle-blower” who warned them that the project was in danger of failing. This failure to heed the whistle-blower has been called the “deaf effect” (Keil et al. 2001). In this paper, we propose a theoretically grounded model of the decision process behind the response to whistle-blowing and conduct an exploratory study to investigate the causes the deaf effect.

It might be objected that this research while utilizing a scenario that is IS related, is not really about information systems research but rather about generic project management. We respond that if we accept the identity of the IS discipline proposed by Benbasat and Zmud (2003), which includes “the human behaviours reflected through the . . . planning, designing, constructing and implementing of . . . [IT] artifacts (p. 186),” we see that the study of the deaf effect falls clearly within that definition and therefore should be considered IS research.

Definition of Whistle-blowing and the Deaf Effect

Miceli and Near define whistle-blowing as “the disclosure by organization members (former or current) of illegal immoral or illegitimate practices under the control of their employers, to persons or organizations that may be able to effect action (2002, P. 456).” Bad news reporting on projects has been argued to fall within this definition, since broadly speaking, such actions represent illegitimate practices in the sense that they waste valuable resources and do not serve stakeholder interests..

Bearing on the effectiveness of whistle-blowing, Keil and Robey (2001) have described the “deaf effect” as a failure to respond to messages of impending project failure. The deaf effect may be defined as occurring when “the whistle-blower’s message is not heard, ignored, or over-ruled by a decision-maker.” This study distinguishes whistle-blowing from the deaf effect as follows: whistle-blowing refers to the signalling of problems within the project while the deaf effect refers to the response to the signals. Whistle-blowing thus covers the point in time from which the wrongdoing was uncovered through the
The Deaf Effect Response to Whistle-blowing

period of blowing the whistle to the final organizational response. The deaf effect occurs after the whistle has been blown while the decision-makers determine how to respond to the situation.

This paper introduces a theoretically grounded model of the decision process behind the response to whistle-blowing and examines some of the key factors that may cause the deaf effect response to whistle-blowing. The next section of the paper provides a brief overview of relevant literature on whistle-blowing, decision-making, and source credibility along with hypotheses to be tested. Then, we introduce the experimental design, present the results of the study, and briefly discuss its implications.

LITERATURE REVIEW

A review of the literature reveals that only one publication (Keil et al. 2001) has dealt with the deaf effect in information systems project management. There is “little research on the effectiveness of whistle-blowing” with “virtually no empirical research and little theory concerning the conditions associated with whistle-blowing effectiveness” (Miceli and Near, 2002, p. 456). Much of the work that has been done in this area is found in three publications by Miceli and Near (1992; 2002; 1995). While Miceli and Near have articulated a theory of whistle-blowing effectiveness, very little empirical research has been done.

In this section, we examine the literature related to whistle-blowing effectiveness, source credibility, and decision-making theory which can be used to inform a model of the deaf effect response to whistle-blowing.

Near and Miceli’s Model of Whistle-blowing Effectiveness

Near and Miceli (1995) describe a model of whistle-blowing effectiveness. They argue that the effectiveness of whistle-blowing is based on the personal characteristics (credibility and power) of the whistle-blower and the complaint recipient, moderated by the support for the whistle-blower and the wrong-doer as well as situational and organizational characteristics of the wrong-doing.

A whistleblower’s credibility can be affected by perceived motives, ability to convince others of their correctness, trustworthiness, power, and perceived value to the organization (Near and Miceli, 1995). Thus a well-respected whistle-blower in a position of power will be more effective than one who has little standing and resides in the lower echelons of the organization.

Miceli and Near (2002) tested three hypotheses related to whistle-blowing effectiveness: 1) Whistle-blowing will be more effective when it is role-prescribed, 2) Whistle-blowing will be more effective when whistle-blowers experience low levels of retaliation, and 3) Whistle-lowing is more effective when it does not use external channels for wrongdoing of low magnitude. They found hypothesis 1 and 2 were supported.

Source Credibility Theory

Miceli and Near (1995) identified the credibility of the whistle-blower as a strong determinant of whistle-blowing effectiveness. It is therefore appropriate to review the literature on credibility. This is referred to as source credibility in the literature. Source credibility theory has a long history within the psychology and marketing fields. Pornpitakpan (2004) has reviewed the source credibility literature over the past 50 years and identified the following characteristics.

Source credibility is primarily composed of two dimensions: Expertise, the extent to which a speaker is considered to be capable of making correct assertions and trustworthiness, the extent to which a speaker can be relied upon to make true assertions(Hovland et al. 1953). In general, a highly credible source is more effective in creating attitudinal or behavioral change than a source with low credibility. The expertise and trustworthy dimensions have differential weights; in general, trustworthiness has a larger impact than expertise (McGinnies et al. 1980). In terms of moderator variables, gender was not seen to have an effect on source credibility, although this area is not well researched (Pornpitakpan 2004).

Pornpitakpan then discusses the interaction between source credibility and message variables. Evidence and argumentation used by the source have mixed effects. The presence of unfamiliar evidence increased the credibility of the low credibility source, but left the high credibility source unchanged (McCroskey 1969; McCroskey 1970). The quality of arguments changed attitudes more for the high credibility source than for the low and decision-makers were more likely to act based on strong arguments of a highly credible source and least likely to act when the highly credible source gave weak arguments (Moore et al, 1986).

When the message disagrees with the recipients’ initial opinion, a highly credible source was more effective the more the message disagrees with the recipient’s opinions, while the low credibility sources were more effective with only a moderate
level of disagreement (Bochner et al. 1966). When faced with various kinds of threats (physical or social) for non-compliance with the message, the most effective in changing attitudes was the strong threat delivered by a highly credible source (Miller et al. 1969). A bias also seems to exist in the message style; low credibility sources tend to have their negative information rejected more significantly than positive information. Similarly, a high credibility source has the negative information given more credence than positive (Czapinski et al. 1979). Language intensity has a contrasting impact. For high credibility sources, it enhances their message, however for low intensity sources, it decreases their effectiveness (Hamilton et al. 1990).

**Heuristic-Analytic Theory**

In any non-trivial problem, finding a solution requires searching through a vast amount of possible solution paths. To explain how humans approach decision-making in such a context, Evans proposed the Heuristic-Analytic (HA) Theory (Evans, 1984; 1989; 1996), noting that humans are confronted daily with more information than can possibly be processed. To handle this onslaught of data effectively, humans developed heuristic processes to conserve their scarce processing power. And when one does think about these selected pieces of information, it is in the context of a mental model of the world rather than the actual world itself as the world is too large to comprehend totally. (Evans, 1989, p.111). Therefore, Evans (1989) believes that the major cause of bias in human reasoning lies in the heuristic processes adopted (p.112) to select information for processing (p. 19).

The HA theory is a general two stage theory of reasoning that postulates a largely unconscious heuristic pre-attentive stage in which information about the decision deemed relevant is selected for processing in a second analytic stage in which inferences are drawn (Evans, 1984; 1989, p. 25). Evans rejects consequentialist thinking that states all decisions are the result of a careful consideration of alternative actions. Rather, the HA theory postulates that thinking is selectively focused on ‘relevant’ parts of problems and that prior knowledge, heuristics, and schemas are retrieved as determined necessary by pre-attentive heuristics (Evans, 1996).

Additionally, Evans holds that if a heuristic fails to select a key piece of information or selects an irrelevant piece of information for processing, the subsequent analysis will be flawed. The analysis itself will be accurate only to the extent that the mental model of the world that one has constructed is accurate (1989, p. 111-112).

Evans identifies four mechanisms that are used within the heuristic stage to select information; availability, relevance, vividness/salience, and working memory capacity. These factors interact with each other. Information made salient by its presentation is more available. Vividness affects availability and relevance (Evans, 1989, p. 27). Availability refers to the ability to recall information when performing some cognitive task (Evans, 1989, p. 20, 21, 23). It becomes a source of bias when triggered by constraints in retrieval capability, expectancies and prior beliefs, or when it triggers one to recall incorrect information or heuristics. Availability is affected by such factors as primacy/recency and vividness/salience. Evans describes vividness/salience as information that has (1) emotional interest; (2) concreteness and imageability; and (3) temporal and spatial proximity (1989, p. 27). Salience ensures that attention will be paid to those features. Working Memory Capacity refers to the limited amount of memory available for storage of information (Evans, 1989, p. 28) given a large amount of information or complex information. Relevance, the output factor of the heuristic process, refers to available information that is selected by the heuristic process as necessary for consideration. The heuristic processes used here are influenced by factors such as perceptual salience, linguistic factors and effects of prior knowledge.

**Hypotheses**

Based on the literature, if whistle-blowers are considered credible within the organization, they will be more effective in terminating the offending behavior. Incorporating this in the H-A model of decision-making, the decision-maker’s heuristic process will have to select the whistle-blower’s message as relevant to their consideration. Thus, the following hypotheses:

**H1:** Messages considered relevant are more likely to result in decisions to terminate the negative course of action in information systems projects.

**H2:** High credibility whistle-blowers’ messages will be considered more relevant to the decision than those with low credibility

**H3:** High credibility whistle-blowers will be more effective in terminating the negative course of action in information systems projects.
EXPERIMENTAL DESIGN

Experimental Model

To test our hypotheses, we constructed an experimental model as follows:

\[
\text{Whistle-blower} \quad \rightarrow \quad \text{Credibility} \quad \rightarrow \quad \text{Perceived relevance} \quad \rightarrow \quad \text{Decision}
\]

Figure 1: Experimental Model

This model is a combination of insights from the literature described above. From heuristic-analytic decision theory, we see that salience of the message should have an influence on relevance of the message. From whistle-blowing literature, we see that credibility has an effect on the organization’s response. We hypothesize that the effect of credibility on the decision is fully mediated by the perceived relevance of the message.

We tested this model using a role-playing experiment with student subjects. While the use of student subjects can pose limitations in terms external validity, there is ample precedent for using student subjects in studies with organizational decision-making tasks (Sitkin et al. 1995) and, specifically, decisions associated with project management (Harrison et al. 1993; March et al. 1995). There is support in the literature for using students as surrogates for managers in studies that focus on decision-making and which do not require deep knowledge of particular domain. Remus (1986), for example, reported no differences in decision making between students and managers in the context of production scheduling. Locke (1986, p. 6) notes that “both college students and employees appear to respond similarly to goals, feedback, incentives, participation, and so forth, perhaps because the similarities among these subjects (such as in values) are more crucial than their differences.” Liyanarachchi and Milne (2005) have indicated that in situations where only psychological processes are being tested and not attitudes and knowledge that would be developed through experience, students stand as a good surrogate for experienced managers. Additionally, the role-playing scenario was constructed so as to place the subject in the role of a recent graduate, which provides a decision-making context that is close to what might be expected from the subject population.

Scenario Description

We created a role-playing experiment that included the elements of the deaf effect described above. Modelled partially on the Providian Trust case (McFarlan, 1997), the subjects were cast as a project manager responsible for development of a new system to be put into production. As part of standard procedures, an internal auditor has reviewed the project and given a negative report on its readiness for production. The auditor has not given specific or understandable reasons for why he believes the project will fail and the decision-maker was not given enough information to resolve the problem himself forcing him to rely on the assertions of others. Exogenous factors were introduced to motivate the subjects in the direction of putting the system into production. The decision-maker can choose to have a known problem in dealing with his management’s expectations if he chooses to delay the project, or an uncertain catastrophic problem if he implements the system and the auditor is right or no pain at all if the system implementation goes well.

Two alternate case scenarios manipulated the credibility of the auditor. In the positive scenario, the auditor was viewed as valuable to the company and had a track record of successfully evaluating projects. In the negative scenario, the auditor had a poor track record and the subject’s team and manager dismissed his credibility. As indicated by the source credibility literature, the lack of evidence produced by the auditor will not hurt him in the high credibility manipulation nor provide needed enhancement in the low credibility treatment. The scenario uses a negative message contrasting with the subject’s initial opinion, extreme language “disaster waiting to happen” and places the subject in a socially threatening environment, all aspects that should enhance the positively placed auditor and not enhance the negatively placed auditor.

In terms of the research model, the salience of the message, and message content were held constant. The credibility of the auditor, however, was manipulated. This allowed us to test the effect of the auditor’s credibility on the decision maker’s assessment of perceived relevance of the message.

Operationalization of Variables

The key experimental variables were operationalized using a set of questions with a Likert scale. The individual scale items for each variable were averaged together and centered prior to analysis.
Dependent Variable: Decision

The dependent variable, decision, was operationalized as a single, eight-point Likert scale question in which the subject was asked to choose to “Test Further” or “Move to Production”. Anchor points for the variable were “Definitely Test Further” and “Definitely Move to Production.” Intermediate points were “strongly”, “somewhat” and “slightly” on each side of the scale. While it might be thought that “decision” is a binary yes/no variable, we wanted to additionally measure the strength of their decision. We wanted to get a reading on whether they believed strongly in their decision.

Independent Variables: Relevance, Salience and Auditor Credibility

The independent variables were operationalized using multi-item seven-point Likert scale questions anchored with “Strongly Agree” and “Strongly Disagree” on the end points and “neutral” in the mid-point. The last relevance question was reverse scaled. We measured salience as a manipulation check to ensure that there was not a variation in salience of the auditor’s message between the scenarios.

Instrument

Students were instructed to read the scenario as described above and then were asked to make a decision as to whether to move the project into production (i.e., implement it) or delay the project for further testing.

A subsequent questionnaire (Appendix C) then asked for the reasons for their decision. Demographic data were collected for gender, age, country of origin, years lived in the US, years of full-time paid work experience, full time paid experience in IS programming, years of project management experience.

Subjects

In total, 61 subjects participated in the experiment. Participation was voluntary, anonymous, and without any extrinsic reward. All subjects were undergraduate business students enrolled in an Introduction to Computer Information Systems class at a Major Southeastern Public University (MSPU).

Validation of the instrument

The instrument was validated using a subject pool of 60 undergraduate students in an Introduction to Computer Information Systems class, combined with an additional nine professionals actively employed in the information systems field (yielding an n of 69). Reliability of the measures was assessed using Cronbach’s alpha. The five relevance questions had an alpha of .897; the four salience questions had an alpha of .806; and the three auditor credibility questions had an alpha of .693. The 12 measurement items tapping into the 3 constructs described above were subjected to factor analysis in order to examine discriminant validity. As expected, three components were extracted with the five relevance questions loading on the first factor, the four salience questions loading on the second factor, and the three auditor credibility questions loading on the third factor. Cross-loadings were relatively low, providing support for the validity of our measures.

Statistical Controls

A number of demographic variables were statistically controlled for in the study. Gender was coded (female = 0 and male =1) as was the class from which the samples were drawn, age, years in the US, years of full-time experience, information systems work experience, information systems programming and project management experience. These variables were centered prior to the analysis.

EXPERIMENTAL RESULTS

This section describes the results obtained from the study. In this study, causal linkages were noted moving in a single direction from salience and credibility to relevance and from relevance to the decision. While many behavioural studies are non-directional, there seemed to be only one logical possibility for movement in this study. Baroudi and Orlikowski (1989) indicate that in these types of studies, it is possible to adopt a one-tailed test, which was the approach taken here.

Demographics

The demographics of our subject pool can be seen in Table 1. Subjects had an average age of 20.5 years and an average work experience of 2.5 years. Fifty-seven percent of the subjects were female and 43% were male.
Descriptive Statistics and Manipulation Checks

We obtained 60 usable responses. Table 1 shows the descriptive statistics for the key variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision</td>
<td>2.83</td>
<td>1.924</td>
<td>60</td>
</tr>
<tr>
<td>Relevance</td>
<td>4.95</td>
<td>1.303</td>
<td>60</td>
</tr>
<tr>
<td>Salience</td>
<td>4.62</td>
<td>1.025</td>
<td>60</td>
</tr>
<tr>
<td>Perception of IA</td>
<td>4.472</td>
<td>1.33</td>
<td>60</td>
</tr>
</tbody>
</table>

Table 1: Descriptive statistics for the key variables

Table 2 shows the same variables split into treatment groups.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Variable</th>
<th>Mean</th>
<th>Standard Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative</td>
<td>Decision</td>
<td>3.26</td>
<td>2.016</td>
</tr>
<tr>
<td>N=31</td>
<td>Relevance</td>
<td>4.63</td>
<td>1.294</td>
</tr>
<tr>
<td></td>
<td>Salience</td>
<td>4.56</td>
<td>1.138</td>
</tr>
<tr>
<td></td>
<td>Perception of IA</td>
<td>3.67</td>
<td>1.128</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td></td>
<td>16 male/15 female</td>
</tr>
<tr>
<td>Positive</td>
<td>Decision</td>
<td>2.37</td>
<td>1.712</td>
</tr>
<tr>
<td>N=30</td>
<td>Relevance</td>
<td>5.26</td>
<td>1.26</td>
</tr>
<tr>
<td></td>
<td>Salience</td>
<td>4.68</td>
<td>.912</td>
</tr>
<tr>
<td></td>
<td>Perception of IA</td>
<td>5.28</td>
<td>.995</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td></td>
<td>11 male/19 female</td>
</tr>
</tbody>
</table>

Table 2: Descriptive Statistics by Treatment Group

Two tailed t-tests were performed at 5% alpha in order to determine significant differences in the scores between the two treatment groups. The critical value for this test is 1.671. These are shown in Table 3.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Difference</th>
<th>t-score</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision</td>
<td>.89</td>
<td>1.859</td>
<td>.068</td>
</tr>
<tr>
<td>Relevance</td>
<td>-.62</td>
<td>-1.897</td>
<td>.063</td>
</tr>
<tr>
<td>Salience</td>
<td>-.12</td>
<td>-0.438</td>
<td>.663</td>
</tr>
<tr>
<td>Perception of the auditor</td>
<td>-1.61</td>
<td>-5.868</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 3: Results of two tailed t-tests

These tests show that with the perception of the auditor varied significantly across the treatment groups. The manipulation therefore was effective. Salience, which was held constant, did not vary significantly indicating that the perception of the salience of the auditor’s message was stable across the treatments. The decision variable changed almost a point across the manipulations indicating that those receiving the positive manipulation were less likely to move the product into production than those receiving the negative manipulation. Similarly, the subjects receiving the positive manipulation had a higher perception of the relevance of the auditor’s message and a higher perception of the auditor.

The decision variable for both treatment groups showed that subjects had a tendency to favour delaying the product implementation.
Analysis of the Decision Variable Regression

An ordinary least squares regression analysis was run to test the experimental model described earlier. A hierarchical regression was used to assess the affects of the control variables before adding the effects of message relevance, message salience and auditor credibility on the decision. The adjusted $R^2$ of the demographic variable (Gender, age, class section, years in the US, years programming experience, years project management experience) step was only .120 and was not significant. Adding the relevance, salience and auditor credibility variables in the second step increased the adjusted $R^2$ to .586 and .000 significance. At this level, relevance, gender, and auditor credibility were found to be the only significant variables. Figure 6 shows this graphically, the numbers show the unstandardized coefficient and significance values.

![Figure 2: Decision Variable Regression](image)

This shows that the relevance of the auditor’s message is strongly negatively correlated with the decision to put the system into production as predicted by our model. It is also noted that gender has an influence. Male subjects were more likely to put the system into production. The perception of the auditor’s credibility also decreases the willingness of the subject to put the system into production. The auditor’s credibility and the salience of the message covary with the decision. Determinants of relevance were then examined to see if these factors were significant influences there.

Relevance Regression

In a hierarchical regression analysis, demographic variables (Gender, age, class section, years in the US, years programming experience, years project management experience) were not found to be significant. Adding the salience and the auditor perception variables was found to be significant and raised the adjusted $R^2$ to .623. Here the salience of the auditor’s message was significant at the .000 level with a beta of .888, Years of project management experience was significant at the .047 level with a beta of -.705, however given the relatively small number of subjects with this experience in the sample, the result was not considered meaningful. The perception of the auditor’s credibility was significant at the .045 level with a value of .159.

![Figure 3: Decision Variable Regression](image)

The relevance of the auditor’s message co-varied with the salience of the message and perception of the auditor’s credibility as predicted by our model.

Mediation Effects Analysis

The experimental model portrays that the effects of the salience of the auditor’s message and the credibility of the auditor on the decision are mediated by the relevance processing. The classic article on the methodology of the analysis of mediation is that of Baron and Kenny (1986) in which they describe a four step method utilizing bi-variate regressions for assessing mediation effects using standard regression methodology. Shrout and Bolger have since proposed a revised procedure to the principles in Baron. They also introduce the effect ratio (computed as the indirect effect/total effect of the variable) as a
measure of the strength of the mediation. We adopted the path analytic method of Shrout and Bolger to perform the mediation analysis in this article.

Two different mediation effects were examined within the model. They are shown in Figure 4 with their associated beta’s and p values.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditor Credibility</td>
<td>-.247</td>
<td>.038</td>
</tr>
<tr>
<td>Message Relevance</td>
<td>-.068</td>
<td>.000</td>
</tr>
<tr>
<td>Decision</td>
<td>.893</td>
<td>.000</td>
</tr>
<tr>
<td>Message Salience</td>
<td>.210</td>
<td>.201</td>
</tr>
</tbody>
</table>

**Figure 4: Mediation Effects Model**

Both auditor credibility and salience had total effect sizes (-.906 and -.558 respectively) that were strongly significant and negatively related showing that when the auditor was credible and the message had salience that it decreased the willingness of the subject to move the project into production. Similarly, both variables were both positive and significant on their effects on the relevance variable showing that they both had a positive effect on the relevance of the auditor’s message. The indirect effects of the variables through the perceived relevance processing were both negative (-.1667 and -.953 respectively). The residual effects were -.247 for credibility but salience was not significant indicating that its effect was mediated by perceived relevance, while approximately 70 per cent of the auditor credibility was mediated by perceived relevance leaving 30% as a direct effect on the decision.

**DISCUSSION**

Three hypotheses were tested:

**H1:** Messages considered relevant are more likely to result in decisions to terminate the negative course of action in information systems projects.

**H2:** High credibility whistle-blowers’ messages will be considered more relevant to the decision than those with low credibility

**H3:** High credibility whistle-blowers will be more effective in terminating the negative course of action in information systems projects.

We found evidence supporting all of our hypotheses. We found that relevant messages from the auditor were strongly significant and decreased the decision rating by one full point indicating that to the extent that the message is found to be relevant, the likelihood of changing course in information systems projects is increased. Thus hypothesis 1 is supported. It was found that the credibility of the whistle-blower does co-vary with the relevance measure. Whistle-blowers with higher credibility tended to have their messages viewed as relevant in the context of information systems projects. Hypothesis two was thus confirmed. We also found that credibility co-varies with the decision with 30% of its effects being on the decision, which confirms hypothesis three. Thus, the whistle-blower credibility not only affects how the subjects view the relevance of the message to their decision, it also directly influences the subjects’ decision.

The salience of the message has a strong effect on its relevance. The fact that salience is fully mediated by relevance shows that its whole function is to make the message relevant to the decision-maker.

Both treatment groups were strongly in favor of delaying the project. Even in the negative treatment group, where the credibility of the auditor was significantly questioned, the subjects opted to delay. One explanation for this effect stems from the position of the auditor. Miceli and Near (2002) found that whistle blowing is more effective when role-prescribed. In the descriptive comments section of the questionnaire, several of the subjects referred to credibility that accrued to the auditor as a result of his role or the unwillingness to contradict the auditor even in the face of negative comments by their team members and manager.

In an unexpected result, it was found that gender had an effect on the decision. Women were more likely to delay the project than men. One possible explanation for this difference is that women are more willing to accept personal negative impacts in
order to avoid negative impacts to the organization. Because the whistle-blower credibility was not fully mediated by perceived relevance and gender had an effect on the decision, we must modify the experimental model by adding gender as an effect on the decision and an effect from whistle-blower credibility to the decision point. The revised model is shown in Figure 5.

![Figure 5: Revised Model](image)

**CONCLUSION**

In this paper, we examined the deaf effect response to whistle blowing in information systems project management in terms of Miceli and Near (2002), Evans’ Heuristic-Analytic theory of decision making and source credibility theory. We created an experimental model experiment that hypothesized that the salience of the message and credibility of the whistle-blower affected how relevant the decision maker found the whistle-blower’s message. We tested the model in a role-playing experiment and found support for the basic propositions of the theory examined. The effects of salience appear to be fully mediated by the relevance processing to the decision. Whistle-blower credibility is partially mediated by the relevance processing and has an effect on the decision. Evidence has been developed that the basic information paths exist.

The whistle-blower credibility results also support by Miceli and Near’s proposal that whistle-blowers that are more credible are more effective in terminating the offending behavior. The experiment has shown that when an internal auditor is perceived as credible, the subjects are more likely to stop the project for further testing.

Additional research is required to provide additional development of this theory. The study should be repeated with other subjects to test for generalizability. Variations of the study should be conducted with subjects asked to play roles that do not have a role prescription for whistle-blowing to see whether this influences the deaf effect. More research is also needed to explore the effect of gender that was observed in this study.

The other areas of the model also need to be explored. Does the presence of additional “noise” in the communication channel contribute to the decision maker not perceiving that a message is trying to be sent? What other perceptual features other than salience are critical to the relevance determination? What other heuristics are used to determine relevance? The entire analytic processing section needs to be researched. What is the process in which the decision is made? How is credibility considered? What factors beyond credibility are considered in the analytic portion of the decision?

Those questions aside, we have shown evidence that the deaf effect response to whistle-blowing is founded in the perceived relevance of the whistle-blower’s message which in turn is influenced by his/her perceived credibility and salience of the message.

**REFERENCES**


APPENDIX A: SCENARIO WITH POSITIVE CREDIBILITY MANIPULATION

Instructions

1. The following scenario is part of a study in business decision-making.

2. Read the scenario completely and thoroughly before you go to the next page.

3. Adopt the role of the project leader and then answer each of the questions in order as the project leader would answer them.

   This is not a test.  
   There are no right answers or wrong answers.

4. Please, do not discuss this study with anyone outside of this room.

Blackstone Bank is one of the top ten banks in the southeastern United States. You joined the bank in their IT department soon after you finished school. You consider the IT department a “tough but fair” place to work. The management team has a low tolerance for poor performance. Project managers have been fired or demoted for late delivery or poor product quality. On the other hand, significant bonuses have been known to be awarded for on-time, high quality deliveries.

Six months ago, you were named to lead your first project. With this assignment, you became responsible for development of a new system with the opportunity to earn a significant bonus for on-time implementation of the system. The technology being used is unfamiliar to you so you are dependent upon your team members to track the status of the project.

Your team has impressed you with their competence and work ethic. They have cooperated with you at every turn and you’ve not had to supervise them closely to ensure that work gets done. Your experience with them suggests that you can trust what the team is telling you.

Development has now been completed. Your team has indicated that the system is ready to go. It is standard procedure to have the internal auditor review all systems prior to implementation. Blackstone’s auditor is a well-respected leader in his field with a very mature evaluation methodology, so you look forward to reading his report. Within the company, he is credited with saving the company millions of dollars and his word is unquestioned.

After the auditor reviewed your project’s documentation, he told you that your system was effectively untested, a “disaster waiting to happen” and that you needed to rigorously test everything. When you asked the auditor to explain his reasoning, he talked a lot about decision trees, regression testing and other things you didn’t understand. He left you a copy of his report, wished you luck and left your office.

When you reviewed the report with your programming team, they cited their years of experience in the profession, with this technology and success on other projects arguing that, contrary to the auditor’s report, the system was ready to go.

When you tried to discuss the situation with your manager, he pointed out that the VP of Information Systems had promised the VP of Operations that the system would be implemented by next month and would be extremely displeased if that didn’t occur. In which case, you had better have a good justification for your actions because YOU were going to have to explain it to him. Bad project managers had been fired or demoted before and he would hate to see your career ruined before it had really begun. At which point he told you get with your team and figure out what you were going to do.
As you left his office, you saw two courses of action. You could decide to delay the project for **further testing and evaluation**, in which case you would have to justify your decision in front of the VP of Information Systems. Or, you could decide to **move the system into production as scheduled** and collect your bonus if it went well or face the unthinkable if the system failed.

You must decide which of the two courses of action to take.
APPENDIX B: SCENARIO WITH NEGATIVE CREDIBILITY MANIPULATION

Instructions

5. The following scenario is part of a study in business decision-making.

6. Read the scenario completely and thoroughly before you go to the next page.

7. Adopt the role of the project leader and then answer each of the questions in order as the project leader would answer them.

This is not a test.
There are no right answers or wrong answers.

8. Please, do not discuss this study with anyone outside of this room.

Blackstone Bank is one of the top ten banks in the southeastern United States. You joined the bank in their IT department soon after you finished school. You consider the IT department a “tough but fair” place to work. The management team has a low tolerance for poor performance. Project managers have been fired or demoted for late delivery or poor product quality. On the other hand, significant bonuses have been known to be awarded for on-time, high quality deliveries.

Six months ago, you were named to lead your first project. With this assignment, you became responsible for development of a new system with the opportunity to earn a significant bonus for on-time implementation of the system. The technology being used is unfamiliar to you so you are dependent upon your team members to track the status of the project.

Your team has impressed you with their competence and work ethic. They have cooperated with you at every turn and you’ve not had to supervise them closely to ensure that work gets done. Your experience with them suggests that you can trust what the team is telling you.

Development has now been completed. Your team has indicated that the system is ready to go. It is standard procedure to have the internal auditor review all systems prior to implementation. The other project leaders consider the auditor to be somewhat of a joke, indicating that he tends to “cry wolf” and exaggerate issues to get his point across.

After the auditor reviewed your project’s documentation, he told you that your system was effectively untested, a “disaster waiting to happen” and that you needed to rigorously test everything. When you asked the auditor to explain his reasoning, he talked a lot about decision trees, regression testing and other things you didn’t understand. He left you a copy of his report, wished you luck and left your office.

When you reviewed the report with your programming team, they cited their years of experience in the profession, with this technology and success on other projects arguing that, contrary to the auditor’s report, the system was ready to go.

When you tried to discuss the situation with your manager, he became angry and indicated that the auditor had never identified a serious problem and often overstated problems in an attempt to show his value to the company. He then pointed out that the VP of Information Systems had promised the VP of Operations that the system would be implemented by next month and would be extremely displeased if that didn’t occur. In which case, you had better have a good justification for your actions because YOU were going to have to explain it to him. Bad project managers had been fired or demoted before and he would hate to see your career ruined before it had really begun. At which point he told you get with your team and figure out what you were going to do.
As you left his office, you saw two courses of action. You could decide to delay the project for *further testing and evaluation*, in which case you would have to justify your decision in front of the VP of Information Systems. Or, you could decide to *move the system into production as scheduled* and collect your bonus if it went well or face the unthinkable if the system failed.

You must decide which of the two courses of action to take.
APPENDIX C: DATA COLLECTION INSTRUMENT

1. Please indicate what you will decide, and how strong that decision will be. (Mark only one of the eight boxes)

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- Definitely
- Strongly
- Slightly
- Somewhat
- Slightly
- Somewhat
- Strongly
- Definitely

2. Please briefly explain why you made the decision you did to question 1:

____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________

3. Your gender (please circle one choice only): Male Female

4. Your age (whole numbers only): _____ Years

5. The country in which you were born: ________________________

6. The number of years you have lived in the United States (whole number only): _____

7. The total number of years, full-time, paid work experience you have in any capacity (whole numbers only): _____

8. The total number of years, full-time, paid experience in information systems support (whole numbers only): _____

9. The total number of years, full-time, paid experience in IS programming (whole numbers only): _____

10. Number of years of project management experience (whole numbers only) _____
11. The internal auditor’s assessment was **highly relevant** in forming my decision.

12. The internal auditor’s assessment was **very important** in forming my decision.

13. My decision was **most influenced** by the internal auditor’s assessment.

14. My decision was **more influenced** by the internal auditor’s assessment than any of the other views expressed.

15. In making my decision, I dismissed the internal auditor’s information.

16. The internal auditor’s assessment was the **outstanding** information in the scenario.

17. The internal auditor’s assessment seemed to **stand out**.

18. The internal auditor’s information was the **most noticeable** information in the scenario.

19. The internal auditor’s assessment was the **most prominent** information in the scenario.

20. I used information from my past experience in addition to information from the scenario to help me make my decision.

21. The Internal Auditor is the **most credible** person in the scenario.

22. The internal auditor is **highly regarded** by executives in the company.

23. The internal auditor is motivated by a desire to see **things done correctly** for the bank.