CHOICE AVOIDANCE IN MANAGERIAL ACCOUNTING DECISIONS

Kimberly M. Sawers

A dissertation submitted in partial fulfillment
of the requirements for the degree of

Doctor of Philosophy

University of Washington

2002

Program Authorized to Offer Degree: School of Business Administration

UMI Number: 3063011

ProQuest Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

In presenting this dissertation in partial fulfillment of the requirements for the Doctorial degree at the University of Washington, I agree that the Library shall make its copies freely available for inspection. I further agree that extensive copying of the dissertation is allowable only for scholarly purposes, consistent with "fair use" as prescribed in the U.S. Copyright Law. Requests for copying or reproduction of this dissertation may be referred to ProQuest Information and Learning, 300 North Zeeb Road, Ann Arbor, MI 48106-1346, to whom the author has granted "the right to reproduce and sell (a) copies of the manuscript in microfilm and/or (b) printed copies of the manuscript made from microfilm."

Signature Kimberly M. Sawyer

Date July 5, 2002

University of Washington
Graduate School

This is to certify that I have examined this copy of a doctorial dissertation by

Kimberly M. Sawers

and have found that it is complete and satisfactory in all respects,
and that any and all revisions required by the final
examining committee have been made,

Chair of Supervisory Committee:

S. Jane Kennedy

Reading Committee:

S. Jane Kennedy

Kathryn Kadous

James Jiambalvo

Terence R. Mitchell

Date: July 5, 2002

University of Washington

Abstract

CHOICE AVOIDANCE IN MANAGERIAL ACCOUNTING DECISIONS

Kimberly M. Sawers

Chairperson of the Supervisory Committee:
Associate Professor S. Jane Kennedy
School of Business Administration

Managers often delay making decisions when decision tools indicate a preferred alternative. This avoidance behavior is costly. I posit this tendency to delay arises from the conflict inherent in choice and the manager's resulting negative affect. In this study I examine two dimensions of choice difficulty which cause conflict and are posited to increase negative affect and, as a result, increase the tendency of individuals to avoid action. Specifically, I investigate the influence of (1) tradeoffs of difficult-to-compare features and (2) tradeoffs of highly valued goals on an individual's tendency to avoid choice when analysis indicates action would be appropriate. In an experiment with one hundred twenty executives, participants with either difficult-to-compare features or difficult tradeoffs report higher levels of decision difficulty, negative affect and desire to postpone than participants in a control group. In addition, I investigate the efficacy of two potential remedies.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Acknowledgements

I would like to express my appreciation and gratitude to Jane Kennedy (my chairperson) and Kathryn Kadous for their guidance, encouragement and support. Both have been excellent mentors and very generous with their time and energy. I would like to thank the other members of my dissertation committee, James Jiambalvo, Terrence Mitchell and Edward Rice for their enthusiasm for my topic and their valuable comments. In addition, I am thankful for the helpful comments from the participants at the University of Washington accounting workshop especially Frank Hodge, Dawn Matsumoto and Shiva Rajgopal. I am grateful for funding from the Arthur Anderson Foundation and the University of Washington Business School Lorig Fellowship. I would especially like to thank the staff in the University of Washington Executive MBA program for helping coordinate administration of the experiment and the Executive MBA students who donated their time to participate in this project.

Dedication

This dissertation is dedicated to my husband, Thomas Sawers, and my sons, Ian, Robert, Ryan, and Tyler. Their love, support, encouragement and tolerance made it possible for me to pursue my dreams. I would also like to dedicate this dissertation to my mother, Anita Bingaman, whose life serves as my example, my stepfather, Mel Bingaman, who was always ready to discuss my topic, my sister, Dianne Arpin, whose friendship I cherish and who never lets me whine and the rest of my family for their continued support and encouragement.

Chapter 1: Introduction

To best serve stockholders of an organization, managers should undertake investments that earn a marginal return greater than or equal to the opportunity cost of capital (Copeland and Antikarov, 2001). Managerial accounting provides tools to organize and evaluate financial information to aid managers in making these types of decisions. Typically, individuals undertake an evaluation process with the goal that once the process is complete a choice will be made and action taken. Yet, anecdotal evidence suggests that managers do not always take action on projects that have undergone analytical evaluation and for which the analysis indicates action is appropriate. Rather, after evaluation and consideration of recommended solutions, decisions are often not made and the same issues resurface for evaluation at a later date. When managers do not undertake investments for which the marginal return is greater than or equal to the opportunity cost of capital, they are not acting in the best interest of stockholders and are open to criticism for being indecisive, or for not being able to make the "hard" decisions. This phenomenon is troubling, particularly when standardized decision tools indicate a clear preference.

Failure to take action after analysis is called decision delay, analysis paralysis, procrastination, or choice avoidance. Hereafter I will use the term "choice avoidance" to indicate a state in which the decision-maker does not make a final decision, but chooses to wait and possibly revisit the issue at some time in the future. Choice avoidance can be costly for organizations in terms of time, effort and lost opportunities. In addition, avoidance can create agency problems. O'Donoghue and Rabin (1999a, 1999b, 2001)

develop a series of analytical models that describe choice avoidance as an avoidance of immediate costs to the decision maker. They argue that delay occurs because individuals are focused on the present, fail to adequately consider future costs of action and are overly optimistic that they will take action in the future. These models show that delayed action can lead to welfare loss and that, within a business setting, it can create agency problems. The individual is able to avoid his cost of action by imposing the cost of delay on the company.

Although these models support the belief that choice avoidance is costly, there are benefits to delay in some circumstances. Delay can be a rational response to variability in the inputs to the evaluation model. Real options analysis indicates a benefit to waiting when three factors are present: 1) there is high uncertainty about inputs to the decision and a high likelihood that new information will be received over time, 2) managers have the flexibility to respond appropriately to the new information, and 3) the traditional Net Present Value of the project is close to zero (Copeland and Antikarov, 2001). For example, assume that an expansion investment has a small positive NPV based on an expected increase in the market price of a product, but there is significant variability in future product prices. In addition, the manager expects to learn more information over time and has the ability to act on the new information. In this situation, if the manager waits to reduce uncertainty about the future price, he or she may be able to make a better decision about expansion. Under these conditions, waiting may be valuable. However, if there is less uncertainty about the future product price or the manager is unable to gain or act on new information, then waiting will be costly.

In the absence of any of the three conditions stated above, choice avoidance is costly to an organization. When inaction is costly, it is important to examine why it occurs and what can be done to prevent it. The psychology literature has described avoidance behavior as a mechanism to cope with negative affect.[1] Having to make a choice, whether personal or business, involves conflict, and conflict leads to negative affect (Einhorn and Hogarth, 1981). Avoiding choice alleviates the individual's negative affect (Luce, 1998). While choice involves some level of negative affect, the level of negative affect and tendency to avoid choice may be higher with more difficult choices. In this study, I examine two dimensions of choice difficulty that I expect will increase negative affect in a business decision and, as a result, increase the tendency of individuals to avoid choice. Specifically, I investigate the influence of 1) tradeoffs of difficult-to-compare features, and 2) tradeoffs of goals that are highly valued or emotion laden on an individual's tendency to avoid choice in a business decision when analysis indicates that action would be appropriate. In an experiment with 120 executives, I find that participants receiving either of the choice difficulty manipulations report higher levels of decisions difficulty, negative affect and desire to postpone than participants in a control group.

[1] Affect is a general term that can describe global moods or specific emotions. Global moods are characterized as being diffused and unfocused, while emotions are more specific reactions to particular events (Schwarz and Clore, 1988). An emotion is a response to a specific cause, intensified over a short period of time, and is relatively short in duration. While mood states can influence a wide variety of different judgments, emotions are more restricted and typically influence the specific judgments related to the generation of emotion. In this paper I use the general term "affect" to refer to emotions.

Prior psychology studies have examined the relation between choice avoidance and choice difficulty using simple choices, such as choosing between two CD players, with students as participants. Choice avoidance, however, has not been examined in complex business decisions for which analytical tools are used by trained managers. Managerial accounting provides a number of analytical tools to help managers evaluate complex decisions. One tool, net present value (NPV), helps managers quantify all cash flows related to an investment decision and provides a summary measure that should allow an objective comparison between alternatives, even when the individual features of the investments differ. As a result, avoidance should be less likely in situations in which this analytical tool is used. In addition, a number of accounting studies have shown that trained managers and accountants do not respond in the same way as students, especially in tasks for which they have training and experience (Smith and Kida, 1991, Vera-Munoz, 1998) making avoidance less likely when managers are making business decisions. Finally, business decisions may be less likely to be influenced by emotions than personal decisions.

The findings in this study make several contributions to the literature. First, I document that choice avoidance occurs in business decisions when decision-making tools are used by experienced managers. This has not been shown in prior studies and contributes to research in both managerial decision making and psychology. Second, I examine the effectiveness of two different mechanisms that may help managers overcome inaction. Prior studies have shown that simply drawing an individual's attention to their internal states may be enough to mitigate the influence of affect on

subsequent decisions (Kadous, 2001). Other studies, however, indicate that avoidance is a mechanism to cope with negative affect and that by changing the way individuals work through a difficult decision may reduce the tendency to avoid choice. I test whether such mechanisms will mitigate the influence of negative affect on the tendency to avoid choice. I find that only one of the mechanisms, changing the way individuals work through the decision, reduced participants' desire to postpone the decision.

The remainder of this dissertation proceeds as follows. Chapter 2 outlines theory and hypothesis development. The experimental design, participants and procedures are described in chapter 3, and the results are reported in chapter 4. The conclusion follows in chapter 5.

Chapter 2: Theory and Development of Hypotheses

Normative models of decision making suggest that alternative X will be chosen over alternative Y if and only if E (X) > E (Y) (Einhorn and Hogarth, 1981). Such normative models imply that evaluation is sufficient for choice. However, empirical studies show that even when evaluation of alternatives provides an expected value ordering, it may not induce choice or action (Tversky and Shafir, 1992, Einhorn and Hogarth, 1981).

Avoidance behavior, in general, is a mechanism to cope with negative affect (Folkman and Lazarus, 1988, Lazarus, 1991). Prior psychology literature has identified loss of freedom, fear of regret and choice difficulty as factors that increase negative affect, and, as a result, may increase choice avoidance. Loss of freedom, also called reactance, can motivate an individual to restore or preserve that freedom (Brehm and Rozen, 1971). Any force that makes it difficult to exercise a freedom constitutes a threat (Brehm and Brehm, 1981). Making a decision can pose a threat to the freedom to choose other alternatives and, as a result, cause an individual to feel a loss and to react to preserve the threatened freedom by avoiding a choice.

Regret is experienced when an individual realizes or imagines that the present situation would be better had he acted differently. In addition, people may anticipate future regrets and make tradeoffs in their decision making to avoid or minimize anticipated regret (Zelenberg, Inman and Pieters, 2001, Zelenberg and Beattie, 1997). Individuals tend to avoid situations where they might appear to have made a wrong choice, even if the pre-decision evidence indicates that the choice should have been made

(Samuelson and Zeckhauser, 1988). Moreover, individuals feel more regret for bad outcomes that are a consequence of new actions than for similar bad consequences resulting from inaction (Tversky, 1982).

Choice difficulty occurs when the features of the choice set become more difficult to compare (Tversky and Shafir, 1992) or the features are difficult to tradeoff (Beattie and Barlas, 2001). Individuals experience negative affect as they try to resolve the conflict. Tversky and Shafir (1992) argue that individuals are more likely to avoid choice when conflict is high.

Each of the factors discussed above describe avoidance as a result of negative affect. The difference lies in how the negative affect is created and whether the affect is anticipated or experienced. For loss of freedom, negative affect is a result of a threat to one or more of the decision maker's options. For fear of regret, negative affect is a result of fear of making a wrong choice or from prior experience or imagined regret. Fear of regret may be an anticipated negative affect. For choice difficulty, the negative affect is a result of the features of the choice set and is experienced at the time of the decision. While each of these factors may influence a business decision, I focus on choice difficulty because it deals with the basic elements of a business decision, i.e., the features of the alternatives under consideration. Managers use analytical tools to quantify and summarize features and, as a result, it may seem unlikely that the features would cause negative affect in a business decisions. As a result, choice difficulty appears to be the best starting point to investigate why managers do not take action when analysis indicates action is appropriate.

Focusing on choice difficulty, I posit that managers avoid or delay choice as a mechanism to cope with negative affect that arises from making a difficult choice. Figure 1 illustrates the posited relationship between choice difficulty, conflict, negative affect, and choice avoidance. I will discuss each relationship in turn.

2.1 Choice Difficulty and Negative Affect

Making a choice involves conflict or internal tension attributed to a clash between opposing or contradictory impulses (Weber, Baron and Loomes, 2001). Conflict is associated with feelings of anxiety, worry and unease, i.e., negative affect (Luce, 1998). Some level of conflict arises naturally because choice implies commitment to a course of action, which restricts freedom to choose other alternatives (Brehm and Brehm, 1981). In addition, upon choosing one course of action a decision-maker may feel a sense of regret for lost opportunities and responsibility for the current action. Conflict can arise from the alternatives not being completely good or completely bad. The decision-maker may fear failure and believe it is better to have a bad outcome as a result of inaction than a bad outcome as a result of his or her action (Samuelson and Zeckhauser, 1988). In addition, action requires effort, and the decision-maker may be working at capacity and have little or no remaining capacity (energy) for action. Finally, action implies change, and change can be stressful. In summary, conflict, and as a result, negative affect, are inherent in choice.

Characteristics of the choice set or context can influence the level of conflict. When choice difficulty increases, conflict increases (Tversky and Shafir, 1992). For

example, the alternatives under consideration may be difficult to compare or may require trade-offs of highly valued goals (Beattie and Barlas, 2001). Tversky and Shafir (1992) argue that the level of conflict not only influences the psychological state of the decision-maker, but also which alternative is chosen or whether choice occurs at all. As choice difficulty increases, the amount of negative affect increases. The greater the negative affect, the greater the tendency to avoid choice.

2.2 Negative Affect and Choice Avoidance

I posit that individuals respond to high levels of negative affect by avoiding choice. Two theories of how individuals respond to negative affect are potentially relevant to this setting. These theories are both plausible and are not mutually exclusive. The first theory posits that individuals use their affective states as information when making evaluative judgments (Schwarz and Clore, 1983, 1988). In making complex evaluations and judgments, individuals may consult their feeling and use a "How do I feel about it?" heuristic as a piece of information that may bear on the judgmental task. Some judgments refer to one's affective reaction to a target. For example, a response to "how likeable is Mary?" refers to one's affective reaction to Mary. Other judgments e.g. "which capital investment should I approve?" may not refer directly to one's affective reaction, but may pose a task that is very complex and demanding. When the judgment task is demanding, it can be simplified by assessing one's affective reaction about the target (Schwarz and Clore, 1988).

Similarly, Loewenstein, Weber, Hsee and Welch (1999) postulate that evaluations of risky situations are influenced in part by emotions including feelings such as worry, fear, dread, or anxiety. For example, Loewenstein, et al. report that individuals judge the riskiness of investment options as higher when self-reported feelings of worry, concern and agitation increase; individuals choose safer investments with lower payoffs when fear and loss aversion increase; and negative affect leads to altered coping strategies and avoidance of decisions. Koonce, McAnally and Mercer (2001) find that investor's judgments regarding the risk of financial items are influenced by the degree to which they worry about the financial items. In addition, Kida, Moreno and Smith (2001) find that managers avoid investment alternatives that are associated with negative interpersonal relations. These studies indicate that increases in negative affect are likely to influence subsequent evaluation of an alternative and judgments and choices.

The studies cited above indicate that individuals use negative affect as information when they evaluate how they feel about a target (Schwarz and Clore, 1983, 1988) or when they make judgments regarding others (Kadous, 2001). These findings, however, may not generalize to a business decision where individuals do not typically access their feelings in the evaluation process.

A second theory suggests that individuals use one of two mechanisms to cope with negative affect 1) problem-focused coping, or 2) emotion-focused coping (Lazarus, 1991). Problem-focused coping involves actions designed to improve one's situation by deliberately altering the environment and/or oneself. When problem-focused coping is used, decision makers tend to use more relevant information and their choices tend to be

more alternative based. Emotion-focused coping, in contrast, alters only the perception of the situation, either by attentional deployment through avoidance or by changing the meaning of the situation through, for example, denial or distancing. Decision makers tend to use less of the relevant information and if they make a choice, their choices tend to be more attribute-based.

Lazarus (1991) argues that individuals are simultaneously motivated toward both coping mechanisms in response to negative affect. Decisions that generate negative affect signal that the decision is important and, as a result, individuals are motivated to make a good decision by increasing the extent of information processing and the amount of time spent on the decision process (problem-focused coping). However, as the individual struggles to resolve difficult-to-compare features or difficult tradeoffs, the individual is motivated to minimize or avoid the negative affect related to the conflict (emotion-focused coping). As a result, the individual is motivated to avoid making the decision or avoid dealing with the specific attributes causing the conflict by basing the decision on a single feature or attribute. Both behaviors could be described as avoidance behaviors.

In the case of managerial decision makers, I expect that individuals with high levels of negative affect caused by having to make a difficult choice will either infer from negative affect that the "best" alternative is not good enough or respond to negative affect by choosing emotion-focused coping. As a result, they will avoid choice. I predict that, even with analytical tools, individuals will avoid choice when decisions involve higher

levels of choice difficulty. The remainder of this section will discuss two dimensions of choice difficulty.

2.3 Choice Difficulty and Choice Avoidance

There are several factors that may increase choice difficulty. I examine two dimensions of choice difficulty that I expect will increase negative affect in a business decision and, as a result, increase the tendency to avoid choice. Specifically, I investigate the influence of 1) tradeoffs of difficult-to-compare features, and 2) tradeoffs of highly valued goals on an individual's tendency to avoid choice in a business decision.

Previous research has found an association between choice difficulty and choice avoidance. Tversky and Shafir (1992) hypothesized that individuals are more likely to avoid choice when conflict and associated negative affect is high. Negative affect is high when the features or attributes of the alternatives are not directly comparable. In the first of two studies, Tversky and Shafir (1992) asked subjects to make choices between gambles or between apartments. The choice combinations either were or were not directly comparable. For example, a gamble that compares a 65% chance to win $15 to a 65% chance to win $14 is a directly comparable choice. In contrast, a gamble that compares a 65% chance to win $15 to a 30% chance to win $35 is not, on the surface, directly comparable. From the normative standpoint, the only difference between the choice pairs is the presentation – one pair is more directly comparable than the other pair – because in each case an expected value ordering can be derived.

Tversky and Shafir (1992) asked their participants to indicate whether they wanted to select from the gambles described above or if they wanted to add another gamble to the choice set at a cost of $1. A greater proportion of participants in the not-directly-comparable condition chose to add another gamble. Not choosing between the gambles presented, but rather adding another gamble, is a type of avoidance behavior because an expected value order could be derived with the original set. The results show that the willingness to purchase additional alternatives depends on the difficulty of comparing the options under consideration. Importantly, avoidance occurs even when it is costly (the additional gamble cost $1 in their study).

Tversky and Shafir (1992) also asked participants to indicate whether they wanted to purchase a CD player or to delay the purchase. They found that when a choice set was made up of two CD players with difficult-to-compare features, more participants chose to delay the purchase. In a follow-up study, Tversky and Shafir (1992) found that when two CD players with easy-to-compare features were in the choice set, fewer participants chose to delay. These results support the assertion that avoidance behavior is a result of choice difficulty. In these cases, the difficulty arose from having to choose between alternatives with difficult-to-compare features.

Beattie and Barlas (2001) conducted a number of studies examining factors that make a decision difficult and, as a result, increase conflict. Consistent with the research cited above, they report that choice difficulty increases when items are difficult to compare and when they are not viewed as entirely substitutable. In addition, they find

that indecision increases when either alternative in a choice set leads to an unacceptable outcome.

The studies described above hypothesize that difficult choices cause conflict and associated negative affect, and, as a result, increases avoidance. None of these studies, however, measure choice difficulty, negative affect and choice avoidance together and, as a result, they cannot test the relationship in Figure 1. In addition, the studies described above use relatively simple choices that do not require analytical tools for evaluation and undergraduate students are used as participants. Managers, however, face complex decisions which require the use of analytical tools for evaluation. If tendency to avoid choice is found in this context, the consequences are potentially very important.

Capital investment decisions often require choosing among alternatives that may or may not have features that are directly comparable. In addition, managers may have to choose among very different investments that are competing for the same limited dollars. Managers do have tools, however, to help evaluate capital investment decisions, e.g., NPV of future cash flows. For example, managers can estimate the cash flows related to each feature even when features differ between alternatives and use NPV to calculate a single, comparable value for each investment option. Thus, NPV is a summary measure that mangers can use to compare investment alternatives. I expect that even having completed NPV analysis, managers may struggle with alternatives whose features are not comparable. For example, two investments may provide different costs and benefits for the company but have a similar NPV. I posit that, even when quantified and included in the NPV calculation, as the features of the investment alternatives become more difficult

to compare, managers will experience more negative affect. I further posit that the higher levels of negative affect resulting from more difficult-to-compare features increase the tendency to avoid choice. My hypotheses are as follows:

H1a: When the features of the alternatives in the choice set are more difficult to compare, managers will feel greater negative affect than when the alternatives in the choice set are less difficult to compare.

H1b: When the features of the alternatives in the choice set are more difficult to compare, mangers will tend to avoid choice more than when the alternatives in the choice set are less difficult to compare.

Negative affect also increases when choice involves tradeoffs of goals that are highly valued or are emotion laden. For example, choosing which child gets medical treatment when resources are not available for all is a highly emotion-laden choice. While this example may seem extreme, it illustrates a tradeoff for which most individuals would have a difficult time finding their indifference point between the two alternatives. Choice avoidance can be a mechanism for coping with such decisions. Luce (1998) examined the tradeoff between safety features and amount of pollution produced, both highly valued goals, versus the tradeoff between cosmetic features in a car purchase. She found that negative affect (measured prior to choice) was higher when choice required tradeoffs of highly valued goals, as was the tendency to avoid choice. Luce also found that individuals took longer to make a choice when this aspect of choice difficulty was

high. These results indicate that having to trade off highly-valued goals increases choice difficulty, which increases negative affect and as a result, choice avoidance.

Luce examined personal decisions that involve tradeoffs of highly-valued goals but did not require analytical tools for evaluation. Managers also face tradeoffs of goals that are highly valued or emotion laden. For example, a manager may have to choose between two investments that trade off the number of employees laid-off and the ability to dispose of waste in an environmentally friendly manner. This may be a difficult tradeoff, especially if the firm has had pride in a history of no lay-offs and in its record of being an environmentally friendly company. Again, evaluation tools such as NPV can calculate a summary measure for each investment. Despite this summary measure, the manager may find it difficult to find a point of indifference between the two alternatives. My hypotheses are as follows:

H2a: When the alternatives in the choice set require more difficult tradeoffs, managers will feel greater negative affect than when the alternatives in the choice set require less difficult tradeoffs.

H2b: When the alternatives in the choice set require more difficult tradeoffs, managers will tend to avoid choice more than when the alternatives in the choice set require less difficult tradeoffs.

2.4 Overcoming Inaction

I argue that choice difficulty creates negative affect in individuals, and that negative affect, in turn, increases the tendency to avoid choice. If choice avoidance

results from negative affect inappropriately influencing the individual's behavior, then the key to finding an effective remedy to help managers overcome inaction is to determine how individuals respond to negative affect. Individuals may respond to negative affect by 1) using it as information (Schwarz and Clore, 1983, 1988), or 2) choosing a coping mechanism (Lazarus, 1991). Two potential remedies are developed based on these two theories. It is important to note that these theories are not mutually exclusive and that the hypotheses are not developed as competing hypotheses.

2.4.1 Affect as Information

In a number of studies, Schwarz and Clore have developed a mechanism to reduce the influence of affect on a judgment when affect is used as information relevant to that judgment. For example, Schwarz and Clore (1983) placed participants in rooms that were either pleasant and comfortable or unpleasant and uncomfortable. Positive or negative moods were induced by having the participants write positive or negative stories. Participants then were asked to assess their own happiness and satisfaction with life. Their responses were consistent with their induced mood, indicating that they used their current affect to assess their general level of happiness. However, when the mood was attributed to an external source, i.e., the pleasant or unpleasant room, the responses were no longer mood-congruent. Individuals discounted their current mood when determining how happy they were in general.

Such misattribution of affect can reduce the impact of negative emotions as well as the impact of mood on judgments (Schwarz and Clore, 1988). A group of heavy

smokers were asked to report their intention to reduce smoking. Some of the participants watched a fear inducing film prior to answering the questions. The film group reported higher intentions to reduce smoking than the control group. The intention was less pronounced, however, when the participants were told that a placebo pill had arousal side-effects, arousal being an increase in the intensity of the emotion. The subjects misattributed their emotion to the placebo pill and, as a result, discounted their emotions when making the judgment.

When affect is used as information for a judgment, the influence of affect on that judgment can be reduced by simply drawing attention to an individual's affective states. Kadous (2001) found that participants who were asked to act as jurors in audit negligence cases evaluated auditors more harshly under a negative affect condition as compared with a control condition. In contrast, participants in a negative affect condition who were made aware of their affective state by attributing the negative affect to the juror role gave evaluations equivalent to those of participants in the control condition.

Schwarz and Clore have investigated how affect influences evaluations and judgments. Typically, the affect was generated from a source external to the evaluation itself. In this dissertation, I am investigating how negative affect related to the decision itself influences the desire to choose. As a result, I am applying Schwarz and Clore's remedy in a way that they had not originally intended. Based on my application of their theory, if affect is an input into judgments, as I hypothesize it is in the case of managerial decision makers, misattribution of emotions and drawing attention to emotions should not change how an individual feels, but should reduce the impact of individual's feelings on

his judgment (Schwarz and Clore, 1988). Thus, one potential remedy to choice avoidance is to draw managers' attention to their own negative affect. Making individuals aware of their affective state stimulates the individual to think about what they are feeling and why. With this awareness, the individual may process the information differently by placing more weight on normatively relevant cues and less weight on emotional cues (Kadous, 2001). The measure of conflict or negative affect, however, should remain unchanged. The resulting hypotheses are as follows:

H3a: When managers are made aware of their own negative affect they will report the same negative affect as when they are not made aware of their own negative affect.

H3b: When managers are made aware of their own negative affect they will have a lower tendency to avoid choice than when they are not made aware of their own negative affect.

2.4.2 Coping Mechanisms

Individuals are simultaneously motivated toward both problem-focused and emotion-focused coping mechanisms in response to negative affect (Lazarus, 1991). If emotion-focused coping leads to avoidance behavior, then a potential remedy would be to motivate an individual to continue with a more deliberate and effortful alternative-based process and to ultimately resolve the conflict (Luce, 2001). Possible solutions are to give the individual a decision tool to follow or to provide an incentive to resolve the conflict that is greater than the incentive to avoid the negative affect. An example of a decision

tool would be one that adds steps requiring a summary evaluation of each alternative. An example of an incentive would be to provide the individual with an additional goal, e.g., accuracy or accountability for the ultimate choice.

Based on the above theory, I hypothesize that a tool that encourages a more deliberate alternative-based evaluation process should reduce the desire to postpone. Adding a step to the evaluation process that asks participants to summarize each alternative should encourage participants to think about each alternative separately and to search for information for each alternative. This deliberate effort to seek relevant information by alternative is a more problem-focused coping strategy.

While theory supports the hypothesis that additional deliberate effort will encourage individuals to be more problem-focused vs. emotion-focused and thus take action, there isn't clear theory regarding how encouraging a more problem-focused approach will influence negative affect. Lazarus argues that coping strategies and negative affect are interactive; negative affect can influence the coping mechanism chosen and the coping mechanism chosen can, in turn, influence negative affect. For example, Luce (1998) finds that individuals report lower levels of negative affect after they have avoided a choice compared to individuals who report negative affect before they have made a choice. Following this thinking, I expect that encouraging individuals to use more problem-focused coping strategies may reduce negative affect. My hypotheses are as follows:

H4a: When managers are required to summarize each alternative before making their decision they will feel less negative affect than when they are not required to summarize each alternative before making the decision.

H4b: When managers are required to summarize each alternative before making their decision they will avoid choice less than when they are not required to summarize each alternative before making the decision.

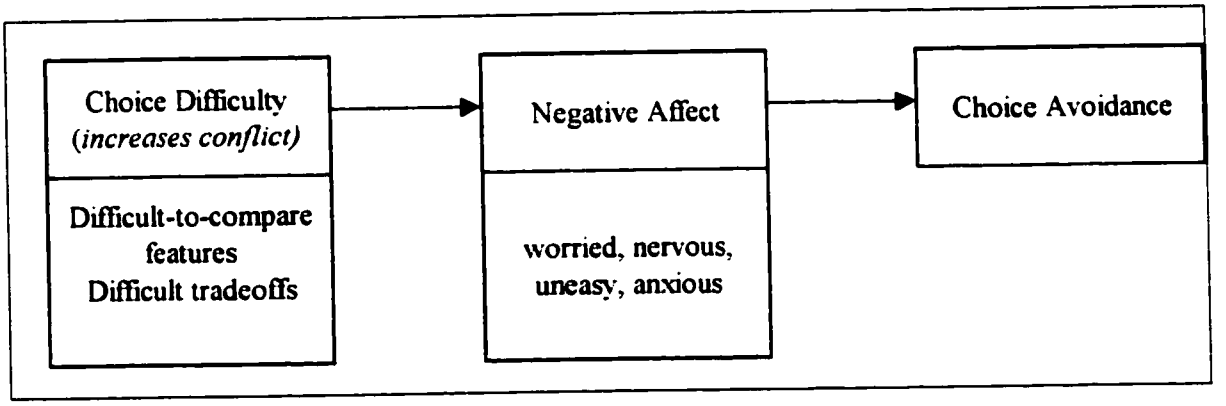

Figure 1
Relationship Between Choice Difficulty, Negative Affect and Choice Avoidance

Chapter 3: Experimental Design and Method

3.1 Participants

I recruited professionals from the Executive MBA (EMBA) program at the University of Washington. To encourage participation, each participant's name was entered into a drawing for $200.[2] One Hundred-twenty EMBAs, of which 75% were male, volunteered and were randomly assigned to one of seven conditions.

Participants had 16 years of work experience on average, with an average of nine years of supervisory experience. Sixty-three percent of the participants had taken one to three accounting courses and the remaining 37% had taken four or more accounting courses. All but 13% had experience with capital investment decisions with 37% having participated in the evaluation of one project and the remaining 50% having made at least two capital investment decisions. Neither level of experience, level of education, nor percentage of women differed significantly across conditions.

3.2 Task and Experiment Method

Participants were asked to take on the role of a manager faced with a capital investment decision. Typically in capital investment decisions an evaluation tool like NPV is used to summarize all relevant cash flow to help determine if the investment meets minimum return requirements as well as allow for comparisons across alternatives. Done well, NPV should capture all the relevant changes to cash flow related to the

---

[2] The experiment was run at two separate times, and, as a result, a separate drawing was made for each time. Each drawing was worth $200.

investment. As a result, the experimental materials had to capture all the changes in cash flow and hold NPV constant across all conditions. The items that were manipulated between conditions were constructed so that the NPV of each alternative and the overall evaluation of the investments did not vary and that the same alternative was always normatively preferred (i.e., its NPV was highest). Participants were informed that the NPV included all relevant cash flows, including expected changes in market share, cost savings, as well as any estimated dollar impact the investment may have on key success factors such as employee satisfaction. Participants were asked to either choose one of two alternatives, to reject both, or to postpone the decision.

Two dimensions of choice difficulty were examined in a between-subjects design utilizing seven cells – a control, two dimensions of choice difficulty (difficult-to-compare features or difficult tradeoffs), and then two remedy conditions for each dimension of choice difficulty. See Figure 2. The choice difficulty conditions are compared to the control condition and the remedy conditions are compared to the related choice difficulty conditions.

The experimental materials describe the company, the current operating environment, a problem that requires a solution and two investment options that have been identified as possible solutions. See Figure 3 for a comparison of the materials presented in the different conditions. The problem is designed such that postponing the decision would be costly. If the manager postpones the decision, market share will decline and the manager will not be able to respond appropriately at that point to regain lost market share. Each investment's NPV and ratings on the key success factors that

were included in calculating NPV are presented. Participants were informed in the materials that all possible information has been estimated and included in the NPV calculation.

In the control condition, the investments are easy to compare and require no tradeoffs because the alternatives are rated on all the same features. One of the investments is clearly dominant, not only on NPV, but also on the presented key success factors.

In the difficult-to-compare features condition, additional ratings on key success factors (included in the NPV calculation) are presented for the alternatives. The ratings highlight the tradeoffs that went into the NPV calculation. For example, one investment alternative has the highest NPV and will increase product quality, but does not improve operational efficiency. The other investment alternative increases operational efficiency, but does not improve product quality. NPV is held constant over all the conditions and alternative A always dominates alternative B and is the normatively preferred alternative. Notice in the NPV table that all elements stay the same as in the control condition except for the savings from operations line. This line is expanded in the difficult-to-compare features condition to include the additional ratings but the total dollar value has not changed. The one line "savings from operations" drives the difference in NPV between the two alternatives.

In the difficult tradeoffs condition, the salience of the required tradeoffs of highly valued goals is increased by adding descriptions of the tradeoffs. One alternative provides environmentally friendly waste disposal methods but displaces a larger

percentage of employees. The other alternative involves minimal, if any, layoffs but does not have environmentally friendly waste disposal methods. The company's goal of no lay-offs, the relation the company has had with its employees, the difficulty the displaced employees will have in gaining subsequent employment are described in detail as is the company's goal of being environmentally friendly in its operations and waste disposal methods. Again, all elements in the NPV table stay the same as in the control condition except for the savings from operations line, which has been expanded in the difficult tradeoffs condition to include the additional ratings (without changing the total dollar value). The one line "savings from operations" drives the difference in NPV between the two alternatives.

Both choice difficulty conditions have more information than the control condition. This information is limited to creating difficult-to-compare features and difficult tradeoffs and does not increase the overall length of the task. If participants respond only to the increase in information, it is expected that the hypothesized results would be harder to find due to the fact that more information should reduce the uncertainty and ambiguity of the decision.

The conditions for the first remedy (Aware conditions) have additional statements in the instructions: "Your goal is to get as completely into the role of manager as possible. It is not unusual for managers to feel anxious and tense when faced with making these decisions. You may find that you feel a little tense, anxious or otherwise uncomfortable as well. That is natural." This addition should draw attention to the

individual's negative affect. Other than these additional statements in the instructions, the task is identical to the choice difficulty condition in each experiment.

The conditions for the second remedy (Summary conditions) have an additional step inserted at the end of the case and before the decision difficulty measures. Participants were told. "Your objective as the Division Manager is to seek the alternative that provides the best overall benefits to your division. As part of your evaluation process, please write a paragraph summarizing your evaluation of each alternative." Other than this additional step, the task is identical to the choice difficulty condition in each experiment.

Participants were asked to record the start and finish time. I expect that more difficult choices will take more time. After reading the capital investment information but prior to making a decision regarding the investment, participants were asked to assess aspects of decision difficulty and their own level of negative affect when making the decision. Participants rated, on an eleven-point Likert scale, how difficult it was for them to make the decision, how complex they found the decision and how sure they were about their decision. Participants rated the extent to which they felt worried, uneasy, nervous and anxious, on eleven-point Likert scales. These terms have been shown to capture important aspects of negative affect (Mano, 1991). Upon completion of the affect assessment, participants rated, on an eleven-point Likert scale, their desire to approve investment A, desire to approve investment B, desire to postpone making the decision, and desire to reject both investments. They then made a forced choice of approving investment A, approving investment B, postponing the decision, or rejecting

both investments. In order to determine whether participants believed that all relevant information was in fact included in the NPV calculation, they were asked to identify, from a list, items which were included in NPV. Finally, participants were asked to provide demographic information.

Experiment 1	
Comparability of Features	
No Choice Difficulty features comparable	A
Choice Difficulty Difficult-to-compare features	B
Choice Difficulty with Aware - Difficult-to-compare features	C
Choice Difficulty with Summary - Difficult-to-compare features	D

Experiment 2	
Tradeoffs of Highly Valued Goals	
No Choice Difficulty tradeoffs easy	A
Choice Difficulty Difficult tradeoffs	E
Choice Difficulty with Aware - Difficult tradeoffs	F
Choice Difficulty withSummary Difficult tradeoffs	G

Predicted results:

Reported levels of negative affect

H1a:	Difficult-to-compare features	B > A
H2a:	Difficult tradeoffs	E > A
H3a:	Aware conditions	C = B and F = E
H4a:	Summary conditions	D < B and G < E

Desire to postpone and percent choosing to postpone

H1b:	Difficult-to-compare features	B > A
H2b:	Difficult tradeoffs	E > A
H3b:	Aware conditions	C < B and F < E
H4b:	Summary conditions	D < B and G < E

Figure 2
Experimental Design and Predictions

Information Presented in the "Summary of New Technology Evaluation"		
Control	**Features**	**Tradeoffs**
Investment: $1,000,000 NPV A: $15,000 NPV B: $ 9,000 Customer Satisfaction A: Improved B: Some Imp Employee Satisfaction A: Unchanged B: Unchanged	Investment: $1,000,000 NPV A: $15,000 NPV B: $ 9,000 Customer Satisfaction A: Improved B: Some Imp Employee Satisfaction A: Unchanged B: Unchanged Operational efficiency: A < B Product Quality: A > B	Investment: $1,000,000 NPV A: $15,000 NPV B: $ 9,000 Customer Satisfaction A: Improved B: Some Imp Employee Satisfaction A: Unchanged B: Unchanged Percent of employees displaced A: 20% B: 9% Environmentally friendly waste disposal methods A: Yes B: No

Information Presented in the Narrative Portion of the Task		
Control	**Features**	**Tradeoffs**
Flat market share past 3 years If changes not made, lose mkt shr Limitations in Production Displaced employees can easily find other employment All changes included in NPV	Flat market share If changes not made, lose mkt shr Limitations in Production Displaced employees can easily find other employment All changes included in NPV Differences between alternatives highlighted - A focuses on reducing defects, B focuses on operational efficiency	Flat market share If changes not made, loss mkt shr Limitations in Production Displaced employees **cannot** easily find other employment All changes included in NPV Tradeoffs between alternatives highlighted - A - more employees displaced and maintains environmentally friendly waste disposal methods, B retains more employees but has environmentally unfriendly waste disposal methods

Figure 3
Comparison of Material Presented in Each Condition

Information Presented in the NPV Table

Control	A - Tech	B - Tech
Increase - sales*	580,000	580,000
Savings - operations **	435,000	429,000
Required investment	(1,000,000)	(1,000,000)
Total NPV	15,000	9,000

Features	A - Tech	B - Tech
Increase - sales*	580,000	580,000
Savings - operations **	215,000	209,000
Savings - increase in op. eff.		220,000
Savings - increase in product quality	270,000	
Increase in maint. costs	(50,000)	
Required investment	(1,000,000)	(1,000,000)
Total NPV	15,000	9,000

Tradeoffs	A - Tech	B - Tech
Increase - sales*	580,000	580,000
Savings - operations **	125,000	119,000
Savings - new waste disposal method		210,000
Savings - employee reductions	310,000	100,000
Required investment	(1,000,000)	(1,000,000)
Total NPV	15,000	9,000

* Includes estimated impact the investment has on customer satisfaction

** Includes estimated impact the investment has on employee satisfaction

Figure 3 - Continued
Comparison of Material Presented in Each Condition

Chapter 4: Results

4.1 Test of Choice Difficulty Hypotheses

To determine whether the experimental conditions created greater choice difficulty than the control condition, participants assessed several aspects of difficulty: 1) decision difficulty, 2) decision complexity, 3) the level of confidence in their choice and 4) time to complete the task. Table 1, panel A presents means for the decision difficulty measures by condition. Table 1, panel B presents the results of contrasts between the control condition and each of the choice difficulty conditions. Participants rated the decision as significantly more difficult and complex in both the difficult-to-compare features and difficult tradeoffs conditions than in the control condition. Further, participants took significantly more time to complete the task (all p's < 0.03). Participants in all conditions had similar ratings of their confidence level. Based on the decision difficulty, complexity and time to completion results, the experimental manipulations created differences in choice difficulty.

Participants were also asked to rate how statements about four types of negative affect (worried, nervous, uneasy, anxious) reflected their feelings about making the decision. H1a and H2a predict that negative affect should be higher in the choice difficulty conditions than in the control condition. I used factor analysis to derive a single negative affect factor score from the four negative affect measures. The factor analysis indicated that the four measures were highly correlated and loaded on one factor which account for 83% of the variance, indicating that a single measure is appropriate. In addition, a reliability test of the four negative affect measures yielded a Cronbach's alpha

of .924, indicating a high degree of internal consistency among the four negative affect measures. Table 2, panel A reports means for the negative affect factor score and the individual negative affect measures by condition. Table 2, panel B presents the results of contrasts between the control condition and the choice difficulty conditions for the same measures. The results indicate that the participants in the difficult-to-compare features condition felt marginally higher levels of negative affect than participants in the control condition ($p = 0.07$). Specifically, participants felt significantly more uneasy and anxious than in the control condition, supporting H1a (all p's < 0.04), but not significantly more worried or nervous. Participants in the difficult tradeoffs condition felt higher levels of negative affect than participants in the control condition ($p = 0.00$). Specifically, participants in the difficult tradeoffs condition felt significantly more worried, nervous, uneasy and anxious than in the control condition, supporting H2a (all p's < 0.03). These results, paired with the choice difficulty rating, support the first link in Figure 1. More difficult decisions are associated with higher levels of negative affect.

Choice avoidance is measured in two ways. The first measure is desire to postpone the decision. Table 3 panel A presents the means for the desire to choose each alternative. Table 3, panel B presents the results of contrasts between the control condition and difficult-to-compare features and difficult tradeoffs conditions. Participants in both the difficult-to-compare features and difficult tradeoffs conditions report significantly higher desire to postpone the decision than participants in the control condition (both p's < 0.02). These results support hypotheses H1b and H2b. Participants in both choice difficulty conditions also reported a lower desire to choose the normatively

preferred alternative A and a higher desire to choose alternative B than did control condition participants (all p's < 0.02). Finally, participants in the difficult-to-compare features condition reported significantly higher desire to reject both alternatives (feature vs. control, $t = 2.51$, $p = 0.01$), but the desire to reject both alternatives was not statistically higher for the participants in the difficult tradeoffs condition (tradeoffs vs. control, $t = 1.21$, $p = 0.12$).

Participants in all conditions did equally well in identifying the items included in the NPV calculation, indicating that the results were not driven by individuals not believing that all relevant items were included in the NPV calculation ($F = 1.199$, $p = .31$) Overall, the desire to choose results seem to indicate that choice difficulty not only increased participants' desire to postpone, but also moved their desire away from the normatively preferred alternative.

The second and stricter measure of choice avoidance is the percent of participants who actually chose to postpone in a forced choice measure. Table 4, panel A presents the results of participant's capital investment choice reported by condition. Eleven percent of participants chose to postpone making a decision in the difficult-to-compare features condition and 12% chose to postpone in the difficult tradeoffs conditions compared to 6% in the control condition. Differences between the choice difficulty conditions and the control condition are not statistically significant (Fisher's exact test, $p = 0.50$ and $p = 0.48$). Although participants in the difficult-to-compare features and difficult tradeoffs conditions reported a higher desire to postpone, they did not choose to postpone in the final choice to a significantly higher degree than participants in the control condition.

Some participants chose to reject both alternatives, a costly choice in this task. The choice pattern was similar to that observed in the desire to choose measures, in that fewer participants chose the normatively preferred alternative A in both the difficult-to-compare features condition (22%) and the difficult tradeoffs condition (65%) than in the control condition (94%). Again, participants in the choice difficulty conditions moved away from the normatively preferred alternative. The results of a Fisher's exact test comparing the proportion of participants who chose alternative A versus all other choices indicates that both the features condition and the tradeoffs condition are significantly lower than in the control condition (all p's < 0.04).

The results indicate that both difficult-to-compare features and difficult tradeoffs make decisions more difficult despite the fact that all aspects have been quantified and included in an analytical decision tool such as NPV. The results also indicate that when the decisions are more difficult, individuals experience higher levels of negative affect, which leads to a higher desire to postpone choice.

4.2 Mediation Analysis

In the above analysis, I have demonstrated that my manipulations of choice difficulty are positively associated with negative affect and choice avoidance. The model I have developed suggests that negative affect acts as a mediator which accounts for the relation between choice difficulty and choice avoidance. Negative affect functions as a mediator if it meets the following conditions: 1) variations in the levels of choice difficulty significantly account for variation in negative affect (mediator), 2) variations in

the levels of negative affect (mediator) significantly account for variation in desire to postpone, and 3) when negative affect (mediator) is introduced as a covariate, a previously significant relation between choice difficulty and desire to postpone is no longer significant (full mediation) or significantly decreases (partial mediation). Finally, while the significance of choice difficulty is reduced in the third condition, negative affect should remain significant (Baron and Kenny, 1986).

Table 5 reports the results of the mediation tests. I used the negative affect factor score from the factor analysis to test for a mediation relationship. Table 5, panel A reports the results of the mediation tests for the difficult-to-compare features condition versus the control condition. There is a significant relation between choice difficulty and the negative affect factor score ($p = 0.06$) and between the negative affect factor score and desire to postpone ($p = 0.00$). When the negative affect factor score is introduced as a covariate, the previously significant relation between choice difficulty and desire to postpone ($p = 0.01$) becomes less significant ($p = 0.05$) while the negative affect factor score remains significant ($p = 0.01$). These results indicate that negative affect partially mediates the relation between choice difficulty and desire to postpone in the difficult-to-compare features versus the control condition.

Table 5, panel B presents the results of the mediation tests for the difficult tradeoffs versus the control condition. There is a significant relation between choice difficulty and the negative affect factor score ($p = 0.00$) and between the negative affect factor score and desire to postpone ($p = 0.05$). When the negative affect factor score is introduced as a covariate, the previously significant relation between choice difficulty

and desire to postpone ($p = 0.01$) becomes less significant ($p = 0.04$) but the negative affect factor score does not remain significant ($p = 0.25$). Thus, not all of the conditions for mediation are met for this dimension of choice difficulty.

It appears that negative affect partially mediates the relation between choice difficulty and desire to postpone, but only when choice difficulty is operationalized as difficult-to-compare features. One possible explanation for the inability to demonstrate mediation for the difficult tradeoffs versus the control condition is the presence of measurement error in the negative affect variables. Measurement error in the mediator tends to produce an underestimate of the effect of the mediator and an overestimate of the effect of the independent variable on the dependent variable. With measurement error in the mediator, effects of the mediator on the dependent variable cannot be totally controlled for when measuring the effects of the independent variable on the dependent variable (Baron and Kenny, 1986). In addition, the results may be due to a power issue. I conclude that negative affect acts as a partial mediator in the relation between choice difficulty and choice avoidance for the difficult-to-compare features condition. While these results support the model, they also indicate that additional factors likely influence choice avoidance. Future research could examine the nature of these factors.

4.3 Test of First Remedy - Aware Hypotheses

In the conditions for the first remedy (Aware conditions) a few statements are added to the choice difficulty instructions making the participants aware of their own affective states. The aware conditions are features/aware and tradeoffs/aware. The

aware hypotheses predict that if participants are using affect as information, making them aware of their own affective state will not change their reported level of negative affect but will reduce their desire to postpone below that reported by the participants in the choice difficulty conditions alone. Means for the decision difficulty measures for the Aware conditions are reported in Table 1, panel A, and for the affect measures in Table 2, panel A. As expected, participants in the aware condition did not rate difficulty (Table 1, panel C) or negative affect (Table 2, panel C) differently from the participants in the choice difficulty condition. These results support H3a. However, desire to postpone (Table 3, panel C) and choice to postpone (Table 4, panel B) are also not significantly different in the aware condition than in the choice difficulty conditions (desire, $t = 0.59$, $p = 0.28$ and $t = -0.07$, $p = .53$, respectively; choice, Fisher's exact test, $p = 0.69$ and $p = 0.50$, respectively). Thus H3b is not supported.

Drawing managers' attention to their own negative affect did not reduce desire to postpone or decision to postpone. Increasing negative affect awareness did, however, appear to move participants' desire to choose and final choice back toward the normatively preferred alternative (desire for Alternative A, feature vs. features/aware, $t = 1.472$, $p = 0.07$). Apparently the statement assuring participants that their negative affect was normal did not prompt them to disregard it enough in their decision making. Perhaps the manipulation was too subtle; the participants did not accept that negative affect is normal, or participants were unable to set aside negative affect when making their judgments. In addition, while negative affect is relevant to the task, participants may not be using it as information when making their judgments.

Given that making individuals aware of their own affective state did not help them overcome inaction and the results were, for the most part, not significantly different from the choice difficulty conditions, the Aware conditions were collapsed with the corresponding choice difficulty conditions for the remainder of the tests. The new conditions are referred to as Combined Features and Combined Tradeoffs. When the conditions are collapsed, the results for the choice difficulty conditions versus the control condition still hold. In addition, the mediation analysis becomes stronger for the combined tradeoff condition vs. control condition (See Table 6). When the negative affect factor scores is introduced as a covariate, the previously significant relation between choice difficulty and desire to postpone ($p = 0.01$) becomes less significant ($p = 0.09$) and negative affect factor score remains significant ($p = 0.02$). Thus, all conditions for mediation are met for the difficult tradeoff dimension of choice difficulty when the tradeoffs and tradeoffs/aware conditions are combined. The results using the combined conditions appear to support the idea that the results of the previous mediation analysis were mixed dues to power issues and that by adding more participants the results became stronger.

4.4 Test of Second Remedy - Summary Hypotheses

In the conditions for the second remedy (Summary conditions) participants are required to write a brief summary of each alternative before making the decision. The summary conditions are features/summary and tradeoffs/summary. The summary hypotheses predict that if participants are responding to negative affect by using an

emotion-focused coping strategy, helping them to use a more problem-focused coping strategy will reduce their levels of negative affect and desire to postpone below that of the participants in the choice difficulty conditions alone. The means for the decision difficulty measures for the summary conditions are reported in Table 7, panel A. Participants in the summary condition did not rate difficulty (Table 7, panel B) significantly different from participants in the choice difficulty conditions. Participants in the summary condition took significantly longer to complete the task ($t = 4.63$, $p = 0.00$ and $t = 3.22$, $p = 0.00$, respectively, probably because they were required to complete an additional step.

The means for the negative affect measures for the summary conditions are reported in Table 8, panel A. Planned contrasts are in Table 8, panel B. Participants in the features/summary conditions did not report significantly different levels of negative affect based on the negative affect factor score compared to participants in the combined features conditions. Participants in the tradeoffs/summary conditions, however, reported lower levels of negative affect ($p = 0.02$) based on the negative affect factor score than participants in the combined tradeoffs condition. The results support H4a for the tradeoffs/summary condition, but not for the features/summary condition.

The first test of choice avoidance compares individuals' desire to postpone between the choice difficulty conditions and the summary conditions. The means for the desire to choose each option are reported in Table 9, panel A. The tests of contrast between the summary conditions and the choice difficulty conditions are reported in Table 9, panel B. Both summary conditions report a lower desire to postpone

(features/summary, $t = 1.70$, $p = 0.05$ and tradeoffs/summary, $t = 2.46$, $p = 0.01$) than the choice difficulty condition alone. Thus H4b is supported. In addition, participants in the features/summary condition report a higher desire to choose alternative A ($t = 3.38$, $p = 0.00$), a lower desire to choose alternative B ($t = 2.42$, $p = 0.01$) and a lower desire to reject ($t = 2.09$, $p = 0.02$) than the combined features condition alone. Participants in the tradeoff/summary condition reported a lower desire to reject ($t = 1.86$, $p = 0.03$) than participants in the combined tradeoff condition alone.

The second test of choice avoidance compares participant's final choice between the choice difficulty conditions and the remedy conditions. Table 10, panel A reports the number of participants who made each choice in each condition. Table 10, panel B reports the Fisher's exact test for homogeneity of proportion. The choice to postpone is not significantly different in the summary conditions than in the choice difficulty conditions (features, $p = 0.218$ and tradeoffs, $p = 0.365$). Thus the second test using choice does not support H4b. The pattern of choice, however, is different from the choice difficulty conditions. Specifically participants in the features/summary condition chose alternative A more than in the combined features condition alone (Fisher's exact test $p = 0.01$).

Requiring individuals to work through difficult choices appears to help reduce negative affect, reduce desire to postpone and shift their final choices back to alternative A, the normatively preferred alternative. Thus, it appears that individuals avoid choice as a mechanism to cope with negative affect.

4.5 Analysis of Comments

After the participants made their final choice, they were asked to briefly describe their primary reasons for making their choice. The comments for the control, features, tradeoffs, features/aware and tradeoffs/aware conditions are summarized in Table 11. Panel A reports the number of each type of comment made by condition. Panel B reports the Fischer's Exact tests for the comments by condition and indicates that participants in the control condition identified NPV more often as the primary reason for making the final choice than participants in the features condition ($p = 0.01$). In addition, participants in the control condition identified customer satisfaction more often as the primary reason for making the final choice (features, $p = 0.075$ and tradeoffs, $p = 0.007$) and efficiency less often (features, $p = 0.000$ and tradeoffs, $p = 0.045$) than participants in the features or tradeoffs conditions. Finally, participants in the tradeoffs conditions identified environmentally friendly waste disposal methods more often as the primary reason for making the final choice than in the control condition ($p = 0.003$). While the features and tradeoffs conditions did have different features to compare and it is not unexpected that there would be more comments in those conditions related to the additional features, it is interesting that participants shifted from listing NPV as a primary reason for the decision and focused on individual features. NPV is the summary measure for the alternatives and should allow for objective comparisons across conditions. It appears that as the decision becomes more difficult, not only does participants' negative affect and desire to postpone increase, but the features considered in the decision differ.

Individual features seem to be more important than the overall summary measure of NPV when the choice is more difficult.

Comments are summarized by choice in Panel C with Fisher's Exact tests reported in Panel D. In each condition, alternative A was constructed to be the normatively preferred alternative. Based on the comments, it appears that participants who chose alternative A identified NPV ($p = 0.000$) more often as the primary reason for making the final choice than participants who chose alternative B or to postpone. Participants who chose alternative B identified efficiency reasons ($p = 0.000$) and retention of employees ($p = 0.010$) more often as the primary reason for making the final choice and environmental disposal methods ($p = 0.007$) less often than participants who chose alternative A. Participants who chose to postpone indicated that they felt the NPV was misleading ($p = 0.025$), needed more information ($p = 0.000$) and miscellaneous other reasons ($p = 0.007$) more often as the primary reason for postponing the choice and customer satisfaction ($p = 0.055$) less often than participants who chose alternative A. Finally, participants who chose to reject both alternatives identified NPV as misleading ($p = 0.038$), needed more information ($p = 0.075$) and miscellaneous other reasons ($p = 0.015$) more often as the primary reason for rejecting the alternatives than participants who chose alternative A. Again, these results indicate that participants who chose alternative A paid attention to the summary measure, NPV, while participants who made other choices paid attention to individual features or rationalized why they couldn't choose.

The analysis of the comments may help explain some of the choice patterns seen between conditions (Table 4). Individuals appear to be responding to decision difficulty by moving away from consideration of the summary measure, NPV and instead focusing on the individual features. As a result, individuals are either avoiding the choice altogether, which is the focus of this study, or choosing an alternative that is not the normatively preferred alternative.

Table 12 reports the comments for the control, combined features, combined tradeoffs, features/summary and tradeoffs/summary conditions. Panel A reports the number of each type of comment made by condition. Panel B reports the Fisher's Exact tests for the comments by condition. The results for the combined features vs. control and the combined tradeoffs vs. control are similar to the results reported for the uncombined conditions reported in Table 11, panel B. Specifically, participants in the control condition identified NPV ($p = 0.01$) more often as the primary reason for making the final choice than participants in the combined features condition. In addition, participants in the control condition identified customer satisfaction (combined features, $p = 0.022$ and combined tradeoffs, $p = 0.005$) more often as the primary reason for making the final choice and efficiency less often (combined features, $p = 0.000$) than participants in the combined features conditions. Finally, participants in the combined tradeoffs conditions identified environmentally friendly waste disposal methods ($p = 0.004$) more often as the primary reason for making the final choice than in the control condition. Again, in the combined conditions participants shifted from listing NPV as a primary reason for the decision and focused on individual features. Participants in the

features/summary condition, however, identified NPV ($p = 0.044$) more often as the primary reason for making the final choice than participants in the combined features condition, indicating that the remedy helped participants focus on the summary measure. In addition, participants in the features/summary and tradeoff/summary conditions listed significantly more comments that fell into the other category (features/summary, $p = 0.006$ and tradeoffs/summary, $p = 0.001$) than participants in the combined features or combined tradeoffs conditions. Finally, the mean number of comments made by participants in the features/summary ($m = 2.375$) was significantly higher than the mean number of comments in the combined features condition ($m = 1.583$, $p = 0.008$). The mean number of comments made by participants in the tradeoffs/summary ($m = 2.062$) was marginally higher than the mean number of comments in the combined tradeoffs condition ($m = 1.588$, $p = 0.11$). These results indicate that participants in the summary conditions not only considered the summary measure, NPV, more often but also considered more information in making their decisions than participants in the features and tradeoff conditions alone. The summary remedy appears to help the participants consider more of the relevant information as well as shift their focus back to overall summary measures like NPV.

Table 1
Descriptive Statistics and Tests of Difficulty Measures

Panel A: Descriptive statistics for decision difficulty measures - means (sd) [a]

Conditions	Decision Difficulty	Decision Complexity	Confidence Level	Time to Completion
Control (n = 18)	2.72	2.88	6.72	10.06
	(2.27)	(2.19)	(2.34)	(2.44)
Features[b] (n = 18)	4.33	5.23	6.38	12.22
	(2.00)	(1.98)	(2.20)	(4.02)
Tradeoffs[c] (n = 17)	6.00	5.17	6.76	11.94
	(2.37)	(2.03)	(1.20)	(3.40)
Features / Aware[d] (n = 18)	5.11	4.66	5.66	12.78
	(2.27)	(2.05)	(1.84)	(2.96)
Tradeoffs / Aware[d] (n = 17)	5.88	5.17	5.94	12.24
	(2.66)	(2.15)	(2.86)	(3.05)

[a] *Participants were asked to rate the level of difficulty, complexity and how sure they were about a capital investment decision on an 11-point scale with 0 being extremely easy, very straightforward or not sure and 10 being extremely difficult, extremely complex or very sure. Participants also recorded their start and finish times.*

[b] *Features refers to the difficult-to-compare features condition*

[c] *Tradeoffs refers to the difficult tradeoffs condition*

[d] *Features/Aware and Tradeoffs/Aware refer to the first remedy conditions where participants were made aware of their own affective states.*

Panel B: t-stats and p-values[e] for contrasts between the choice difficulty conditions and the control condition

Contrasts	Decision Difficulty	Decision Complexity	Confidence Level[f]	Time to Completion
Features vs. Control	2.21	3.33	0.47	2.03
	(0.02)	**(0.00)**	(0.32)	**(0.02)**
Tradeoffs vs. Control	3.97	3.17	(0.06)	1.87
	(0.00)	**(0.00)**	(0.52)	**(0.03)**

[e] *p-values are one-tailed since hypotheses are directional, p-values < 0.05 are in bold type*

[f] *Confidence level is expected to be lower in the choice difficulty conditions than in the control condition*

Panel C: t-stats and p-values[g] for contrasts between the choice difficulty condition and the aware condition

Contrasts	Decision Difficulty	Decision Complexity	Confidence Level	Time to Completion
Features vs. Features/Aware	1.07	0.81	1.01	0.52
	(0.29)	(0.42)	(0.32)	(0.61)
Tradeoffs vs. Tradeoffs/Aware	0.14	0.00	1.07	0.29
	(0.89)	(1.00)	(0.29)	(0.78)

[g] *p-values are two-tailed since hypotheses are not directional and I predict no difference between the choice difficulty conditions and the aware condition.*

Table 2
Descriptive Statistics and Tests of Negative Affect

Panel A: Descriptive statistics for negative affect - means (sd) [a]

Conditions	Negative Affect Factor Score	Worried	Nervous	Uneasy	Anxious
Control (n = 18)	-0.60	3.17	2.72	2.50	2.55
	(0.94)	(2.03)	(2.08)	(1.91)	(2.20)
Features (n = 18)	-0.13	3.88	3.50	3.66	3.72
	(0.80)	(2.05)	(1.69)	(1.90)	(1.77)
Tradeoffs (n = 17)	0.41	5.82	4.23	4.52	4.58
	(0.95)	(2.27)	(2.56)	(2.26)	(2.09)
Features / Aware (n = 18)	0.00	3.94	4.05	3.94	4.00
	(0.83)	(1.69)	(1.92)	(1.83)	(1.87)
Tradeoffs / Aware (n = 17)	0.63	5.47	5.23	5.23	5.00
	(1.33)	(2.50)	(2.58)	(3.09)	(3.20)

[a] *Participants were asked to rate how worried, nervous, uneasy an anxious they felt about making the decision on an 11-point scale with 0 being not at all and 10 being extremely worried, nervous, uneasy or anxious.*

Panel B: t-stats and p-values [b] *for contrasts of negative affect between the choice difficulty conditions and the control condition*

Contrasts	Negative Affect Factor Score	Worried	Nervous	Uneasy	Anxious
Features vs. Control	1.48	1.12	1.24	1.86	1.79
	(0.07)	(0.13)	(0.11)	**(0.04)**	**(0.04)**
Tradeoffs vs. Control	3.13	3.46	1.85	2.44	2.37
	(0.00)	**(0.00)**	**(0.04)**	**(0.01)**	**(0.01)**

[b] *p-values are one-tailed since hypotheses are directional. p-values < 0.05 are in bold type*

Panel C: t-stats and p-values [c] *for contrasts of negative affect between the choice difficulty conditions and the aware condition*

Contrasts	Negative Affect Factor Score	Worried	Nervous	Uneasy	Anxious
Features vs. Features/Aware	0.46	0.09	0.89	0.44	0.43
	(0.65)	(0.93)	(0.38)	(0.66)	(0.67)
Tradeoffs vs. Tradeoffs/Aware	0.68	0.45	1.21	0.84	0.47
	(0.50)	(0.65)	(0.23)	(0.41)	(0.64)

[c] *p-values are two-tailed since hypotheses are not directional and predict that there will be no difference between the choice difficulty conditions and the aware condition.*

Table 3
Descriptive Statistics and Tests of Desire to Choose

Panel A: Descriptive statistics for desire to choose each alternative - means (sd) [a]

Conditions	Alt. A	Alt. B	Postpone	Reject
Control (n = 18)	7.88	2.16	1.44	1.38
	(1.71)	(1.82)	(1.09)	(1.33)
Features (n = 18)	3.44	6.38	2.94	3.33
	(2.20)	(2.89)	(2.53)	(3.21)
Tradeoffs (n = 17)	6.29	4.00	3.17	2.29
	(2.22)	(2.54)	(2.83)	(2.88)
Features / Aware (n = 18)	4.61	4.83	2.55	1.88
	(3.03)	(2.57)	(2.06)	(2.02)
Tradeoffs / Aware (n = 17)	6.76	2.58	3.23	1.76
	(2.61)	(2.45)	(2.96)	(2.16)

[a] *Participants were asked to rate the level of desire to choose each alternative on an 11-point scale with 0 being weak desire and 10 being strong desire.*

Panel B: t-stats and p-values [b] *for contrasts of desire to choose each alternative between the choice difficulty conditions and the control condition*

Conditions	Alt. A	Alt. B	Postpone	Reject
Features vs. Control	5.61	5.13	2.26	2.51
	(0.00)	**(0.00)**	**(0.01)**	**(0.01)**
Tradeoffs vs. Control	2.14	2.36	2.11	1.21
	(0.02)	**(0.01)**	**(0.02)**	(0.12)

[b] *p-values are one-tailed since hypotheses are directional, p-values < 0.05 are in bold type*

Panel C: t-stats and p-values [c] *for contrasts of desire to choose each alternative between conditions and the Aware condition*

Contrasts	Alt. A	Alt. B	Postpone	Reject
Features vs. Features/Aware	1.47	1.89	0.59	1.86
	(0.07)	**(0.03)**	(0.28)	**(0.03)**
Tradeoffs vs. Tradeoffs/Aware	0.62	1.80	(0.07)	0.70
	(0.27)	**(0.04)**	(0.53)	(0.24)

[c] *p-values are one-tailed since hypotheses are directional, p-values < 0.05 are in bold type*

Table 4
Descriptive Statistics and Tests of Participant Choice

Panel A: Descriptive statistics for percent of participants choosing each option[a]

Conditions	Alt. A	Alt. B	Postpone	Reject	All Other Choices	Postpone	Alt A + Alt B	Postpone + Reject	Alt A	All Other Choices
Control (n = 18)	17	0	1	0	17	1	17	1	17	1
	94%	0%	6%	0%	94%	6%	94%	6%	94%	6%
Features (n = 18)	4	11	2	1	16	2	15	3	4	14
	22%	61%	11%	6%	89%	11%	83%	17%	22%	78%
Tradeoffs (n = 17)	11	3	2	1	15	2	14	3	11	6
	65%	18%	12%	6%	89%	12%	83%	18%	65%	36%
Features / Aware (n = 18)	7	9	2	0	16	2	16	2	7	11
	39%	50%	11%	0%	89%	11%	89%	11%	39%	61%
Tradeoffs / Aware (n = 17)	12	2	3	0	14	3	14	3	12	5
	71%	12%	18%	0%	83%	18%	83%	18%	71%	30%

[a] *Participants were asked to choose between approving alternative A, approving alternative B, postponing the decision or rejecting both alternatives.*

Panel B: p-values[b] *for Fisher's Exact Tests of homogeneity of proportion*

Contrasts	All Other Choices vs. Postpone	Alt A + B vs. Postpone + Reject	Alt A vs. All Other Choices
Features vs. Control	(0.500)	(0.279)	**(0.000)**
Tradeoffs vs. Control	(0.487)	(0.301)	**(0.036)**
Features vs. Features/Aware	(0.699)	(0.500)	(0.235)
Tradeoffs vs. Tradeoffs/Aware	(0.500)	(0.672)	(0.500)

[b] *P-values are one-tailed since hypotheses are directional, p-values < 0.05 are in bold type*

Table 5
Mediation Analysis: Negative Affect on the Relation Between Choice Difficulty and Desire to Postpone

Panel A: Mediation Tests for Feature vs. Control Conditions - Negative Affect factor scores[a]

	F	p-value[b]
1) relation between choice difficulty and negative affect factor score	2.618	0.057
2) relation between negative affect factor score and desire to postpone	8.836	0.003
3) relation between choice difficulty and desire to postpone	5.321	0.014
4) relation between choice difficulty and desire to postpone after controlling for negative affect factor sco		

Source	df	F-stat	p-value[b]
Model	2	20.327	0.003
Intercept	1	58.355	0.000
Negative affect factor score	1	6.178	0.009
Choice difficulty	1	2.963	0.048

[a]The negative affect factor score is derived from a factor analysis of the four negative affect measures (worried, nervous, uneasy, and anxious) which are highly correlated and load on one factor

[b]p-values are one-tailed since hypotheses are directional

Panel B: Mediation Tests for Tradeoffs vs. Control Conditions - Negative affect factor scores

	F	p-value[c]
1) relation between choice difficulty and negative affect factor score	9.909	0.002
2) relation between negative affect factor score and desire to postpone	2.870	0.050
3) relation between choice difficulty and desire to postpone	5.812	0.011
4) relation between choice difficulty and desire to postpone after controlling for negative affect factor sco		

Source	df	F-stat	p-value[c]
Model	2	3.092	0.030
Intercept	1	41.065	0.000
Negative affect factor score	1	0.466	0.250
Choice difficulty	1	3.129	0.043

[c]p-values are one-tailed since hypotheses are directional

Table 6
Mediation Analysis: Negative Affect on the Relation Between Choice Difficulty and Desire to Postpone – Combined Conditions[a]

Panel A: Mediation Tests for Feature vs. Control Conditions - Negative Affect factor scores[b]

	F	p-value[c]
1) relation between choice difficulty and negative affect factor score	4.864	0.016
2) relation between negative affect factor score and desire to postpone	6.352	0.007
3) relation between choice difficulty and desire to postpone	5.234	0.013

4) relation between choice difficulty and desire to postpone after controlling for negative affect factor score

Source	df	F-stat	p-value[c]
Model	2	4.685	0.007
Intercept	1	60.259	0.000
Negative affect factor score	1	3.850	0.028
Choice difficulty	1	2.799	0.050

[a] Combined conditions refers to the combination of the features and features/aware conditions into the combined features condition and the tradeoffs and tradeoffs/aware conditions into the combined tradeoffs condition.

[b] The negative affect factor score is derived from a factor analysis of the four negative affect measures (worried, nervous, uneasy, and anxious) which are highly correlated and load on one factor

[c] p-values are one-tailed since hypotheses are directional

Panel B: Mediation Tests for Tradeoffs vs. Control Conditions - Negative affect factor scores

	F	p-value[d]
1) relation between choice difficulty and negative affect factor score	12.630	0.001
2) relation between negative affect factor score and desire to postpone	9.656	0.002
3) relation between choice difficulty and desire to postpone	6.296	0.008

4) relation between choice difficulty and desire to postpone after controlling for negative affect factor score

Source	df	F-stat	p-value[d]
Model	2	5.802	0.003
Intercept	1	48.205	0.000
Negative affect factor score	1	4.826	0.017
Choice difficulty	1	1.794	0.094

[d] p-values are one-tailed since hypotheses are directional

Table 7
Descriptive Statistics and Tests of Difficulty Measures – Summary

Panel A: Descriptive statistics for decision difficulty measures - means (sd) [a]

Conditions	Decision Difficulty	Decision Complexity	Confidence Level	Time to Completion
Control (n = 18)	2.72	2.88	6.72	10.06
	(2.27)	(2.19)	(2.34)	(2.44)
Combined Features[b] (n = 36)	4.72	4.94	6.03	12.50
	(2.14)	(2.01)	(2.03)	(3.49)
Combined Tradeoffs[c] (n = 34)	5.94	5.17	6.35	12.09
	(2.48)	(2.06)	(2.20)	(3.18)
Features / Summary[d] (n = 16)	5.44	5.31	5.87	17.73
	(1.75)	(2.02)	(1.50)	(5.60)
Tradeoffs / Summary[d] (n = 16)	5.87	5.25	5.56	15.69
	(2.39)	(2.11)	(2.18)	(4.01)

[a] *Participants were asked to rate the level of difficulty, complexity and how sure they were about a capital investment decision on an 11-point scale with 0 being extremely easy, very straight forward or not sure and 10 being extremely difficult, extremely complex or very sure. Participants also recorded their start and finish times*

[b] *Combined Features includes both the Features and the Features/Aware conditions*

[c] *Combined Tradeoffs includes both the Tradeoffs and Tradeoffs/Aware conditions*

[d] *Features/Summary and Tradeoffs/Summary refer to the second remedy conditions where participants were required to write a brief summary of each alternative*

Panel B: t-stats and p-values [e] *for contrasts between the choice difficulty condition and the summary condition*

Contrasts	Decision Difficulty	Decision Complexity	Confidence Level	Time to Completion
Combined Features vs. Features/Summary	1.06	0.59	0.24	4.63
	(0.29)	(0.56)	(0.81)	**(0.00)**
Combined Tradeoffs vs. Tradeoffs/Summary	1.56	0.12	1.25	3.22
	(0.12)	(0.91)	(0.22)	**(0.00)**

[e] *p-values are two-tailed since hypotheses are not directional and I predict no difference between the choice difficulty conditions and the summary condition.*

Table 8
Descriptive Statistics and Tests of Negative Affect – Summary

Panel A: Descriptive statistics for negative affect - means (sd) [a]

Conditions	Negative Affect Factor Score	Worried	Nervous	Uneasy	Anxious
Control (n = 18)	-0.60	3.17	2.72	2.50	2.55
	(0.94)	(2.03)	(2.08)	(1.91)	(2.20)
Combined Features (n = 36)	-0.05	3.92	3.77	3.80	3.86
	(0.80)	(1.86)	(1.77)	(1.84)	(1.80)
Combined Tradeoffs (n = 34)	0.52	5.64	4.74	4.88	4.79
	(1.14)	(2.35)	(2.58)	(2.69)	(2.67)
Features / Summary (n = 16)	-0.22	4.00	3.50	3.68	2.75
	(0.92)	(1.78)	(2.22)	(2.12)	(2.17)
Tradeoffs / Summary (n = 16)	-0.09	4.06	3.50	4.13	3.38
	(0.78)	(2.01)	(1.75)	(1.63)	(2.06)

[a] *Participants were asked to rate how worried, nervous, uneasy an anxious they felt about making the decision on an 11-point scale with 0 being not at all and 10 being extremely worried, nervous, uneasy or anxious.*

Panel B: t-stats and p-values [c] *for contrasts of negative affect between the choice difficulty conditions and the summary condition*

Contrasts	Negative Affect Factor Scores	Worried	Nervous	Uneasy	Anxious
Combined Features vs. Features/Summary	0.06	0.14	0.43	0.18	1.67
	(0.27)	(0.45)	(0.33)	(0.43)	**(0.05)**
Combined Tradeoffs vs. Tradeoffs/Summary	2.13	2.55	1.91	1.17	2.11
	(0.02)	**(0.01)**	**(0.03)**	(0.12)	**(0.02)**

[c] *p-values are one-tailed since hypotheses are directional, p-values < 0.05 are in bold type*

Table 9
Descriptive Statistics and Tests of Desire to Choose – Summary

Panel A: Descriptive statistics for desire to choose each alternative - means (sd) [a]

Conditions	Alt. A	Alt. B	Postpone	Reject
Control (n = 18)	7.88	2.16	1.44	1.38
	(1.71)	(1.82)	(1.09)	(1.33)
Combined Features (n = 36)	4.03	5.61	2.75	2.61
	(2.67)	(2.81)	(2.28)	(2.74)
Combined Tradeoffs (n = 34)	6.52	3.29	3.20	2.02
	(2.40)	(2.56)	(2.45)	(2.52)
Features / Summary (n = 16)	6.56	3.81	1.62	1.18
	(2.55)	(2.34)	(1.26)	(2.07)
Tradeoffs / Summary (n = 16)	7.06	2.62	1.56	0.76
	(2.91)	(2.16)	(2.06)	(1.13)

[a] *Participants were asked to rate the level of desire to choose each alternative on an 11-point scale with 0 being weak desire and 10 being strong desire.*

Panel B: t-stats and p-values [c] *for contrasts of desire to choose each alternative between conditions and the summary condition*

Contrasts	Alt. A	Alt. B	Postpone	Reject
Combined Features vs. Features/Summary	3.38	2.42	1.70	2.09
	(0.00)	**(0.01)**	**(0.05)**	**(0.02)**
Combined Tradeoffs vs. Tradeoffs/Summary	0.71	0.89	2.46	1.86
	(0.24)	(0.19)	**(0.01)**	**(0.03)**

[c] *p-values are one-tailed since hypotheses are directional, p-values < 0.05 are in bold type*

Table 10
Descriptive Statistics and Tests of Participant's Choice – Summary

Panel A: Descriptive statistics for percent of particpants choosing each option [a]

Conditions	Alt. A	Alt. B	Postpone	Reject	All Other Choices	Postpone	Alt A + Alt B	Postpone + Reject	Alt A	All Other Choices
Control (n = 18)	17	0	1	0	17	1	17	1	17	1
	94%	0%	6%	0%	94%	6%	94%	6%	94%	6%
Combined Features (n = 36)	4	11	2	1	16	2	15	3	4	14
	22%	61%	11%	6%	89%	11%	83%	17%	22%	78%
Combined Tradeoffs (n = 36	11	3	2	1	15	2	14	3	11	6
	65%	18%	12%	6%	89%	12%	83%	18%	65%	36%
Features / Summary (n = 16)	11	4	0	1	16	0	15	1	11	5
	39%	50%	11%	0%	89%	11%	89%	11%	39%	61%
Tradeoffs / Summary (n = 16	12	3	1	0	15	1	15	1	12	4
	71%	12%	18%	0%	83%	18%	83%	18%	71%	30%

[a] *Participants were asked to choose between approving alternative A, approving alternative B, postponing the decision or rejecting both alternatives.*

Panel B: p-values [b] *for Fisher's Exact Tests of homogeneity of proportion*

Contrasts	All Other Choices vs. Postpone	Alt A + B vs. Postpone + Reject	Alt A vs. All Other Choices
Combined Features vs. Control	(0.454)	(0.338)	**(0.000)**
Combined Tradeoffs vs. Control	(0.312)	(0.221)	**(0.028)**
Combined Features vs. Features/Summary	(0.218)	(0.392)	**(0.012)**
Combined Tradeoffs vs. Tradeoffs/Summary	(0.365)	(0.269)	(0.428)

[b] *P-values are one-tailed since hypotheses are directional, p-values < 0.05 are in bold type*

Table 11
Descriptive Statistics and Analysis of Participant's Comments

Panel A: Descriptive statistics for the percentage of comments made in each condition[a]

	NPV	NPV too close	NPV misleading	Customer sat.	Employee sat.	Product quality	Eff.	Eff. > quality	Retain employ.	Environ. methods	Delay costly	Need info	Other
Control	38%	3%	3%	28%	3%						6%	6%	13%
Features	10%	3%	3%	10%		3%	33%	17%			10%	7%	3%
Tradeoffs	23%		3%	3%	3%		13%		10%	23%	7%	7%	7%
Features/Aware	15%	7%	4%	11%	4%	11%	33%	4%				4%	7%
Tradeoffs/Aware	33%			13%					4%	21%	13%		17%

[a] *Participants were asked to briefly describe their primary reason for making their choice.*

Panel B: p-values for Fisher's Exact Tests of homogeneity of proportion[b]

Features vs. Control	**(0.006)**	(1.000)	(1.000)	**(0.075)**	(1.000)	(1.000)	**(0.000)**	**(0.045)**	NA	NA	(1.000)	(1.000)	(0.338)
Tradeoffs vs. Control	(0.181)	(1.000)	(1.000)	**(0.007)**	(1.000)	NA	**(0.045)**	NA	(0.104)	**(0.003)**	(1.000)	(1.000)	(0.658)
Features vs. Features/Aware	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)	(0.603)	(1.000)	(0.177)	NA	NA	(0.229)	(1.000)	(1.000)
Tradeoffs vs. Tradeoff/Aware	(1.000)	NA	(1.000)	(0.601)	(1.000)	NA	(0.103)	NA	(0.601)	(0.721)	(1.000)	(0.485)	(0.656)

[b] *P-values are two-tailed since there are no directional hypotheses, p-values < 0.05 are in bold type.*

Panel C: Descriptive statistics for the percentage of comments made by choice[c]

	NPV	NPV too close	NPV misleading	Customer sat.	Employee sat.	Product quality	Eff.	Eff. > quality	Retain employ.	Environ. methods	Delay costly	Need info	Other
Alternative A	39%	2%		18%	4%	5%	5%			14%	7%	1%	6%
Alternative B	2%	5%	2%	10%			44%	15%	10%		10%		2%
Postpone			15%				8%					38%	38%
Reject			25%									25%	50%

[c] *Participants were asked to briefly describe their primary reason for making their choice.*

Panel D: p-values for Fisher's Exact Tests of homogeneity of proportion[d]

Alternative A vs. B	**(0.000)**	(0.594)	(0.329)	(0.266)	(0.547)	(0.296)	**(0.000)**	**(0.001)**	**(0.010)**	**(0.007)**	(0.721)	(1.000)	(0.657)
Alternative A vs. Postpone	**(0.000)**	(1.000)	**(0.025)**	**(0.055)**	(1.000)	(1.000)	(1.000)	NA	NA	(0.187)	(0.577)	**(0.000)**	**(0.007)**
Alternative A vs. Reject	(0.138)	(1.000)	**(0.038)**	(1.000)	(1.000)	(1.000)	(1.000)	NA	(1.000)	(1.000)	(0.721)	**(0.075)**	**(0.015)**

[d] *P-values are two-tailed since there are no directional hypotheses, p-values < 0.05 are in bold type.*

Table 12
Descriptive Statistics and Analysis of Participant's Comments – Summary

Panel A: Descriptive statistics for the number of comments made in each condition[a]

	NPV	NPV too close	NPV misleading	Customer sat.	Employee sat.	Product quality	Eff.	Eff. > quality	Retain employ.	Environ. methods	Delay costly	Need info	Other
Control	38%	3%	3%	28%	3%						6%	6%	13%
Combined Features	12%	5%	4%	11%	2%	7%	33%	11%			5%	5%	5%
Combined Tradeoffs	28%		2%	7%	2%		7%		7%	22%	9%	4%	11%
Features/Summary	21%			11%	3%	21%	13%	3%			8%	3%	18%
Tradeoffs/Summary	18%			6%	3%		3%		15%	15%	6%		33%

[a] *Participants were asked to briefly describe their primary reason for making their choice.*

Panel B: p-values for Fisher's Exact Tests of homogeneity of proportion[b]

Combined Features vs. Control	**(0.001)**	(1.000)	(1.000)	**(0.022)**	(1.000)	(0.289)	**(0.000)**	(0.163)	NA	NA	(1.000)	(1.000)	(0.205)
Combined Tradeoffs vs. Control	(0.152)	(0.346)	(1.000)	**(0.005)**	(1.000)	NA	(0.285)	NA	(0.285)	**(0.004)**	(1.000)	(0.602)	(0.723)
Combined Features vs. Features/Summary	**(0.044)**	(0.544)	(1.000)	(0.475)	(0.525)	**(0.004)**	(0.229)	(0.415)	NA	NA	(0.357)	(1.000)	**(0.006)**
Combined Tradeoffs vs. Tradeoff/Summary	(0.763)	NA	(1.000)	(1.000)	(0.542)	NA	(1.000)	NA	(0.124)	(1.000)	(1.000)	(1.000)	**(0.001)**

[b] *P-values are two-tailed since there are no directional hypotheses, p-values < 0.05 are in bold type.*

Panel C: Descriptive statistics for the number of comments made by choice[c]

	NPV	NPV too close	NPV misleading	Customer sat.	Employee sat.	Product quality	Eff.	Eff. > quality	Retain employ.	Environ. methods	Delay costly	Need info	Other
Alternative A	33%	1%		15%	3%	7%	4%		2%	12%	7%	1%	13%
Alternative B	5%	4%	2%	9%	2%	2%	38%	13%	11%		9%		7%
Postpone			13%				7%			7%		33%	40%
Reject	13%		13%			13%	13%					13%	38%

[c] *Participants were asked to briefly describe their primary reason for making their choice.*

Panel D: p-values for Fisher's Exact Tests of homogeneity of proportion[d]

Alternative A vs. B	**(0.000)**	(0.582)	(0.302)	(0.319)	(1.000)	(0.167)	**(0.000)**	**(0.000)**	**(0.021)**	**(0.002)**	(0.768)	(1.000)	(0.201)
Alternative A vs. Postpone	**(0.000)**	(1.000)	**(0.015)**	**(0.060)**	(1.000)	(0.347)	(1.000)	NA	(1.000)	(0.450)	(0.347)	**(0.000)**	**(0.067)**
Alternative A vs. Reject	(0.567)	(1.000)	**(0.039)**	(0.564)	(1.000)	(0.374)	(0.252)	NA	(1.000)	(1.000)	(1.000)	(0.114)	**(0.018)**

[d] *P-values are two-tailed since there are no directional hypotheses, p-values < 0.05 are in bold type.*

Chapter 5: Summary and Conclusions

Delaying important decisions can be costly to an organization. Avoiding action may be reasonable in the short term from an individual's perspective because the individual relieves his or her own discomfort in having to make a choice. This is an agency issue: what is in the best interests of the manager is not always in the best interests of the organization. The shareholders of the organization want the managers to undertake investments provided the marginal return is greater than or equal to the opportunity cost of capital. When managers do not do this, they are not executing the desires of the shareholders.

Choice avoidance is a mechanism to cope with negative affect. Negative affect can arise as a result of loss of freedom, fear of regret or choice difficulty. While each of these factors may influence negative affect, this study focuses on choice difficulty and investigates two dimensions of choice difficulty that may cause negative affect and, as a result, cause individuals to avoid choice. Two potential remedies to this problem are investigated as well. I find that negative affect is higher when alternatives have difficult-to-compare features or involve difficult tradeoffs. The desire to avoid choice is higher when alternatives have difficult-to-compare features or require difficult tradeoffs, even when analytical tools are used to evaluate the alternatives. Mediation analysis indicates that negative affect is a partial mediator in the relation between choice difficulty and choice avoidance, indicating that in avoiding choice, individuals are, in part, responding to negative affect. Our current decision models do not contemplate the influence of affect and, as a result, do not help managers overcome inaction.

The first remedy attempted to help individuals overcome inaction by making them aware of their own affective state. If participants used negative affect as information in this situation, negative affect should not have changed but the desire to postpone should have been reduced. Participant's responses, however, were not significantly different from the choice difficulty conditions alone, indicating that in this situation, participants were not using negative affect as information when making their decision.

The second remedy attempted to help participants overcome inaction by giving them a more problem-focused tool to help them cope with negative affect. Participants who were asked to write a brief summary of each alternative reported slightly lower negative affect as well as a significantly lower desire to postpone than participants in the choice difficulty conditions alone. The results indicate that individuals respond to negative affect by choosing an emotion-focused coping strategy, but the use of a more problem-focused strategy can help them overcome inaction.

The results of this study have important implications to managerial accounting decision models. When choice difficulty increases, individuals experience higher levels of negative affect. As a means to cope with the negative affect, individuals avoid making a choice. In addition, it appears that individuals who experience higher levels of negative affect shift their focus from summary measures, like NPV, to individual features. This indicates that individuals not only avoid resolving the conflict caused by choice difficulty by not making a choice, but also they may avoid resolving the conflict by focusing on one or two features instead of the entire information set that is summarized by NPV. When decisions become more difficult and analytical tools are used for evaluation,

individuals may focus on the individual features, and, as a result, either avoid choice or make a less than optimal choice. Instructing managers to take deliberate steps to resolve conflict and make decisions using all the available relevant information can help them overcome inaction.

There are a number of limitations to this study. It was important to construct an experiment where it was clear that delay was costly. As a result, the experimental materials make the cost of delay salient and immediate and in so doing, made it more difficult to find the phenomena of interest. In a natural environment the cost of delay may not be so clear cut and, as a result, may make it easier for an individual to delay. In addition, it was important to construct a scenario where the NPV captured all the relevant changes to cash flow related to the investment and hold NPV constant across all conditions. All other items had to be carefully constructed so that the same alternative was always normatively preferred. As a result, the experimental materials make one alternative normatively preferred, making it, again, more difficult to find the phenomena of interest.

As with any experiment, subjects may bring prior beliefs and knowledge or may not take the experiment seriously and, as a result, not behave in the experimental setting as they would in the natural environment. If true, both of these limitations would have added noise to the results and made it difficult to find significant results. However, since the participants were randomly assigned to conditions, prior beliefs should not be problematic for experimental inference. Another limitation is the access to qualified participants. The cell sizes in this study ranged from 16 to 18 participants per cell, which

is close to the minimum number needed to be able to draw strong conclusions from the results. The small cell size may contribute to the lack of results for the final choice.

Choice avoidance and the influence of negative affect on evaluation and judgment is a new and important area of research in accounting. Our current models do not consider factors that influence avoidance nor do they consider the influence of affect on evaluation and judgment. This provides potential areas of future research related to how managers make accounting decisions. For example, there may be other factors contributing to choice avoidance including fear of regret. Anticipated regret may influence both what individuals choose and whether they choose at all. The remedies for fear of regret are likely different than the one explored in this study. The traditional approach to agency problems is to align the manager's goals with those of the shareholders through some type of reward/compensation scheme may increase a manager's tendency to avoid choice. Perhaps tying the manager's compensation to the outcome of the investment decision increases the fear of regret and actually increases choice avoidance. A subsequent research study could investigate whether financial compensation tied to the outcome of investment decisions affects the tendency to avoid choice positively or negatively.

List of References

Baron, R.M. and D.A. Kenny. 1986. The Moderator – Mediator Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*. 51(6): 1173-1182.

Beattie, J. and S. Barlas. 2001. Predicting Perceived Differences in Tradeoff Difficulty. *Conflict and Tradeoffs in Decision Making*. Cambridge University Press 2001. Cambridge, UK.

Brehm, S. S. and J. W. Brehm. 1981. *Psychological reactance: A theory of freedom and control*. New York, NY: Academic Press.

Brehm, J.W. and E. Rozen. 1971. Attractiveness of Old Alternatives when a New, Attractive Alternative is Introduced. *Journal of Personality and Social Psychology*. 20(3): 261-266.

Copeland, T. and V. Antikarov. 2001. *Real Options: A Practitioner's Guide*. New York, NY: TEXERE.

Einhorn, H. J. and R. M. Hogarth. 1981. Behavioral Decision Theory: Processes of Judgment and Choice. *Journal of Accounting Research*. 19(1): 1-31.

Folkman, S. and R.S. Lazarus. 1988. Coping as a Mediator of Emotion. *Journal of Personality and Social Psychology*. 54(3): 466-475.

Kadous, K. 2001. Improving Jurors' Evaluation of Auditors in Negligence Cases. *Contemporary Accounting Research*. 18(3): 425-444.

Kida, T.E., K.K. Moreno, and J.F. Smith. 2001. The Influence of Affect on Managers' Capital-Budgeting Decisions. *Contemporary Accounting Research*. 18(3): 477-494.

Koonce, L., M. L. McAnally and M. Mercer. 2001. How do Investors Judge the Risk of Derivative and Non-Derivative Financial Items? Working Paper. University of Texas.

Lazarus, R.S. 1991. Progress on a Cognitive-Motivational-Relational Theory of Emotion. *American Psychologist*. 46(8): 819-834.

Loewenstein, G.F., Weber, E.U., Hsee, C.K. and E.S. Welch. 1999. Risk as Feelings. Working paper 1999.

Luce, M.F. 1998. Choosing to Avoid: Coping with Negatively Emotion-Laden Consumer Decisions. *Journal of Consumer Research*. 24 (March): 409-433.

Luce, M.F. 2001. Consequences of Tradeoff Difficulty. *Journal of Consumer Research*. Supplemental Issue 1: 1- 209.

Mano, H. 1991. The Structure and Intensity of Emotional Experiences: Method and Context Convergence. *Multivariate Behavioral Research*. 26(3): 389-411.

O'Donoghue, T. and M. Rabin. 1999a. Doing It Now or Later. *The American Economic Review*. 89(1): 103-124.

O'Donoghue, T. and M. Rabin. 1999b. Incentives for Procrastination. *The Quarterly Journal of Economics*. 114(3): 769-816.

O'Donoghue, T. and M. Rabin. 2001. Choice and Procrastination. *The Quarterly Journal of Economics*. 116(1): 121-160.

Samuelson, W. and R. Zeckhauser. 1988. Status Quo Bias in Decision Making. *Journal of Risk and Uncertainty*. 1: 7-59

Schwarz, N. and G.L. Clore. 1983. Mood, Misattribution and Judgments of Well-Being: Informative and Directive Functions of Affective States. *Journal of Personality and Social Psychology*. 45(3): 513-523.

Schwarz, N. and G.L. Clore. 1988. How do I Feel About It? The Information Function of Affective States. *Affect, Cognition and Social Behavior*. Lewiston, NY: Hogrefe.

Smith, J.F. and T. Kida. 1991. Heuristics and biases: Expertise and task realism in auditing. *Psychological Bulletin*. (May): 472-489.

Tversky, A. and E. Shafir. 1992. Choice under conflict: The dynamics of deferred decision. *Psychological Science.* 3(6): 358-361.

Vera-Munoz, S.C. 1998. The Effects of Accounting Knowledge and Context on the Omission of Opportunity Costs in Resource Allocation Decisions. *The Accounting Review.* Vol. 73(1): 47-72.

Weber, E.U., J. Baron, and G. Loomes. *Conflict and Trade-offs in Decision Making.* Cambridge series on Judgement and Decision Making. Cambridge University Press 2001. Cambridge, UK.

Zeelenberg, M. and J. Beattie. 1997. Consequences of regret Aversion: 2. Additional evidence for effects of feedback on decision making. *Organizational Behavior and Human Decision Processes.* 65: 148-158.

Zeelenberg, M., J.J. Inman, and R. Pieters. 2001. What We Do When Decisions Go Awry: Behavioral Consequences of Experienced Regret. *Conflict and Tradeoffs in Decision Making.* Cambridge University Press 2001. Cambridge, UK.

Appendix A
Instructions to Experimental Materials

Please record your Start Time _____

General Instructions

Managerial Investment Decision Making Case

Thank you for participating in this study of managerial decision making. Please take a minute to read the following instructions.

- Please read the following information regarding a capital investment decision.
- The task will take approximately 15 – 20 minutes.
- Work through the task from beginning to end. do not go back and revisit prior questions once you have completed them.
- As you read through the task, place yourself in the role of the manager and try to imagine how you would respond if you were actually evaluating the capital investment options and making the final decision.

☐ **Please check here that you have read the above instructions.**

Appendix B
Instructions to Experimental Materials – Aware Conditions Only

Please record your Start Time _____

General Instructions

Managerial Investment Decision Making Case

Thank you for participating in this study of managerial decision making. Please take a few minutes to read the following instructions.

- Please read the following information regarding a capital investment decision.
- The task will take approximately 15 – 20 minutes.
- Work through the task from beginning to end, do not go back and revisit prior questions once you have completed them.
- As you read through the task, place yourself in the role of the manager and try to imagine how you would respond if you were actually evaluating the capital investment options and making the final decision.
- **Your goal is to get as completely into the role of manager as possible. It is not unusual for managers to feel anxious and tense when faced with making these decisions. You may find that you feel at least a little tense, anxious or otherwise uncomfortable, as well. This is natural.**

Do you anticipate feeling tense when making capital investment decisions? Please check one.

☐ **Yes, quite a lot.**

☐ **Yes, a little.**

☐ **No, none at all.**

Appendix C
Control Condition

Imagine that you are the Division Manager of a midsize publicly traded company. Your division is considered an investment center and you are fully responsible for achieving the operational and financial goals of your division as well as promoting long-term growth through ongoing capital investment decisions. As a result, you have the authority to make all operational and capital investment decisions for your division.

Your division produces nameplates and surfaces for a variety of uses. One of your products is the touch pads used on point of sales terminals (i.e., cash registers) in fast food restaurants. All products are custom made to client specifications. As your products have become more sophisticated, your firm has added new production equipment to perform the required functions. As a result, during production, items move from workstation to workstation with each workstation performing a single function.

Until now, adding a piece of equipment now and again has allowed your division to keep up with demand and maintain its market share, which has been relatively flat for the past three years. After some investigation, you determined that one barrier to increasing market share is the state of your production facility. A key success factor in your business is being responsive to the changing needs of your customers. Although your current production facility can meet the current level of activity, it could not handle much of an increase in activity. The marketing department believes that the limitations of the production facility may eventually impair their ability to meet the needs of current customers and, as a result, erode your current market share.

To address the limitations of your production facility you have been working with a team of supervisors and line employees to develop and evaluate potential solutions. Over the last few months your team has gathered information on a number of new technologies. After evaluating the alternatives, the group has identified two alternatives that seem to best address the problem at hand as well as provide the highest Net Present Value (NPV) of all the alternatives evaluated. Information regarding the features of the top two alternatives is presented below. The net present value (NPV) is calculated using a 12% discount factor, which is the firm-wide required return. Recall that when the NPV is equal to zero, the investment earns a 12% return on investment and that a positive NPV indicates a rate of return exceeding 12%. It is your job to make the final investment decision.

Both of the alternatives are newer types of technology that have greater capacity than your current technology. Both combine multiple steps in the process into a single workstation but with differing levels of automation. The first alternative is A-Tech and the second alternative is B-Tech. Each alternative can be purchased for $1,000,000 and has an estimated useful life of 5 years.

Cost savings are achieved with both investments, in part, from reducing production staff. All displaced employees will be provided out placement services including retraining if needed. It is likely that all displaced employees will be able to find other employment immediately.

Your division analysts have quantified all expected changes in market share, cost savings, costs of obtaining and placing the equipment into production and all costs related to employee displacement and included them in the analysis to the best of their ability. This includes any estimated impact the investment may have on key success factors like customer or employee satisfaction. The NPV of cash flows is presented below. In addition, the key success factors included in the NPV calculation have been itemized in the summary of the evaluation criteria, below.

NPV of Cash flows

	A - Tech	B - Tech
Increase in sales*	580,000	580,000
Savings from operations**	435,000	429,000
Required investment	(1,000,000)	(1,000,000)
Total NPV of Cash flows	15,000	9,000

* Includes estimated impact the investment has on customer satisfaction

** Includes estimated impact the investment has on employee satisfaction

All other capital investment projects currently under consideration are mostly repair and maintenance projects. None of the projects are urgent in nature and there are sufficient funds available if any of these projects are deemed appropriate.

Summary of evaluation criteria:	**A-Tech**	**B-Tech**
Required investment	$1,000,000	$1,000,000
NPV	$ 15,000	$ 9,000
Customer satisfaction	Improved	Somewhat
improved		
Employee satisfaction	Unchanged	Unchanged

Ratings: Improved > Slightly improved > Somewhat improved > Unchanged > Worsened

Once you have reviewed the material presented above, please turn the page and answer the questions.

Appendix D
Difficult-to-Compare Features Conditions

Imagine that you are the Division Manager of a midsize publicly traded company. Your division is considered an investment center and you are fully responsible for achieving the operational and financial goals of your division as well as promoting long-term growth through ongoing capital investment decisions. As a result, you have the authority to make all operational and capital investment decisions for your division.

Your division produces nameplates and surfaces for a variety of uses. One of your products is the touch pads used on point of sales terminals (i.e., cash registers) in fast food restaurants. All products are custom made to client specifications. As your products have become more sophisticated, your firm has added new production equipment to perform the required functions. As a result, during production, items move from workstation to workstation with each workstation performing a single function.

Until now, adding a piece of equipment now and again has allowed your division to keep up with demand and maintain its market share, which has been relatively flat for the past three years. After some investigation, you determined that one barrier to increasing market share is the state of your production facility. A key success factor in your business is being responsive to the changing needs of your customers as it relates to design changes, on-time delivery, and product quality. Although your current production facility can meet the current level of activity, it could not handle much of an increase in activity. Efforts to reduce throughput time and defect rates have been unsuccessful. The marketing department believes that the limitations of the production facility may eventually impair their ability to meet the needs of current customers and, as a result, erode your current market share.

To address the limitations of your production facility you have been working with a team of supervisors and line employees to develop and evaluate potential solutions. Over the last few months your team has gathered information on a number of new technologies. After evaluating the alternatives, the group has identified two alternatives that seem to best address the problem at hand as well as provide the highest Net Present Value (NPV) of all the alternatives evaluated. Information regarding the features of the top two alternatives is presented below. The net present value (NPV) is calculated using a 12% discount factor, which is the firm-wide required return. Recall that when the NPV is equal to zero, the investment earns a 12% return on investment and that a positive NPV indicates a rate of return exceeding 12%. It is your job to make the final investment decision.

One of the alternatives is a newer technology (A-Tech) that has greater capacity than your current technology. It combines multiple steps in the process into a single workstation. A-Tech is a high speed, precision machine that will reduce defect rates. Set-up time is lengthy so running large batches will be necessary, and, as a result, inventory levels will increase. It will not address throughput time or on-time delivery issues. This technology is highly calibrated to eliminate most defects and, because of this high calibration, it requires significantly more maintenance. This new technology can be purchased for $1,000,000 and has an estimated useful life of 5 years.

The other alternative is a component type system (B-Tech) that allows a set of machines to produce multiple products by a single operator. The system is designed to allow for quick set-ups and small batch sizes. As a result, inventory levels will decrease as well as throughput time. Because this technology increases the responsibility of each operator, his or her required training and experience, and pay are anticipated to increase. This technology is not a high precision system, and, as a result, will not address the defect issues. Product quality will be in the hands of the employees as it is now. The estimated cost of this alternative is also $1,000,000 and has as estimated useful life of 5 years.

Cost savings are achieved with both investments, in part, from reducing production staff. All displaced employees will be provided out placement services including retraining if needed. It is likely that all displaced employees will be able to find other employment immediately.

Your division analysts have quantified all expected changes in market share, cost savings, costs of obtaining and placing the equipment into production and all costs related to employee displacement and included them in the analysis to the best of their ability. This includes any estimated impact the investment may have on key success factors like customer or employee satisfaction. The NPV of cash flows is presented below. In addition, the key success factors included in the NPV calculation have been itemized in the summary of the evaluation criteria, below.

NPV of Cash flows

	A - Tech	B - Tech
Increase in sales*	580,000	580,000
Savings from increases in product quality	270,000	
Savings from operations**	215,000	209,000
Savings from increases in operational efficiency and flexibility		220,000
Increase in maintenance costs	(50,000)	
Required investment	(1,000,000)	(1,000,000)
Total NPV of Cash flows	15,000	9,000

* Includes estimated impact the investment has on customer satisfaction

** Includes estimated impact the investment has on employee satisfaction

All other capital investment projects currently under consideration are mostly repair and maintenance projects. None of the projects are urgent in nature and there are sufficient funds available if any of these projects are deemed appropriate.

Summary of evaluation criteria:	A-Tech	B-Tech
Required investment	$1,000,000	$1,000,000
NPV	$ 15,000	$ 9,000
Customer satisfaction improved	Improved	Somewhat
Employee satisfaction	Unchanged	Unchanged
Operational efficiency		
Inventory levels improved	Worsened	Slightly
Throughput time	Unchanged	Improved
Maintenance costs	Worsened	Unchanged
Product quality		
Defect rate	Improved	Unchanged
Returns	Slightly improved	Unchanged
Flexibility		
Ease of change from product to product	Unchanged	Slightly improved

Ratings: Improved > Slightly improved > Somewhat improved > Unchanged > Worsened

Once you have reviewed the material presented above, please turn the page and answer the questions.

Appendix E
Difficult Tradeoffs Conditions

Imagine that you are the Division Manager of a midsized publicly traded company. Your division is considered an investment center and you are fully responsible for achieving the operational and financial goals of your division as well as promoting long-term growth through ongoing capital investment decisions. As a result, you have the authority to make all operational and capital investment decisions for your division.

Your division produces nameplates and surfaces for a variety of uses. One of your products is the touch pads used on point of sales terminals (i.e., cash registers) in fast food restaurants. All products are custom made to client specifications. As your products have become more sophisticated, your firm has added new production equipment to perform the required functions. As a result, during production, items move from workstation to workstation with each workstation performing a single function.

In addition, your division is committed to a number of long standing values, such as the value placed on employees and the value placed on being an environmentally friendly company. Valuing employees is exhibited in numerous ways from the inclusion of all ranks in improvement efforts, job satisfaction initiatives and a solid record of no layoffs. Being environmentally friendly is demonstrated by the types of raw materials purchased for the production process as well as by the methods of waste disposal.

The current employees typically operate more than one piece of equipment and it is not uncommon for them to rotate through machines to increase their skill level. Most of the employees have been with your division for more than 8 years and some for more than 15 years. Production employees' average level of education is a high school diploma. Your division is relatively small, where everyone knows each other and is active socially. In fact, employees' lives seem to revolve around the company, from the company softball team to employee support of community service projects. The employees pride themselves on their ability to make quality products for their customers and view themselves as tradesmen with a long-term connection to the company.

Until now, the combination of adding equipment as needed over time and employee ingenuity and commitment has allowed your division to keep up with demand and maintain its market share, which has been relatively flat for the past three years. After some investigation, you determined that one barrier to increasing market share is the state of your production facility. A key success factor in your business is being responsive to the changing needs of your customers. Although your current production facility can meet the current level of activity, it could not handle much of an increase in activity. The marketing department believes that the limitations of the production facility may eventually impair their ability to meet the needs of current customers and, as a result, erode your current market share.

To address the limitations of your production facility you have been working with a team of supervisors and line employees to develop and evaluate potential solutions. Over the last few months your team has gathered information on a number of new technologies. After evaluating the alternatives, the group has identified two alternatives that seem to best address the problem at hand as well as provide the highest Net Present Value (NPV) of all the alternatives evaluated. Information regarding the features of the top two alternatives is presented below. The net present value (NPV) is calculated using a 12% discount factor, which is the firm-wide required return. Recall that when the NPV is equal to zero, the investment earns a 12% return on investment and that a positive NPV indicates a rate of return exceeding 12%. It is your job to make the final investment decision.

Both of the alternatives are newer types of technology that have greater capacity than your current technology. Both combine multiple steps in the process into a single workstation but with differing levels of automation. The first alternative is A-Tech and the second alternative is B-Tech. Each alternative can be purchased for $1,000,000 and has an estimated useful life of 5 years.

A-Tech will reduce the number of employees by 20% while B-Tech will reduce the number of employees by 9%. Due to the nature of B-Tech, most of the employee reductions can be accomplished through attrition. A-Tech produces similar waste and byproducts as your current system and, as a result, will allow your division to maintain its current environmentally friendly waste disposal methods. B-Tech, however, produces a very different type of waste that cannot be disposed of in an environmentally friendly method. The waste cannot be processed further, is not biodegradable and must be disposed of in landfills. While this is not in keeping with the company's environmentally friendly values, the waste disposal method required in B-Tech provides a substantial cost savings.

Your division analysts have quantified all expected changes in market share, cost savings, costs of obtaining and placing the equipment into production and all costs related to employee displacement and included them in the analysis to the best of their ability. This includes any estimated impact the investment may have on key success factors like customer or employee satisfaction. The NPV of cash flows is presented below. In addition, the key success factors included in NPV have been itemized in the summary of the evaluation criteria, below.

NPV of Cash flows

	A - Tech	B - Tech
Increase in sales*	580,000	580,000
Savings from operations**	125,000	119,000
Savings from employee reductions	310,000	100,000
Savings from changing waste disposal methods		210,000
Required investment	(1,000,000)	(1,000,000)
Total NPV of Cash flows	15,000	9,000

* Includes estimated impact the investment has on customer satisfaction

** Includes estimated impact the investment has on employee satisfaction

All other capital investment projects currently under consideration are mostly repair and maintenance projects. None of the projects are urgent in nature and there are sufficient funds available if any of these projects are deemed appropriate.

Your division has valued its record of no layoffs. Approving either investment will require employee lay-offs to differing degrees. A-Tech will require laying off 20% of the production staff and B-Tech will require only 9%. In addition, it will be very difficult for the displaced employees to find other employment due to poor economic conditions, low education level of employees and limited employment opportunities in the area. While B-Tech will minimize the number of displaced employees, the waste it produces threatens your division's ability to maintain its environmentally friendly waste disposal methods. It appears that the investment that is most environmentally friendly, A-Tech, is also the alternative that will

result in the largest number of employees being layed-off. B-Tech, on the other hand, will allow you to retain the most employees but will produce environmentally unfriendly waste that cannot be disposed of in an environmentally friendly manner.

Summary of evaluation criteria:	**A-Tech**	**B-Tech**
Required investment	$1,000,000	$1,000,000
NPV	$ 15,000	$ 9,000
Customer satisfaction improved	Improved	Somewhat
Employee satisfaction	Unchanged	Unchanged
Percent of production employees displaced	20%	9%
Environmentally friendly waste disposal methods	Yes	No

Ratings: Improved > Slightly improved > Somewhat improved > Unchanged > Worsened

Once you have reviewed the material presented above, please turn the page and answer the questions.

Appendix F
Summary Task for the Summary Conditions Only

Your objective as the Division Manager is to seek the alternative that provides the best overall benefits to your division. As part of your evaluation process please write a paragraph summarizing your evaluation of each alternative.

Overall evaluation of A-Tech.

Overall evaluation of B-Tech

Appendix G
Decision Difficulty and Emotion Rating Form

Put yourself in the position of the manager. Before making your decision, answer the following questions by checking the box that best describes your response.

How difficult is it for you to make this decision?

☐ 0 Extremely easy ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Neither easy nor difficult ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Extremely difficult

Rate the level of complexity of this decision.

☐ 0 Very straight forward ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Not completely straight forward ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Extremely complex

How sure are you that you will make the right decision?

☐ 0 Not sure at all ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Neutral ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Very sure

Assign each of the following statements a value between zero and ten reflecting how well each describes how you feel about making this decision.

I feel worried.

☐ 0 Not at all worried ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Neutral ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Extremely worried

I feel nervous.

☐ 0 Not at all nervous ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Neutral ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Extremely nervous

I feel uneasy.

☐ 0 Not at all uneasy ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Neutral ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Extremely uneasy

I feel anxious.

☐ 0 Not at all anxious ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Neutral ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 Extremely anxious

Complete this page before continuing. Do not revisit this page.

Appendix H
Desire to Choose and Final Choice Form

In this type of decision you can approve one of the investments, postpone making the decision or reject both investments. Please rate on a scale of zero to ten your level of <u>desire</u> to choose each of the following options.

Approve the investment in A-Tech now

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Weak desire to approve — Strong desire to approve

Approve the investment in B-Tech now

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Weak desire to approve — Strong desire to approve

Postpone making the decision for now

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Weak desire to postpone — Strong desire to postpone

Reject both investment options (stay with existing technology)

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Weak desire to reject — Strong desire to reject

Please make your decision now by checking one of the options below:

☐ Approve the investment in A-Tech now

☐ Approve the investment in B-Tech now

☐ Postpone making the decision for now

☐ Reject both investment options (stay with existing technology)

Please briefly describe your primary reasons for making your choice.

_____

_____

_____

_____

Appendix I
NPV Recall Form

Please answer the following question without referring to the prior material.

Check below all items included in the NPV calculation.

- ☐ Increase in sales
- ☐ Savings from operations
- ☐ Savings from increases in operational efficiency and flexibility
- ☐ Savings from increases in product quality
- ☐ Savings from employee reductions
- ☐ Savings from changing waste disposal methods
- ☐ Impact investment has on customer satisfaction
- ☐ Impact investment has on employee satisfaction
- ☐ Increase in maintenance costs
- ☐ Cost of investment in new technology

Appendix J
Post-Experimental Questionnaire

Please complete the following demographic questionnaire.

How many years of work experience do you have? _____

How many of those years were you in a managerial/supervisory role? _____

What is your experience with capital investment decisions? (Check one)

☐ None (never been involved with a capital investment decision)

☐ A little (have only participated in evaluation of capital investment projects)

☐ A fair amount (have made 1-3 capital investment decisions)

☐ A considerable amount (have made 4-6 capital investment decisions)

☐ **Major part of job (have made more than 6 capital investment decisions)**

What is your current job title? _____

What is the highest level of education you have obtained? (Check one)

☐	☐	☐	☐	☐	☐
Some college	Undergraduate degree	Some graduate courses	Master's degree	Professional degree (LLM, JD)	Other

How many accounting courses have you taken? (Check one)

☐	☐	☐	☐	☐
0 – 3	4 – 6	7 – 10	11 – 13	Over 13

Please indicate your gender.

☐ Male ☐ Female

Please record your Finish Time _____

Once you have completed the above materials return them to Kimberly Sawers.

Thank you for your participation.

Vita

Kimberly M. Sawers

Department of Accounting, Box 353200, University of Washington
Seattle, WA 98195-3200, Home phone (425) 392-5746,
Email ksawers@u.washington.edu

EDUCATION:

Doctor of Philosophy in Business Administration with a major in Accounting, June 2002, University of Washington, Seattle, WA.

Masters of Business Administration, December 1994, Seattle Pacific University, Seattle, WA.

Bachelor of Science in Business Administration with a major in Accounting, June 1985, Southern Oregon State University, Ashland, OR.

EXPERIENCE:

University of Washington

Instructor - Managerial Accounting, June 2001 to August 2001
Teaching Assistant - Executive MBA program, September 1999 to April 2001
Research Assistant, January 1999 to September 1999, June 2000 to September 2000

Undergraduate evaluations – Overall rating = 4.1 on a 5 point scale, 5 being the highest
Executive MBA evaluations – Overall rating = 4.4 on a 5 point scale, 5 being the highest

Seattle Pacific University

Visiting Assistant Professor of Accounting, September 1997 to September 1998
Adjunct Accounting Instructor, September 1996 to June 1997
Courses taught:
- Managerial Accounting (undergraduate & MBA)
- Financial Accounting (Undergraduate & MBA)
- Intermediate Accounting II
- Accounting Theory

Undergraduate evaluations – Overall rating = 4.5 on a 5 point scale, 5 being the highest
Graduate evaluations - Overall rating = 4.5 on a 5 point scale, 5 being the highest

Seattle Pacific University

Director of Finance, July 1995 to August 1997
Controller, July 1985 to June 1995

ACADEMIC AWARDS:

Anderson Foundation Doctorial Dissertation Fellowship, 2001 – 2002

DISSERTATION TOPIC:

Choice Avoidance in Managerial Accounting Decisions

Managers often delay making decisions when decision tools indicate a preferred alternative. This avoidance behavior is costly. I posit this tendency to delay arises from the conflict inherent in choice and the manager's resulting negative affect (emotion). In this study I examine two dimensions of choice difficulty which are posited to increase negative affect and, as a result, increase the tendency of individuals to avoid action. Specifically, I investigate the influence of choices requiring (1) tradeoffs of difficult to compare features, and (2) tradeoffs of highly valued goals, on an individual's tendency to avoid choice when analysis indicates action would be appropriate. In addition, I investigate the efficacy of two potential remedies that may help mitigate the influence of negative affect and, as a result, managers overcome inaction.

PAPERS AND PRESENTATIONS:

Burgstahler, D. and K. Sawers. 2002. Financial Reporting Incentives for Private Colleges and Universities. Working paper.

Presentations at professional meetings

"Balancing Risk: A Case Study in the Consolidation of Accounts Payable, Purchasing and Budget Control Functions" presentation at the Common Fund's National Education Treasury Management Forum, October 1997.

Co-Facilitator of "FASB 116 & 117 Implementation Roundtable" at the WACUBO seminar, May 1996.

PROFESSIONAL MEMBERSHIPS:

American Accounting Association
Society for Judgment and Decision Making
Washington Society of CPAs
Northwest Independent College & University Business Officers Association (1988-1997)
National Association of College & University Business Officers (1985-1997)

VOLUNTEER / SERVICE ACTIVITES:

Doctoral Business Student Association (Secretary, 1999-2000)
First Presbyterian Church of Bellevue (various youth activities, 1996-1998, 2000-2002)
Seattle Chapter of Habitat for Humanity (Finance Committee, 1995-1996)
Seattle Pacific University (community outreach programs, 1985-1997)

REFERENCES:

Jane Kennedy, Associate Professor
Department of Accounting, Box 35320
University of Washington, Seattle WA 98195-3200
(206) 543-6405, Email: jkennedy@u.washington.edu

Dave Burgstahler
Department of Accounting, Box 35320
University of Washington, Seattle WA 98195-3200
(206) 543-6316, Email: dburg@u.washington.edu

Kathryn Kadous
Department of Accounting, Box 35320
University of Washington, Seattle WA 98195-3200
(206) 221-5140, Email: kadous@u.washington.edu