EFFECTS OF PERSONAL RESPONSIBILITY AND REWARDS ON ESCALATION OF COMMITMENTS IN NEW PRODUCT CONTEXT

by

SUNIL HARISHBHAI CONTRACTOR

(Under the Direction of Thomas W. Leigh)

ABSTRACT

The Escalation of Commitment (EC) to a new product development (NPD) project is aptly characterized as "throwing good money after bad money" because the continuation of a failing course wastes scarce resources and precludes the opportunity of investing in alternate projects. Many studies have enhanced our understanding of EC. The focus of these studies is to explain EC in behavioral terms. In addition to explaining behavior, studies on EC should focus on understanding psychological aspects associated with EC in order to provide insights concerning the processes that guide managers' behavior. The extant research on EC suggests that managers' perception of personal responsibility to initiate a NPD project is an antecedent of EC. However, we don't know which psychological components of commitment are escalated. Furthermore, we don't know when (i.e. NPD outset or post failure) these components are escalated.

Researchers suggest self-justification theory as a rationale for EC to NPD when a manager is personally responsible for initiating the NPD project. Self-justification theory employs a behavioral commitment view. This view suggests that the effects of personal responsibility to initiate a project on future behavior and attitudes towards the project are reduced when rewards are associated with the personal responsibility. In fact, under the title of "Reverse

Incentive Effect," a parallel stream of research exists to explain a counterintuitive effect in which a smaller reward produces a higher effect than a larger reward. However, we don't know which components of commitments are associated with the reverse incentive effect.

The objective of this dissertation is to identify which components of commitments are escalated, when are the components escalated and which components of the commitment are involved in the reverse incentive effect. Consistent with the experimental method in EC, a 2x2 experiment design is employed in which the independent variables are personal responsibility to initiate NPD project and reward. The results of this experiment support my hypotheses and suggests 1) a differential effect of interaction between personal responsibility to initiate project and reward on components of psychological commitment at the outset of NPD project, and 2) change in the effects of interaction between the personal responsibility and rewards on the components upon potential NPD failure. Based on the empirical findings theoretical and managerial implications as well as possible future research, are discussed.

INDEX WORDS: Escalation of Commitment, Reverse Incentive Effect, Personal Responsibility, Rewards, Commitment, Self-Justification Theory, and Outcome based rewards

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DEDICATION

This dissertation is dedicated to my wife Bela, my son Parth and my daughter Niti as well as my mother Harshilaben and my father Harishbhai. Without their love, encouragement, support and sacrifice it would have been impossible to attain this degree.

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CHAPTER I

INTRODUCTION

1. Importance of the Research Area

Although new product development (NPD) is a vital activity to most firms, it is also a risky business. New products absorb scarce resources in increasing quantities over the developmental cycle starting from idea generation to its commercialization. However, only a small percentage of NPD projects that reach commercialization are profitable (Page 1993). According to Urban and Hauser (1993), the cost of these failures is millions of dollars. Thus, it is important to intelligently and objectively screen and selectively discontinue NPD projects in order to save valuable resources. Unfortunately, empirical evidence suggests that managers actually tend to escalate their commitment to failing new product development (NPD) projects (Schmidt and Calantone 1998; 2002). This escalation of commitment (EC) phenomena is aptly characterized as "throwing good money after bad money" because the continuation of a failing NPD project wastes scarce resources and precludes the opportunity of investing in alternate projects.

2. Gaps in the Literature

Many studies have been conducted to understand the EC phenomena (Boulding et al. 1997; Brockner 1992; Schmidt and Calantone 1998; Schmidt et al. 2001; Staw 1997). These studies typically define escalation of commitment in terms of the behavioral continuation of a failing NPD project. They contribute significantly to our understanding by identifying antecedent conditions that trigger EC and proposing theories to explain EC. Fishbein and Ajzen (1980) suggest that, in addition to explaining overt behavior such as continuation of a failing NPD

project, it is also important to understand attitudes that influence the behavior. However, EC studies have not attempted to understand how a manager's attitudes or psychological states[1] affect continuation of failing NPD projects. Identification of a manager's psychological states associated with EC to a NPD project will shed light on how needs, obligations and wants of the manager operate in a NPD context. In turn, the understanding of psychological states associated with EC will suggest possible ways to more effectively discontinue failing NPD projects. For example, identification of an obligation as a root cause of EC would suggest that a change in an NPD team's norms or the culture of the organization might limit EC; however, if needs are identified as a root cause of EC, then a change in the NPD team's rewards structure might be suggested. Identification of psychological states associated with EC would also provide insight concerning the processes that guide a manager's EC to a NPD project. When EC is evaluated solely in terms of the continuation of a failing NPD project, we cannot determine if the managers' psychological states were escalated before NPD failure, or due to the NPD failure itself. Furthermore, we cannot determine which components of psychological commitment were escalated and, hence, control the escalation process.

Research on EC suggests that an individual has a greater tendency to escalate commitment to a failing course of action when he is personally responsible for initiating the NPD project in the first place (Staw 1976). Most organizations follow a stage-gate process that involves incremental steps for the development of new products (Cooper 1994). Schmidt and Calantone (2002) posit that the EC phenomena is applicable to the NPD decision since the NPD process meets the required conditions for EC phenomena, as suggested by Staw (1997), in that it offers the opportunity to either persist or withdraw in case of a potentially negative consequence.

[1] Recent development in the literature of commitment suggests that psychological state is broader concept than attitudes Meyer, John P. and Natalie J. Allen (1997), Commitment in the Workplace: Theory, Research, and Application. Thousand Oaks, CA.: Sage Publication.

Subsequently, they confirm that a manager, who was personally responsible for initiating an NPD project, exhibited a behavioral tendency to continue a failing NPD project. They call for an identification of other antecedents of EC in the NPD context, including the effects of the reward structure motivating the manager.

Rewards are a tool for eliciting desired behavior (Eisenhardt 1985). In the NPD contexts, rewards are often tied to the success of the NPD project[2]. Such rewards may directly affect a manager's commitment to completing an NPD project whether or not he is personally responsible for initiating an NPD project. Thus, understanding the effects of rewards on managers' psychological states as well as the behavioral tendency to continue a failing NPD project is important. Furthermore, since rewards and personal responsibility may affect the decision of an NPD manager, understanding the interaction effects of these antecedents on root psychological states, which may drive a NPD manager's tendency to continue a failing NPD project is desirable. Particularly, the understanding of root psychological states when a manager is personally responsible for an NPD project and/or rewarded for a NPD project will illuminate the nature of interactions between personal responsibility and rewards. This understanding, in turn, will not only enable us to devise effective strategies to control the escalation process as suggested earlier, but the understanding will also enable us to better assign responsibility and rewards in order to curtail triggering of the escalation process.

3. Objectives of the Study

The purpose of this dissertation is to advance our understanding of the escalation of commitment phenomenon in the NPD context. Specifically, the objectives are to:

[2] Organizations define NPD success differentially based on meeting or exceeding one or more of market performance targets such as revenue goal or a market share and/or launch of product in a market.

1. Introduce a conceptual model that defines EC as a cross sectional or inter-temporal increase in any of the distinct psychological states. These psychological states, namely affective commitment, normative commitment and continuance commitment, are the underlying roots of commitment. These roots represent managers' needs, obligations, and wants for NPD projects, respectively.
2. Identify and evaluate psychological states that may drive an NPD manager to escalate commitment when he/she is personally responsible for initiating the NPD project.
3. Identify and evaluate the effects of reward as a potential driver of EC with emphasis on identifying psychological states that drive a manager's decision to escalate commitment when reward is based on the success of the NPD project.
4. Theoretically and empirically examine the nature of interaction between personal responsibility and rewards on alternative roots (i.e. psychological states) of commitment as well as the choice to continue a failing NPD project.

4. Organization of the Dissertation

The remainder of this dissertation is organized as follows. First, I summarize the literature on commitment in the NPD context. Then I define EC as a derived construct of commitment having three components: affective commitment, normative commitment and continuance commitment. Next, I develop the research hypotheses to investigate effects of personal responsibility and/or rewards on EC to NPD project. Subsequently, I describe an experiment that was conducted to test these hypotheses. Finally, I present the empirical results of the study and its implications for future research and managerial practice.

CHAPTER II

LITERATURE REVIEW

The objective of this chapter is to summarize the extant research on escalation of commitment. First, the scope of the research on escalation of commitment is described. Then the research on EC is summarized employing a scheme that categorizes antecedents associated with EC. Subsequently, theoretical mechanisms proposed by researchers to explain the EC phenomena are described in the NPD context.

1. Scope of the Phenomena

The escalation of commitment phenomena pertains to decision making in situations where efforts to achieve something have failed and corrective actions can actually deepen or compound the loss associated with the situation (Staw 1997). For example, when an individual is losing money in a common stock, should he/she invest more money to reduce average cost or sell the stock? Similarly, when a manager has invested money in a poorly performing project, should he invest more money to improve project's performance or should he discontinue the project? In each case, escalating commitment may often compound the problem.

Formally, Staw (1997) defines an escalation situation as one in which loss has been suffered; in which there is an opportunity to persist or withdraw; and, in which the consequences of these actions are uncertain. Schmidt and Calantone (2002) note that NPD managers employ a stage gate process that includes multiple decision points. At each decision point in the process, NPD managers review the project's performance and make an investment decision (i.e. go/no-go decision) to pursue the development or withdraw from it. Thus, when an NPD project is not

performing to the expectations defined based on an objective criteria, the NPD go/no-go decision is a potential escalation situation.

The scope of EC research is not limited to the NPD context. Researchers have studied decision making during the Vietnam War and Desert Storm (Lipshitz 1995); case studies of Expo 86 (Ross and Staw 1986); the Apollo moon mission (Mitroff 1974); the Campeau-Federated merger, the coffee wars between Philip Morris and P&G (Bazerman and Neale 1992); the NBA draft (Staw and Hoang 1995); and information technology projects (Keli 1995, Keli, Mann and Rai 2000) as escalation situations. They have identified several antecedents of escalation of commitment and proposed many theoretical mechanisms to explain it.

2. Antecedents of Escalation of Commitment

In his seminal paper, Staw (1976) conducted a role-playing experiment by asking participants to assume a position of a vice president of a company. He randomly assigned the subjects to one of the two treatment groups by manipulating responsibility to initiate a project at two levels (choosing a project and justifying the selection or project organizationally assigned). Next, he manipulated the predicted project outcome at two levels. One group of subjects was provided positive outcome information; the other group of subjects was provided negative outcome information. Subsequently, he asked subjects in both groups to make a decision as to whether they should invest additional resources. He observed that the subject group, which had personally initiated a project that subsequently had a negative outcome, allocated significantly more money to continue the project than the other subject groups. Hence, he concluded that individuals have a tendency to escalate commitment to a failing project when they are responsible for initiating the project.

The results of Staw's research generated significant interest in the escalation of commitment phenomena. Other researchers have replicated Staw's results, as well as extended our understanding of the phenomena. This research suggests that, even though rational decision-making would suggest individuals to withdraw from a failing course of action, individuals tend to escalate commitment and persist with the course of action for a variety of reasons. Staw and Ross (Staw 1997; Staw and Ross 1987; 1989) have reviewed the research on EC and proposed a classification scheme that categorizes the determinants of escalation of commitment into four groups: project determinants, psychological determinants, social determinants and organizational determinants. A brief description of each group follows:

2.1. Project Determinants

Project determinants are the objective features of a project that affect the financial value or utility of a course of action as well as broader economics of the investment situation (Staw 1997). Specifically, individuals tend to continue a failing course of action when 1) a setback is perceived to be due to temporary causes (Leatherwood and Conlon 1985; Levi 1982) 2) the efficacy of further investment/actions in turning a losing situation around is thought to be positive (Bateman 1983; Conlon & Wolf 1980; Staw and Fox 1977) 3) the size of project's goal or eventual payoff (Rubin & Brockner 1975) 4) the level of future expenditures or costs necessary to complete a project's goals or achieve its payoff (Brockner, Rubin & Lang 1981) 5) the availability of feasible alternatives to a course of action (Bateman 1983; Northcraft & neale 1986); and, the salvage value of closing costs for ending a project (Northcraft & Wolf 1984).

Subsequently, Schmidt and Calantone (1998) suggested that innovativeness of NPD project also triggers escalation of commitment. Following a commonly adopted research methodology for EC, the authors assigned experimental group subjects to develop a product

which was manipulated to be perceived as either high or low in its innovativeness. Then, the authors simulated an NPD failure by presenting lackluster performance data and asked the experimental and control subjects to make a project continuation decision. The results show that individuals who perceive an NPD project to be innovative have a higher likelihood to continue the failing NPD project than individuals, who perceive an NPD project to be less innovative. In summary, various attributes of a project's characteristics are antecedents to EC.

2.2 Social Determinants

This category represents social pressure on individuals' decision to continue a losing course of action. Decisions in an organization are not made in isolation. Hence, individuals need to consider ongoing social interactions and interpersonal relationships when making a decision. Individuals may continue a losing course due to norms for consistency (Staw and Ross 1980), or face saving, or public identification with a project (Brockner et al. 1981; Fox and Staw 1979). Furthermore, in addition to the external justification by publicly noting the accountability to others, individuals may continue a losing course of action due to internal justification that pertains to one's own felt sense of accuracy and competence (Bobocel and Meyer 1994). Another social determinant of escalation involves the attribution of leadership (Staw et al. 1997). An individual may continue a losing course because making it a success may be associated with a social reward of demonstrating a positive attribute of leadership.

2.3 Organizational Determinants

While social determinants are individual level determinants for EC, the organizational determinants are group level causes for EC. The organizational level determinants cannot be attributed to any single individual and are the product of social interactions and interpersonal relationships among members of the organization (Staw 1997). For a variety of reasons,

organizations are slow to respond or change a loosing course of action. The slow response may be attributed to a lack of right information communicated to a centralized decision-making authority or to resistance from affected constituencies. Stakeholders, e.g. channel members, who are not employees of the organization, may also initiate such political resistance. In addition, the mission of the organization or culture and value system of organization may mandate continuation of a losing course.

2.4 Psychological Determinants

Psychological determinants suggest why people do not turn away from a loosing course of action when the first real sign of trouble appears and indicates that the promised benefits are not going to materialize (Staw 1997). There are various explanations for this irrational behavior including optimism and illusion of control, self-justification, framing effects, agency effects, attribution, sunk costs and initial positive belief inertia. A brief description of each theory within an NPD context is as follows.

2.4.1 Optimism and Illusion of Control

The optimism (Tylor 1989) and illusion of control (Langer 1975) viewpoint are based on a tendency of people to overestimate the likelihood that positive events will occur in their lives and underestimate the likelihood of negative outcomes due to illusion of control (i.e. belief that one can control one's destiny) (Langer 1975). This view posits that people perceive themselves to perform better than others in most situations as well as believe in their ability to avoid future mishaps. Hence, individuals may not neutrally process objective economic data but they inflate NPD project's success expectations due to this optimism and illusion of control.

2.4.2 Self Justification Theory

Staw and his colleagues (Staw 1981; 1976; Staw and Fox 1977; Staw and Ross 1978) propose Self Justification Theory (SJT) as possible explanation for EC. They suggest that a manager who is personally responsible for initiating a NPD project will continue funding the failing project due to a felt need to self-justify his initial decision. The self-justification theory suggests that, because a decision is a psychologically binding act, an individual's initial behavior will influence his future behavior and attitudes (Staw 1976). Staw's rationale is that once a decision is made, future decisions are made to justify the first decision by changing one's attitudes to resolve imbalances between one's motivated state (i.e. a belief that the first decision was right thing to do) and the inconsistent results of the first decision. Self-justification theory is based on cognitive dissonance theory (Festinger 1957), which posits that an individual's psychological discomfort arising from an existence of dissonance (inconsistency between two cognitions held concurrently) motivates the individual to reduce discomfort by achieving consonance (consistency between two cognitions held concurrently).

Many studies have suggested SJT as possible rationale for EC to NPD (Schmidt and Calantone (2002), Brockner (1992) and Staw (1997). According to Brockner (1992), three very different types of research studies have yielded results supportive of the SJT model of EC. The first type suggests SJT as a possible rationale for EC by showing that in high need to justify situations (i.e. where an NPD manager is personally responsible for initiating an NPD project and subsequently the project is potentially failing) manager's EC to NPD is the greatest. The second type of studies suggests SJT as possible rationale for EC by showing that an NPD manager, who escalates commitment by continuing a failing NPD project, is more likely to endorse self justification measures such as "Once I had already invested a certain amount, I had

to keep going" (Strube and Lott 1984). Finally, the third type of studies suggest SJT as possible rationale for EC by showing that pre conditions of self justification based rationale for EC also influence the information that individuals seek as well as the information that they present to others (Caldwell and O'Reilly 1982; Conlon and Parks 1987).

As shown in Figure 1, the self-justification process involves choice and a public or private justification of a NPD project by a decision maker. It further involves a continuation of the NPD project to reduce or eliminate a cognitive dissonance between justification for a success of the project and an analysis of subsequent negative results suggesting failure. A public justification involves informing others of a rationale for project selection while private justification does not involve sharing a rationale with others. Researchers have tested and confirmed that escalation occurs for public as well as private justification, and no significant difference in effect size exists between the justifications (Bobocel and Meyer 1994).

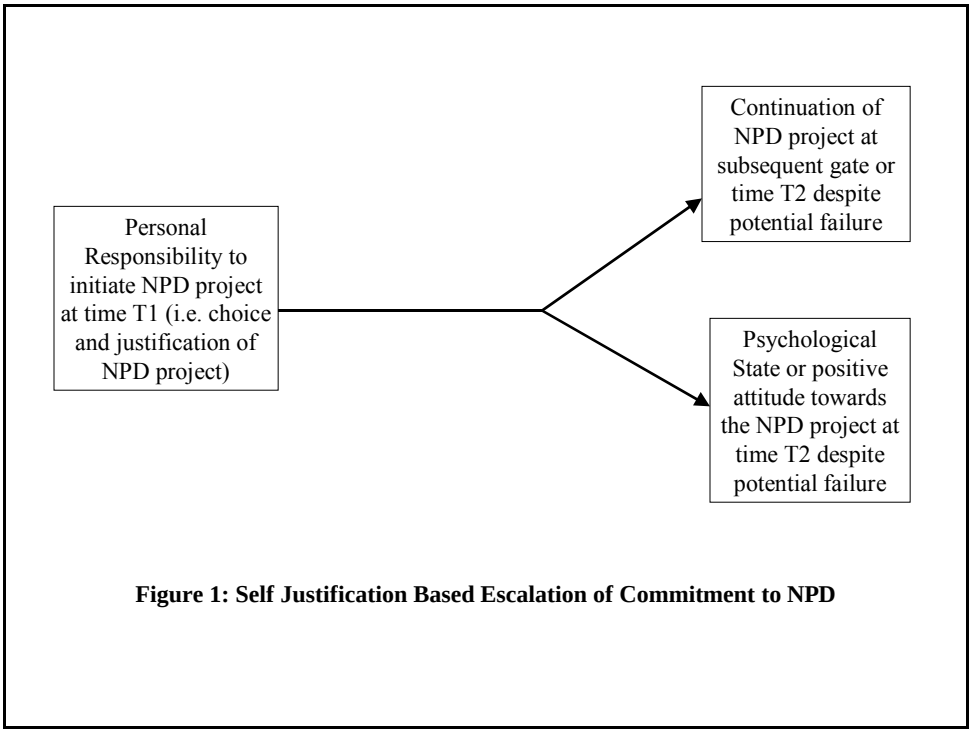


Figure 1: Self Justification Based Escalation of Commitment to NPD

2.4.3 Prospect Theory

Whyte (1986) has disagreed with this self-justification based rational for NPD escalation. He argues that self-justification motives could be replaced by more general decision errors based on the framing effect. The framing effect suggests that an individual's behavior differ for a positively and negatively framed outcome (Kahneman and Tversky 1979). Specifically, when a decision is framed in terms of a positive outcome, individuals are risk averse; however, when a decision is framed in terms of a negative outcome, individuals are risk seekers. Hence, Whyte (1986) proposes prospect theory as a possible rationale for EC. Prospect theory (PT) explains individual's risk-taking propensity under conditions of uncertainty (Kahneman and Tversky 1979; 1982). Prospect theory claims that how an NPD manager frames a decision, i.e. a decision viewed as an opportunity to save additional resources or as taking a loss of invested resources in a failing NPD project, is a salient determinant of continuation of the failing NPD project. The theory does not suggest what type of decision frame is adopted in a given circumstance, but the theory does suggest that an individual adopts a risk-averse behavior when a decision is framed as a gain, i.e. opportunity to save additional resources, and a risk taking behavior when a decision is framed as loss i.e. loss of invested resources in a failing project. Hence, Whyte (1986) posits that when an NPD project is failing, a manager frames the decision as loss of resources. Thus, the manager does not truncate the project to avoid sure loss, but the manager gambles more investments in the project.

The prospect theory is applicable as a rationale for EC only when loss is involved and not applicable when an NPD project is a success. While NPD researchers have not explicitly tested the prospect theory as a possible rationale for EC in NPD context, NPD research indirectly suggests that the prospect theory may explain EC in NPD context. For example, Schmidt and

Calantone (2002) observed that many individual's continued failing NPD project to avoid loss of invested resources. Furthermore, new product development requires upfront investment of resources with uncertainty of return on the investment that provides conditions to trigger a prospect theory based mechanism for EC. Thus, prospect theory is a possible explanation for EC to NPD.

2.4.4 Sunk Cost Effect

While self-justification and framing effects are based on the psychological effects of a negative outcome, the sunk-cost effect is based on the influence of the investment already made to a course of action. Conventional wisdom suggests that one should not account for resources already invested while making a decision. But, the reality is that sunk costs may influence an individual's decision to continue a failing course of action (Arkes and Blumer 1985). Thus, according to this view, individuals might continue an NPD project in the face of negative feedback due to a judgment error by believing that they are saving money or avoiding losses by considering the sunk cost in their calculations. This miscalculation may be due to their misperception of relationship between expenditure and progress on of the NPD project or due to a mental budgeting that want to recoup the past investment (Heath 1995). For example, Schmidt and Calantone (2002) noted that in their EC research, many managers wrote "significant money is already invested in the project" as a reason to continuing a failing NPD project.

2.4.5 Positive Belief Inertia

While the sunk-cost effect suggests judgment error due to prior investment as a cause for EC, the inertia effect due to initial positive belief suggests that the driving force behind escalation behavior is improper use of initial positive beliefs in the face of negative new information. Biyalgorsky et al. (2006) identify and test three general paths for EC.

1) Decision involvement inertia suggests that an involvement in the decision for initiating a NPD project in the first place affects the continuation of an NPD project in the face of feedback that it is failing. This path is similar to the self-justification determinant.
2) Decision involvement distortion suggests that an involvement in the decision for initiating a NPD project creates inertia for changing positive beliefs about the NPD project in the face of feedback that the NPD project is failing. Thus, NPD managers continue the failing project due to the positive beliefs that should have been updated in the face of the feedback.
3) Belief inertia suggests that a positive belief about an NPD project in the first place generates inertia for changing positive beliefs for the NPD project in the face of feedback that the project is failing. Thus, NPD managers continue the failing project due to the positive beliefs that should have been updated in the face of the feedback.

These authors conduct an experiment in which treatment of a personal responsibility to initiate an NPD project and outcome based reward is given to the experiment group subjects. They find that the belief inertia, i.e. improper use of initial positive belief towards a NPD project in the face of feedback that the project is failing, is the driving force behind EC.

2.4.6 Agency Theory

Harrison and Harrell (Harrison and Harrell 1993) propose agency theory as possible rationale for EC to NPD project and suggest that an NPD manager shirks in a condition of information asymmetry for self-interest and views his behavior as rational when a goal conflict exists between his superior and him. Agency theory (Eisenhardt 1989) suggests a principal-agent model in a decision-making situation and postulates that an agent (NPD manager) may exhibit a behavior that maximizes his self-interest at the expense of a principal's (NPD

manager's superiors) interest when it is expensive or impractical for the principal to monitor a behavior of the agent (Eisenhardt 1985). Agency theory as a rationale for EC to NPD is contingent upon the principal's inability to monitor activities of the NPD manager who has some benefits attached to the continuation of the NPD project. Thus the agency theory's applicability for explaining EC is limited to information asymmetry and "side bet" conditions together.

New product development is a complex undertaking in an ambiguous environment. Research suggest that senior executives often spent little time on the NPD projects (Cooper et al. 2002; Davis 2002). Davis (2002) suggests that traditional financial models to evaluate NPD potential are dependent on assumption and risk associated with the project but the models do not give any insight into those assumptions. Thus, it is easy for an NPD manager to hide NPD information. Furthermore, significant rewards are associated with NPD. Hence, agency theory is applicable as a rationale for EC during NPD; however, no research has identified psychological states associated with agency theory based EC.

2.4.7 Attribution Theory

Onifade, Harrison and Cafferty (1997) propose attribution theory as a possible explanation for EC to NPD project. They suggest that an NPD manager continues failing NPD project when cause of the failure is due to external factors or unstable in nature. Attribution theory (ATT) suggests that people develop causal explanations concerning outcomes of their prior behavior using three dimensions of causality: 1) locus of control (cause of performance outcome is internal or external to the person): 2) stability (cause of performance is stable or unstable): and 3) controllability (degree of volitional influence that can be exerted over cause) (Weiner 1986; Weiner 1985). Attribution theory suggests that an individual shifts his expectation of the success or the failure of the NPD project based on causal attributions associated with a

prior outcome of the project. Thus a manager may continue funding an NPD project if the cause of failure is perceived to be unstable (Onifade et al. 1997) or if the locus of control for failure is external (Staw and Ross 1978). For example, managers may pursue an NPD project during an economic decline with a hope that when economy improves, demand for the product will pick up and NPD project will be successful.

In summary, the escalation of commitment research pertains to decision making in a course of action. A review of the extant research suggests that individuals tend to commit to a failing course of action due to many determinants. These determinants can be categorized in to four groups: project determinants, psychological determinants, social determinants and organizational determinants. While project determinants, social determinants and organizational determinants include various antecedents of the EC the psychological determinants include various theoretical mechanisms that have been proposed to explain EC.

Researchers have compared and evaluated these explanations of EC and suggested that SJT has a better fit for explanation of EC (Brockner 1992; Keil et al. 2000; 1995). While there is a convergence of research suggesting SJT as rationale for EC and considerable empirical research, researchers have evaluated EC as a behavior.

CHAPTER III

DEFINITION OF ESCALATION OF COMMITMENT

This chapter presents the commonly adopted definition of EC and posits issues concerning its validity. Subsequently, this chapter reviews the literature on commitment and introduces a definition of EC that is based on psychological commitment.

1. Issues Concerning The Commonly Adopted Definition of EC

EC to an NPD project is defined as the continuation of an NPD project in the face of feedback that the project is failing (Barton et al. 1989; Schmidt and Calantone 2002). While significant progress is made in enhancing our understanding of EC by adopting this behavioral definition, several issues concerning the construct's validity are important for making legitimate inferences from the construct's operationalization (Trochim 2001).

- First, EC is not defined based on a definition of commitment. A construct has face validity if its definition and operationalization seems like a good translation of the construct (Trochim 2001). Hence, EC should be a defined accordingly to obtain face validity. While the term "escalation of commitment" means increase in intensity or magnitude of commitment, the commonly adopted definition of EC, i.e. continuation of a NPD project in the face of feedback that the project is failing, is not a good translation of the term escalation of commitment.
- Second, this definition suggests that EC is binary because only continuation or discontinuation of NPD project determines EC. A construct has a good content validity if its definition and operationalization covers relevant content domain for the construct.

Individuals may have a varying magnitude of escalation of commitment to an NPD project despite the project's success or failure. Evaluation of EC only as continuation of a failing NPD project severely limits its content domain to a failing project only and suggests low content validity.

- Third, it is difficult to differentiate EC from commitment despite the fact that the definition and/or operationalization of a construct should not be similar to the definition and/or operationalization of other construct to achieve discriminant validity. A list of various definitions of commitment compiled by Meyer and Herscovitch (2001) demonstrates that many researchers define continuation of an NPD project in the face of feedback that the project is failing as commitment. For example, Scholl (1981) defines commitment to be a stabilizing force that acts to maintain behavioral direction when expectancy or equity conditions are not met and do not function. Similarly, DeShon and Landis (1977) define commitment as unwillingness to abandon or lower the goal when confronted with setbacks and negative feedback. Hence, the current definition of EC has low discriminant validity.

In summary, the commonly adopted definition of EC lacks in face, content as well as discriminant validity and suggest that EC to NPD project must be defined based on commitment to an NPD project.

2. New Product Development and Commitment to NPD Project

Most companies employ a stage-gate decision process in managing NPD (Cooper 1994). In this process, stages involve an execution of various marketing, technical, business and financial analysis activities necessary to solve problems and transform ideas into final products. Information concerning an NPD project's success potential is generated through the execution of

these activities. Gates are points where a go/no-go decision for the NPD project must be made. Conventional wisdom suggests that economic factors should govern NPD project decisions. However, empirical evidence suggests that continuation of an NPD project may also be due to psychological commitments (Balachandra 1984; Boulding et al. 1997; Crawford 1977; Schmidt and Calantone 2002). Our review of the literature on commitment suggests that managers develop commitment to an NPD project through the two distinct processes as shown in Figure 2 (Meyer and Allen 1991; Meyer and Herscovitch 2001).

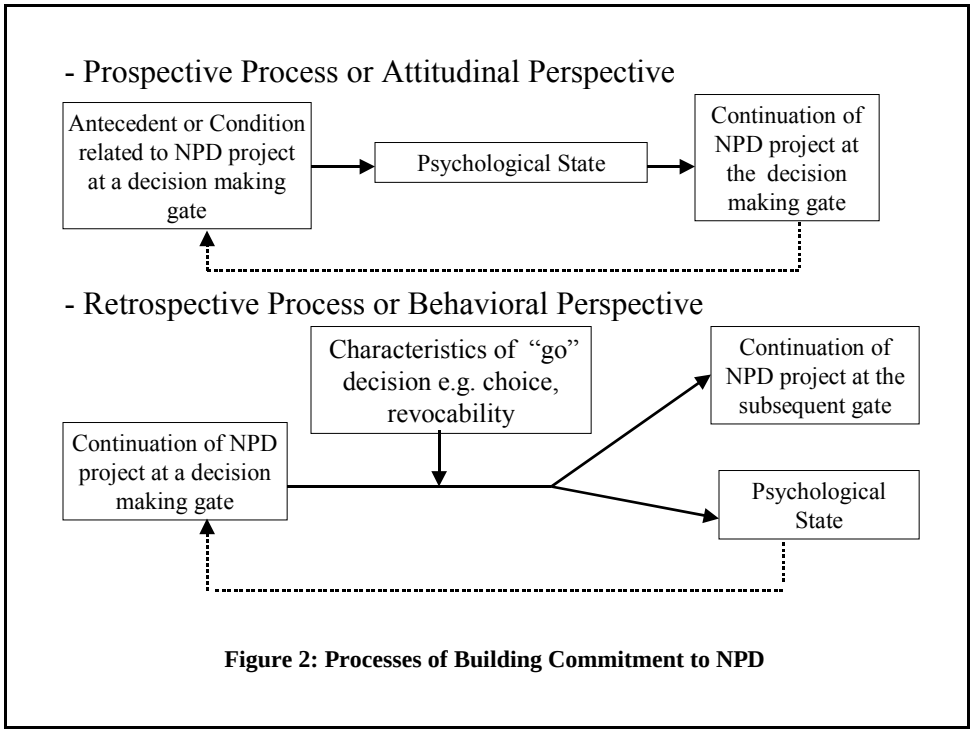


Figure 2: Processes of Building Commitment to NPD

3 Attitudinal or Prospective Commitment

The attitudinal perspective presumes that prospective rational processes guide the development of a manager's attitudes towards the NPD project that influence the likelihood of continuing an NPD project (Meyer and Allen 1991). This perspective proposes that NPD managers will search for and use information that allows them to rationally assess the success

potential of an NPD project. Thus, it focuses on identifying antecedent conditions, such as characteristics of the NPD project and information generated through execution of various NPD activities that build a manager's commitment to the NPD project (Meyer and Allen 1991; Meyer and Herscovitch 2001). For example Schmidt and Calantone (2002) show that managers escalate commitment to highly innovative NPD projects. Similarly, Harrison and Harrell (1993) suggest that managers continue failing NPD projects under the conditions of adverse selection. Specifically, when information asymmetry prevails between a manager and his superior concerning negative feedback that the NPD project is failing, and personal benefits (e.g. rewards) for the manager are attached to a continuation of the failing NPD project, the manager is more likely to escalate his commitment to the project.

4. Behavioral or Retrospective Commitment

The behavioral perspective adopts a retrospective processes in which an NPD manager's behavior and volition or irreversibility of behavior shapes future behaviors and attitudes (Meyer and Allen 1991; Meyer and Herscovitch 2001; O'Reilly and Caldwell 1981). Behavioral perspective posits that a voluntary behavior, i.e. a behavior that is not justified by extrinsic causes such as pay or coercion, will result in manager's retrospectively interpreting the behavior in more positive intrinsic terms. Hence, such voluntary behavior will increase commitment to an NPD project than behaviors justified by extrinsic causes (O'Reilly and Caldwell 1981). Researchers have shown that when an NPD manager freely chooses a NPD project or when a manager's initiation of an NPD project is irrevocable, he/she may escalate commitment to the project. For example, Schmidt and Calantone (2002) show that managers escalate commitment to an NPD project when they are responsible for initiating NPD projects.

5. Proposed Definition of EC

Even though these behavioral and attitudinal views of commitment are distinct, there is a cyclical relationship between them. Meyer and Allen (1991) suggest that both approaches include secondary relations (broken arrows in Figure 2) which imply that a complementary set of processes may be involved in the commitment-behavior link. For example, when a manager commits to an NPD project prospectively based on evaluation of project information, the choice, associated with the project continuation is likely to change the manager's commitment retrospectively. Similarly, when a manager voluntarily continues an NPD project, the manager's attitudes resulting from the behavior may affect the likelihood of the future continuation of the NPD project. Thus, Meyer and his colleagues incorporate attitudinal and behavioral approaches as well as their complementary relationships and define commitment as a force that binds an individual to a course of action of relevance to one or more targets (in NPD context, target of commitment is NPD project) (Meyer and Allen 1991; Meyer and Herscovitch 2001). Here, the force is the psychological state or mindset, which is a broader concept than attitudes, and reflects the desires, needs and obligations that bind an individual to an NPD project. Use of this definition of commitment as a basis for the definition of EC to NPD is appropriate for the following reasons. First, this definition's content domain includes both attitudinal and behavioral commitment perspectives. Second, a comprehensive review of competing views on dimensions of workplace commitment suggests that despite the use of different labels, considerable research support has been established for the three dimensions (desire, need and obligation) of commitment (Meyer and Herscovitch 2001). Third, research of multiple disciplines converges on the dimensions and conceptualization of commitment (Bansal et al. 2004). Thus, I define escalation of commitment to NPD as an increase in a force that binds a

manager to the course of NPD project. According to this definition, EC is a derived construct of commitment and thus inherits three components of commitment: affective commitment, normative commitment and continuance commitment as described below (Meyer and Allen 1997; Meyer and Herscovitch 2001).

- Affective Commitment is a force based on an individual's emotional attachment to, identification with, and involvement in the NPD project. For example, an individual may commit to an NPD project because he/she is interested in or likes the project or finds it enjoyable. Thus, a manager who has affective commitment to an NPD project would continue the project because he/she "wants" to do so.
- Normative Commitment is a force based on obligations or norms to continue an NPD project. For example, an individual may continue an NPD project because an organization's culture suggests that he/she is expected to continue working on it until the project is a success. Thus, a manager with high normative commitment to NPD project would continue the project because he "ought" to do so.
- Continuance Commitment is a force due to awareness of a cost or "loss of side bets" associated with not continuing NPD project. For example, an individual may continue an NPD project if significant resources are invested in the project, or reward is tied to a launch of the project. Thus, a manager with high continuance commitment continues an NPD project because he "needs" to do so.

While all three components represent commitment as a psychological mindset, each represents a distinct construct with diverse set of antecedents as well as behavioral implications (Meyer and Allen 1997; Meyer and Herscovitch 2001). Thus, an increase in any component constitutes an escalation of commitment that may manifest as continuation of the NPD project.

For example, in the condition of adverse selection (Harrison and Harrell 1993), as described earlier, managers may escalate only the continuance commitment. Such escalation of a continuance commitment may be a cause of a continuation of an NPD project even when the managers' normative commitment and affective commitment do not differ from commitments of managers who do not face adverse selection condition.

CHAPTER IV

HYPOTHESES DEVELOPMENT

This chapter describes the self-justification theory posits hypotheses for the main effects of personal responsibility to initiate an NPD project and outcome based rewards associated with the NPD project in terms of commitments and felt responsibility towards the NPD project. Subsequently, this chapter presents hypotheses for the effects of interaction between personal responsibility to initiate an NPD project and outcome based rewards associated with the project in terms of the commitments and felt responsibility. Finally, the effect of the interaction on manager's self-justification and intention to continue the NPD project in the face of a negative feedback is hypothesized.

1. Self Justification Theory

In his seminal paper on EC, Staw (1976) observes that a greater proportion of managers exhibit intention to continue a failing NPD project when they were personally responsible for initiating the project. He employs a behavioral commitment view and cognitive dissonance theory (Festinger 1957) to propose that a manager, who is personally responsible for initiating a failing NPD project, will subsequently fund and continue the NPD project for self-justification reasons. Many empirical studies have confirmed that personal responsibility for initiating a NPD project is an antecedent to EC.

How does a manager's personal responsibility to initiate an NPD project affect his/her subsequent attitudes and behavior regarding post failure decision for the NPD project despite a possible long time gap between the project initiation and post NPD failure decisions? O'Reilly

and Caldwell (1981) note that effects of a behavior on future attitudes and behavior is contingent upon characteristics of the preceding behavior. They suggest that not all behaviors are equally committing and the degree of commitment or binding of subsequent attitudes and behavior depends on felt responsibility. The felt responsibility is an outcome of the transformation process internal to an NPD manager who mediates the effects of personal responsibility to initiate the NPD project on future attitudes and behavior (Baron and Kenny 1986). In summary, the causal mechanism of the self-justification theory suggests that a personal responsibility to initiate a NPD project induces felt responsibility on the part of the NPD manager; hence, the subsequent availability of information suggesting the likely failure of an NPD project will trigger a self-justification process which escalates the NPD manager's commitment to continue the NPD project.

Researchers experimentally demonstrate and agree that Self Justification Theory (SJT) is a possible rationale for EC to NPD (Brockner 1992; Schmidt and Calantone 2002; Staw 1997). According to Brockner (1992), three distinct research approaches have yielded results supportive of the SJT based explanation for EC. The first approach shows that EC is higher when an NPD manager experiences a high need to justify his earlier decision. The second approach shows that an NPD manager who escalates commitment by continuing a failing NPD project is more likely to endorse self justification such as, "Once I had already invested a certain amount, I had to keep going" (Strube and Lott 1984). The third approach shows that pre-existing conditions of self justification also influence the information that individuals seek as well as the information that they present to others (Caldwell and O'Reilly 1982; Conlon and Parks 1987). Despite the convergence of evidence suggesting SJT as a rationale for EC, these studies have not identified which components of commitment are associated with the escalation behavior. Furthermore,

these studies have not evaluated the effects of rewards on the EC when a manager is personally responsible for initiating an NPD project. Finally, these studies have not evaluated if commitment components are escalated at NPD outset or after NPD failure. This information will enhance our understanding of the EC phenomena and show us the process that drives manager's attitudes and behaviors. In turn the information will guide us for assigning responsibility and rewards to NPD managers by providing us insight of the managers' mindsets and enable us to control the escalation process.

2. Effects of PRI on Commitment Components at NPD Outset

Personal responsibility to initiate an NPD project exists when a manager freely chooses to initiate an NPD project and justifies (i.e. giving reasons to self or others) the selection of the project (Bobocel and Meyer 1994). What effects does personal responsibility have on each component of manager's psychological commitment? According to a behavioral commitment view, an individual's freedom of choice in selecting a task is causally related to an individual's subsequent attitude towards the chosen task. Meyer and Allen (1991) suggest that decentralization, autonomy, participative decision making and volition are antecedents of free choice and affective commitment. Furthermore, Calder et al. (1973) observed that an individual who freely chooses to perform a task will rate it to be more enjoyable than will an individual who does not chooses to perform a task. Thus, personal responsibility to initiate an NPD project elevates enjoyment as an aspect of affective commitment.

Personal responsibility to initiate a NPD project may also escalate normative commitment. First, SJT suggests that an individual may continue a failing course of action because he wants to justify that his previous actions were correct. This justification is similar to an obligation to continue (i.e., I believed in it so I will prove it) or a normative component of the

commitment. Second, a manager is required to provide a rationale for his/her action for justifying an NPD project. According to the role theory the justification generates normative expectations for the self and a belief that others also have expectations for a success of the NPD proejct (Biddle 1979; Katz and Kahn 1978).

Finally, personal responsibility to initiate an NPD project may also elevate continuance commitment. Crawford (1977) suggests that people put their job and reputation at stake when they commit to a project. Similarly, Bart (1988) suggests that individuals put their personal career and potential for rewards at risk when they sponsor a project. Hence,

H1: Compared to managers who are organizationally assigned a NPD project, managers who are personally responsible for initiating the NPD project will exhibit higher level a) of affective commitment, b) normative commitment, c) continuance commitment and d) felt responsibility at the NPD outset.

3. Effects of Rewards on Commitment Components at NPD Outset

Organizations use rewards as a mechanism for eliciting desired behavior (Eisenhardt 1985). Specifically, organizations commonly tie outcome-based rewards with a successful completion of an NPD project defined in terms of objective performance levels. As defined earlier, continuance commitment is a force due to awareness of a cost or "loss of side bets" associated with not continuing an NPD project. Here side bets are the actions that link a person to a particular course of action by virtue of the fact that something the person value would be forfeited if he/she discontinues the course (Meyer and Allen 1991; Meyer and Herscovitch 2001). Because rewards tied to a performance of an NPD project are given if the project is successful, such rewards are a side bet for NPD managers. Thus, rewards will escalate continuance commitment.

Meyer and Allen (1991) suggest that affective commitment develops on the basis of psychologically rewarding experiences that satisfy an individual's needs and allows them to achieve their goals. Rewards tied with the success of an NPD project typically are determined to fulfill financial or other needs of a manager. Thus, as O'Driscoll and Randall (1999) observed, rewards will escalate affective commitment.

Wiener (1982) argues that normative commitment develops based on the collection of pressures an individual feels through a complex process that involves conditioning (rewards and punishment) as well as other factors. Through these pressures an individual learns what is valued in an organization and what is expected of them. When rewards are associated with success of an NPD project, the rewards suggest that managers are expected to make NPD successful. Expectations are basis for normative commitment (Biddle 1979; Katz and Kahn 1978). Furthermore, when managers internalize the expectations, the expectations induce felt responsibility. Hence,

H2: Compared to managers who will not to be rewarded for success of an assigned NPD project, managers who will be rewarded for success of an assigned NPD project will have a higher level of a) affective commitment, b) normative commitment, c) continuance commitment and d) higher felt responsibility at an NPD outset.

4. Effects of Interaction Between Personal Responsibility and Rewards on Commitment Components

The extant research involving personal responsibility and reward suggests that the interaction between these two constructs may have a significant effect on a person's attitude that varies depending on the circumstances (Calder et al. 1973; Freedman et al. 1992). Freedman et al. (1992) note that when personal responsibility is high, ordinarily a larger reward produces a

greater effect on attitudes than a smaller reward. However, in some situations the opposite effect occurs. Hence, they label the phenomena as the Reverse Incentive Effect. Calder et al. (1973) suggest that the effects of interaction between rewards and personal responsibility are moderated by consequences of the behavior. For example, if the rewarded behavior is to give charity to self-selected needy people, the larger reward for giving the charity produces a greater effect on the attitudes. However, if the rewarded behavior is to lie to fellow classmates for suggesting that they participate in a boring activity, then the opposite effect occurs in that smaller rewards produce a greater effect on the attitudes. Hence, Scher and Cooper (1989) posit that aversion to, or undesirability of, the consequence of behavior determines direction of the effect of personal responsibility and rewards interaction. Specifically, aversive consequences of behavior will produce an inverse effect of the reward and personal responsibility interaction while non-aversive consequences will produce a direct effect of the interaction. At the outset of an NPD project, where the behavior is initiating NPD project, there are no aversive consequences of the behavior. Thus, reward and personal responsibility should produce direct interaction effect at the outset of an NPD project. While there may be no aversive consequences for initiating an NPD project, there are aversive consequences for discontinuing an NPD project. Hence, as suggested by the reverse incentive effect, reward should moderate the effect of personal responsibility in the inverse direction. Which component(s) of commitment will be affected by the interactions? O'Reilly and Caldwell (1981) suggest that rewards and personal responsibility interaction reduce felt responsibility. When a manger feels less responsibility for the success of an NPD project, he /she should feel fewer expectations from him/her for the success of the project. The belief about fewer expectations lowers his/her normative commitment. Similarly when reduction in felt responsibility should reduce a manager's perception of their job, career and reputation at stake

which are basis for continuation commitment as suggested by Crawford (1977) and Bart (1988). Hence, reverse-incentive effect will have direct effects on affective commitment only. Thus, rewards will moderate effects of personal responsibility on felt responsibility and commitment components. Specifically,

H3: Compared to managers who will not to be rewarded for a success of a self initiated NPD project, managers who will be rewarded for a success of the self initiated NPD project will have a) higher affective commitment, b) lower normative commitment, c) lower continuance commitment and d) lower felt responsibility at an outset of a NPD project.

H4: Compared to managers who will not to be rewarded for a success of a self initiated NPD project, managers, who are to be rewarded for success of the self initiated NPD project, will have a) lower affective commitment, b) lower normative commitment, c) lower continuance commitment and d) lower felt responsibility at an NPD failure.

5. Self Justification and Intention to Continue Failing NPD Project

Staw (1976) observes that an NPD manager continues a failing NPD project when he is personally responsible for initiating the project. He evaluates alternate explanations such as maximization of gain, consistency of choice and self-perception theory for analyzing results of his experiment. He suggests that only self-justification explains higher intentions to continue a failing course of action when an individual is personally responsible for initiating an NPD project. As delineated earlier, the causal mechanism of the self justification theory posits that the personal responsibility to initiate NPD project induces felt responsibility and subsequent NPD project failure triggers a self justification process which mediates effects of felt responsibility on the mindsets of the NPD manager. As suggested in H3 and H4, reward reduces felt responsibility of a manger personally responsible for initiating an NPD project. The reduction of felt

responsibility reduces self-justification, which in turn reduces manager's willingness to continue failing NPD project. Thus,

H5: Compared to managers who will not to be rewarded for success of a self initiated NPD project, managers who will be rewarded for a success of the self initiated NPD project will have a) lower self justification and b) lower intention to continue the project at NPD failure.

CHAPTER V

RESEARCH DESIGN

This chapter details the experimental method adopted to test the hypotheses. The chapter presents a general overview of the experiment and describes experimental treatments. Finally, the chapter shows a description of a pretest and lists sample characteristics.

1. Overview of the Experiment

To test the hypotheses, I conducted a 2 x 2 role-playing experiment with personal responsibility to initiate an NPD project and rewards associated with a success of the NPD project as the independent variables. Role-playing experimentation is commonly employed for EC and NPD research to control for internal validity in testing causation hypotheses. Furthermore, Schmidt and Calantone (2002) argue that it is extremely difficult to conduct EC research in the field.

The experiment required participants to assume a role of an NPD manager in a hypothetical company. Subsequently the participants were asked to report their felt responsibility and psychological mindsets at an NPD outset and after a review of feedback suggesting a failure of the NPD project. The participants were also asked to report their continuation intention and justification for the intention after a review of feedback suggesting a failure of the NPD project. The each participant was asked to read and follow instructions from a booklet to implement the role-playing. The booklet included brief information about the company, a description of the participant's NPD manager role within the company and a scenario outcome simulating a NPD failure context. In addition to the background information, the company description stated that

the company's senior management required objective performance criteria of 25% market share and 12% profitability for a new project. This company information was constant across all experimental conditions. However, the description of an NPD manager's role was purposefully varied among the booklets in order to systematically manipulate personal responsibility for initiating an NPD project (personally selected and justified or corporately assigned) and rewards associated with the success of the NPD project (rewards or no rewards).

2. Experimental Treatments

The experimental treatment of personal responsibility to initiate the NPD project was achieved using the free choice method originally employed by Staw (1976). Participants were asked to review the descriptions of two NPD ideas shown in Figure 3. The participants were asked to select one of the NPD project for implementation. They were informed that the company does not have sufficient resources to fund both NPD projects. Hence, in this high personal responsibility condition, the participants were able to personally select one of the two NPD ideas for a development. After they made a selection, the participants were asked to justify their choice of a project by writing their selection reason as suggested by Bobocel and Meyer (1994).

The low level of a personal responsibility to initiate an NPD project was achieved by assigning a project to all participants of this experimental group. These participants were informed that their predecessor, who is no longer with a company, initiated the assigned project. Furthermore, these participants were not asked to justify the project. While participants in the high personal responsibility situation had to choose one of the two NPD ideas, only one of these

NPD ideas, shown in Figure 4, was assigned to all the participants of the low personal responsibility group to efficiently use experiment participants[3].

Currently, two new product development ideas are being considered for development at TCC. Since company resources are limited, it is your responsibility to select and work on one of these two projects for product development.

Based on the description of these projects which of the following ideas will you choose for development? (*Please read project descriptions below and select a project)*

Project 1: This project involves a small upgrade of the software so that instead of four fixed time slots for temperature, it will be possible to have 6 fixed time slots for temperature. Thus, even though the change in technology is marginal, it enables homeowners to maintain the temperature of the house at fixed time slots of 6:00 am, 8:00 am, 12:00 pm, 5:00 pm, 7:00 pm and 10:00 pm automatically.

Project 2: This project requires minor enhancement of software so that the homeowners can program time slots (instead of fixed time slots of 6:00 am, 8:00 am, 5:00 pm, and 10:00 pm) as well as the temperature they wish to maintain. Thus, even though the change in technology is marginal, it enables homeowners to maintain the temperature of the house at four adjustable time slots automatically.

Figure 3: High Personal Responsibility Manipulation

Recently, you are assigned a project for new product development. Your predecessor chose this project for development and resigned after the project was initiated.

The Chosen Project: This project requires minor enhancement of software so that the homeowners can program time slots (instead of fixed time slots of 6:00 am, 8:00 am, 5:00 pm, and 10:00 pm) as well as the temperature they wish to maintain. Thus, even though the change in technology is marginal, it enables homeowners to maintain the temperature of the house at four adjustable time slots automatically.

Figure 4: Low Personal Responsibility Manipulation

[3] Since only one of the two projects was assigned to all the participants in a low personal responsibility group, data from those participants' in high personal responsibility to initiate NPD project group who selected a project that was not assigned to low personal responsibility group were discarded.

The experimental treatments for the high level of rewards associated with an NPD success was achieved by informing all participants that they will receive a significant bonus and senior management may promote them if the NPD project is a success (see Figure 5). In the low reward condition, no information about rewards was mentioned to participants. After the administration of treatments, each participant's commitment to the NPD project and a felt responsibility for the NPD project were measured using scales described in the measurement section.

A bonus of $150,000 will be given to you if the project you worked on is successful in the market. Furthermore, TCC executive team may promote you if the developed product is a success in the market.

Figure 5: High Rewards Manipulation

Subsequently, to simulate the potential failure of the NPD project, each participant was provided an updated description detailing the NPD project's expected performance (see Figure 6). The NPD performance report projected its likely profit at $175,000 per year and estimated the investment required to complete the NPD project to be $3.6 million. Finally, the report noted an expected market share of 18% with 7% profitability; compared to the initial hurdle rate of 25% market share and 12% profitability established by senior management.

All participants were given identical information. Care was taken to "frame" this information in a neutral tone to avoid any bias (Kahneman and Tversky 1979). Furthermore, no sunk-cost information was given to avoid bias.

At the end of a development stage, project report indicates that the R&D has tested the technical modifications and has given a green signal. The production department has projected the cost of this project to be $3.6 million (net present value). Furthermore, marketing research estimates profits of approximately $175,000 per year from18% market share and 7% profitability for this product.

Figure 6: NPD Performance Information Used to Stimulate Project Failure

After a review of this NPD failure data, each participant's commitment to the NPD project, felt responsibility for the NPD project and intention to continue the NPD project was measured. Subsequently, participants' self-justification was measured after obtaining the go/no-go decision. Finally participants' responses to manipulation checks were obtained.

3. Details of a Pilot Test

The experiment was designed based on previously employed designs. A pilot test was conducted using 38 undergraduate students to ensure that manipulations were effectively achieved. Specifically, experimental treatments were randomly assigned to subjects and their input on manipulation checks was obtained. Furthermore, subjects were asked to review scales used in the instrument and identify any confusing terms. While the results indicated effectiveness of the manipulations, a few items were revised and experimental descriptions were refined.

4. Sample Characteristics

The participants were recruited from executive MBA, evening MBA and MBA programs of a large southeastern university. These subjects were selected for the following reasons. First, Biyalgorsky et al. (2006) conducted a test and empirically verified that responses of executive MBA and MBA students do not differ in a research on EC involving a role playing experiment. Hence, based on the results of their analysis these authors suggest that results of research on EC involving MBA students can be appropriately generalized to the population of senior-level

managers. Second, due to the decentralization of decision-making in organizations, attitudes and behavior of managers from all levels influence NPD go/no-go decisions. These attitudes and behaviors are affected by responsibility for an NPD project and rewards associated with a success of an NPD project. Finally, recruitment of MBA students is a common practice for a research on EC (Biyalgorsky et al. 2006; Staw 1976).

For participants' convenience, the experiment was conducted just before their class was commenced. Participants were informed about the anonymity of their input and were requested to give input as if they were working in an actual company. Furthermore, they were requested to consult privately with the research administrator to ask any questions, and they were instructed not to converse with other participants during the data collection. The participants spent approximately 30 minutes to complete a booklet. The participants highlighted facts presented in the booklet. They wrote calculations in the margins of the booklets. Furthermore, they did not interact with each other as instructed till the data collection was complete. These facts suggest that the participants were involved in their role-play.

The realized sample included 134 responses. Approximately equal numbers of participants were recruited from the three MBA programs. All participants had successfully completed at lease one full semester of course work that included managerial decision-making. The sample was approximately 66 percent male. The participants had approximately 9 years of experience. As a token of appreciation, all participants received a gift worth approximately $5.

CHAPTER VI

MEASURMENT OF VARIABLES

This chapter describes the measures adopted in the study and presents the observed reliability. The study adopts existing scales to measure the following variables: felt responsibility, commitment components, go/no-go decision and self-justification. The detail of each variable is as follow.

1. Felt Responsibility

Felt responsibility is an individual's belief about his/her role for making an NPD project successful. As suggested earlier, interaction between a personal responsibilities to initiate an NPD project and outcome-based rewards affects felt responsibility at an outset of an NPD project as well as after NPD failure. Hence, repeated measures of participants' felt responsibility were collected. The felt responsibility of a low personal responsibility treatment group was measured after a project was allocated to the participants. The felt responsibility of a high personal responsibility treatment group was measured after a choice of one of the two NPD projects was made and justified. A second measure of a felt responsibility of both groups was obtained after the NPD failure data were reviewed. A scale developed by Morrison and Phelps (1999) was used to measure felt responsibility. The five scale items are shown in Table 1. The observed reliability, i.e. Cronbach's alpha, of items is 0.75, which is above the acceptable standard set by Nunnally (1978) and similar to the reliability of 0.80 observed by Morrison and Phelps (1999).

2. Three Components of Commitment

The three components of commitment to NPD were measured using items developed by Meyer and Allen (1991). Since these items may represent commitment to any entity (e.g.

organization, work group, project, manager) of a workplace (Meyer and Herscovitch 2001), the items

Table 1: Items Used to Measure Felt Responsibility
1. I would feel a personal sense of responsibility for the success of the chosen project.
2. It would be up to me to make the chosen project successful.
3. I would take responsibility to introduce new procedures where appropriate for the success of the chosen project.
4. It would not be my responsibility to correct problem related to the chosen project.
5. I would not change or challenge status quo related to the chosen project.

were adapted to the NPD context as shown in Table 2. These measures of commitment were collected after felt responsibility was measured at the NPD outset and after the updated NPD failure context was presented. Affective commitment was measured using a six item scale developed by Meyer and Allen (1991). The Cronbach's alpha of the resulting scale is 0.82. Normative commitment was measured using five of the six items of a revised scale developed by Meyer and Allen (1991). The item "I would not move to other project right now because I have a sense of obligation to the people in it" was not employed because the experiment was directed at the individual NPD manager rather than a team. The calculated Cronbach's alpha of the normative commitment scale is 0.76. Similarly, continuance commitment was measured using a five of the six items from the scale developed by Meyer and Allen (1991). One item "If so much were not at a stake with chosen project, I would consider discounting it" was removed due to low reliability[4]. The Cronbach's alpha of the remaining five continuance commitment items is 0.73. The observed reliabilities of the commitment scales are acceptable (Nunnally 1978).

[4] The observed reliability of six items scale of continuance commitment is 0.65 and below recommended standard set by Nunnally (1978). Hence, the item was discarded even though data analysis, which included this item in the continuance commitment scale showed that the results are statistically significant and essentially the same as reported with minor differences in numbers.

Furthermore, these reliabilities are within range of reliabilities of these scales reported by Fields (2002) based on his review of the extant research involving these scales.

Table 2: Items Used To Measure Commitment Components

Affective Commitment

1. I would be very happy to spend my work time on chosen project.
2. I would not feel "emotionally attached" to chosen project.
3. I would feel that chosen project's problems are my own.
4. I would not feel a strong sense of belonging to chosen project.
5. I would not feel that chosen project is my own project.
6. The chosen project would have great deal of personal meaning for me.

Normative Commitment

1. I would not feel obliged to continue the chosen project.
2. I would feel guilty if I discontinue chosen project.
3. Even if it were to my advantage, I would not feel it would be right to discontinue chosen project.
4. The chosen project would deserve my loyalty.
5. I owe a great deal to work on chosen project.

Continuance Commitment

1. Staying with chosen project would be a matter of necessity as much as desire.
2. I believe that I have too few options to discontinue chosen project.
3. It would be hard for me to discontinue chosen project, even if I wanted to.
4. One of the few negative consequences of discontinuing chosen project would be the scarcity of similar opportunity.
5. Moving to other project would require considerable personal sacrifice; another project may not offer the overall benefits I would get from chosen project.
6. *If so much were not at a stake with chosen project, I would consider discontinuing it (Item discarded for the data analysis)*

3. Go/No Go decision

After the three components of commitment were measured, participants in each treatment group were asked to assess their likelihood to make a go/no-go decision using a 9 point scale "How likely you are to continue the project and launch the product in the market?" anchored by "Not at all likely" and "Extremely likely".

4. Indicators Suggesting Self Justification Process for Each Participant

Subsequent to the go/no-go decision, participant's self-justification for the decision was measured using a three-item scale shown in Table 3. Items for a scale developed by Daley and Geyer (1994) to measure justification were adapted to fit the context of the NPD go/no-go decision. The Cronbach's alpha of the resulting scale is 0.68, which is close to the reliability of 0.77 observed by Daley and Geyer (1994) .

Table 3: Items Used to Measure Self-Justification
1. I have strong reasons for continuing the project. 2. The project description provides sufficient information suggesting potential success of the project. 3. There is little negative information pertaining to the project.

CHAPTER VII

DATA ANALYSIS

This chapter reports the results of the experiment. The chapter describes a multi-stage approach adopted for the data analysis. Then the chapter presents a data analysis for each stage.

1. General Approach for the Data Analysis

A multi-stage approach was employed for the data analyses of the experiment. First eligibility for the use of three sub-samples of students was verified. Subsequently, efficacy of the experiment treatments was verified. Then MANOVA and ANOVA were conducted to test hypotheses and to investigate effects that were not hypothesized.

2. Verification of No Differences Among Sub-samples

The first step in a data analysis was to determine whether three subject sub-samples differ in their continuation intentions for the failing NPD project. An analysis of variance model with MBA type (MBA, Evening MBA or Executive MBA) as the independent variable and continuation intention as a dependent variable was computed. The overall F for this model was not significant ($F=0.69$, $p=0.50$). These results suggest that an intention to continue a failing NPD project did not differ among MBA, Executive MBA and Evening MBA students. These results are similar to the results noted by Biyalgorsky et al. (2006). Hence, subsequent analyses aggregated the data across the three student groups.

2. Results of Manipulation Checks

Next, the efficacy of the experimental treatments was verified by analyzing the manipulations checks. Two 7-point scales were used to evaluate the efficacy of the personal

responsibility to initiate NPD project manipulation. The mean for the scale "I selected the new product development project to work on" was significantly higher for the high personal responsibility to initiate NPD project treatment group than the mean for the treatment group that was organizationally assigned the NPD project (mean for high personal responsibility = 5.41; mean for low personal responsibility = 3.90; $F = 20.88$, $p < .0001$). Mean for the scale "My predecessor selected the new product development project to work on" was significantly lower for the high personal responsibility to initiate an NPD project treatment groups than the mean for the treatment groups that were organizationally assigned the NPD project (mean for high personal responsibility = 3.45, mean for low personal responsibility = 5.30, $F = 43.81$, $p < .0001$). These differences are in the expected direction and suggest that the experimental treatments for the personal responsibility to initiate NPD project were effectively achieved.

Similarly, two 7-point scales were used to evaluate the effectiveness of alternate manipulations for rewards associated with success of an NPD project. The mean for the scale "Significant rewards were explicitly tied to the success of the chosen project" was significantly higher for the rewards treatment groups than the mean for the no reward treatment groups (mean for high reward group = 5.6; mean for low reward group = 4.00; $F = 50.06$; ($p < .0001$)). The mean for the scale "No financial rewards were explicitly tied with the success of the project" was significantly lower for the rewards treatment groups than the mean for the no reward treatment groups (mean for high reward group = 2.66, mean for low reward group = 4.29, $F = 38.62$, ($p < .0001$)). These differences are in the expected directions and indicate that the experimental treatments for rewards associated with an NPD project success were effectively achieved during the experiment.

3. Results of MANOVA and ANOVA

Double multivariate repeated analysis of variance (DMANOVA) was employed to determine if any treatment has a significant effect on at least one dependent variable measured at the NPD outset and post failure (affective commitment, normative commitment, continuance commitment and felt responsibility). Furthermore, multivariate analysis of variance (MANOVA) was employed to determine if any treatment has a significant effect on at least one dependent variable measured at the NPD outset and post failure (affective commitment, normative commitment, continuance commitment and felt responsibility) and self justification and intention to continue NPD project measured at post failure. The models examine the main effects of personal responsibility to initiate an NPD project and rewards associated with success of an NPD project, as well as their interaction term as independent variables. The results indicate a significant difference of the means ($p < .0001$ based on Wilk's lambda for both models). Hence, for each dependent variable, a separate ANOVA model was computed using the same three predictors to identify significant differences among treatment groups.

The definition of escalation of commitment proposed earlier implies 1) a higher level of commitment evaluated cross sectionally due to an effect of the respective treatment (e.g. greater affective commitment between NPD managers who are given a responsibility to initiate a project versus having the NPD project assigned); 2) an inter-temporal increase in a commitment component at an NPD failure within a treatment group (i.e. an increase of the affective commitment at NPD failure relative to the level of affective commitment at an NPD outset for high personal responsibility group) suggests EC. Hence a sample mean for each treatment group was calculated for each dependent variable. Moreover, significance of a between subjects difference of means for each treatment group pair at an NPD outset as well as at an NPD failure

was tested using Fisher's least significant difference (LSD) test (alpha 5%). The means and significance of the model as well as each predictor are reported in Table 4 and shown in Figure 7 and Figure 8. These results are discussed in depth next.

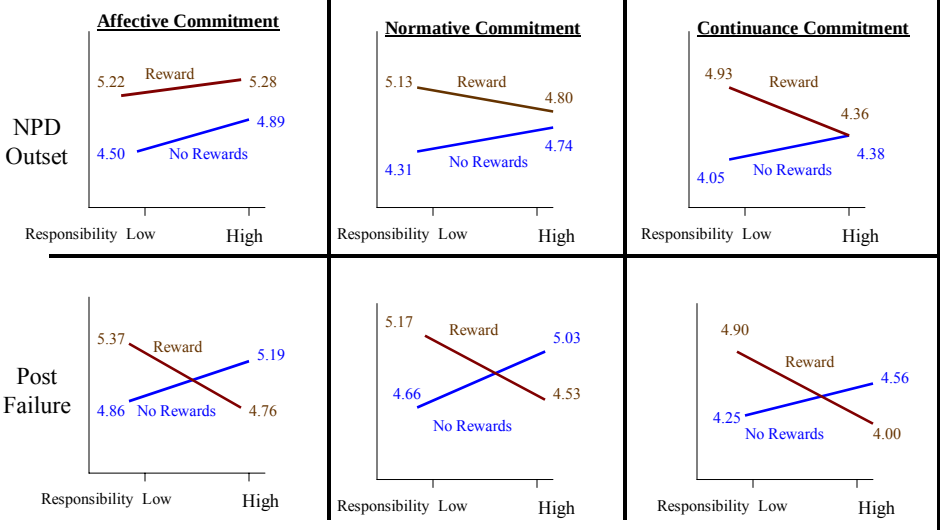


Figure 7: Sample Mean Ratings of Commitments for Treatment Groups

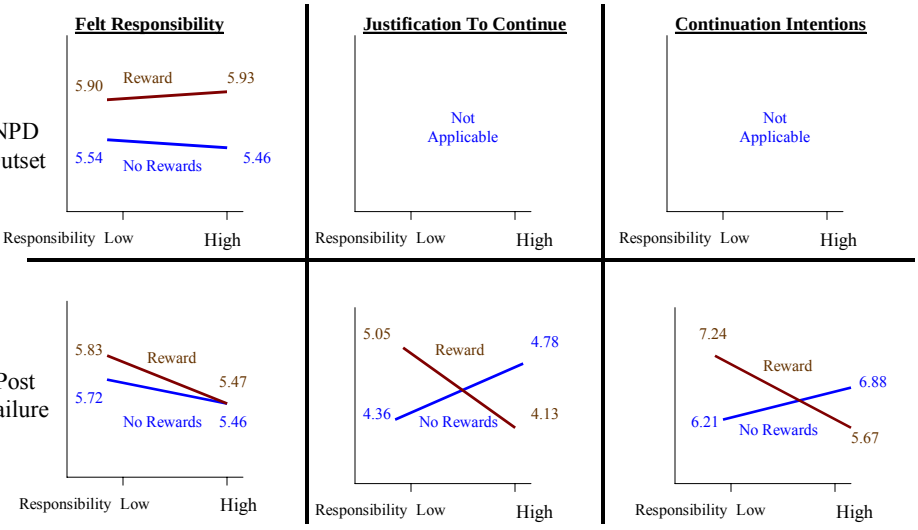


Figure 8: Sample Mean Ratings of Felt Responsibility, Justification & Continuation Intentions for Treatment Groups

Table 4: Cross-Sectional Pre Failure and Post Failure Mean Ratings of Dependent Variables Per Treatment Groups and Significance of Predictors (ANOVA Model: DV = PR RWD PR*RWD)

	Felt Responsibility		Affective Commitment		Normative Commitment		Continuance Commitment		Post Failure Self Justification	Post Failure Continuation Intentions
	NPD Outset	Post Failure	NPD Outset	Post Failure	NPD Outset	NPD Failure	NPD Outset	NPD Failure		
Treatment Groups										
Control (CTRL)	5.54	5.72	4.50	4.86	4.31	4.66	4.05	4.25	4.36	6.21
Reward (RWD)	5.90	5.83	5.22	5.37	5.13	5.17	4.93	4.90	5.05	7.24
Persn. Resp. (PR)	5.46	5.46	4.89	5.19	4.74	5.03	4.38	4.56	4.78	6.88
PR * RWD	5.93	5.47	5.28	4.76	4.80	4.53	4.36	4.00	4.13	5.67
Significance										
Model F statistic	3.2600	1.91	7.57	3.68	5.36	3.53	7.54	4.92	4.28	4.01
Model p-value	0.024	NS	0.000	0.014	0.002	0.017	0.000	0.003	0.006	0.009
RWD p-value	0.002	NS	<.0001	NS	0.003	NS	0.002	NS	NS	NS
PR p-value	NS	0.023	0.086	NS	NS	NS	NS	0.093	NS	NS
PR*RWD p-value	NS	NS	NS	0.002	0.011	0.002	0.001	0.001	0.001	0.002

Hypothesis 1 predicts that managers who are responsible for initiating an NPD project should escalate affective commitment (H1a), normative commitment (H1b) and continuance commitment (H1c), as well as felt responsibility (H1d) at the outset of a project. Between subjects differences of felt responsibility and commitment components at an NPD outset between managers responsible for initiating an NPD project (personal responsibility group) and manager assigned the NPD project (control group) were calculated to test these hypotheses. These differences are reported in Table 5. The differences show that managers escalate affective commitment and normative comment due to personal responsibility to initiate a NPD project. However, no statistically significant difference in felt responsibility and continuance commitment was observed at an NPD outset. Hence, Hypothesis 1 is partially supported for affective and normative commitments.

Similarly, Hypothesis 2 predicts that managers, who are rewarded based on performance of an assigned NPD project, should have higher levels of affective commitment (H2a), normative commitment (H2b) and continuance commitment (H2C) as well as felt responsibility (H2d) at the outset of the project. Between subject differences of felt responsibility and the commitment

types between managers who were assigned a NPD project with (reward group) or without (control group) an outcome-based rewards were calculated to test these hypotheses. These differences are reported in Table 6. The differences show that in presence of outcome-based rewards, managers' escalate felt responsibility and each of the three commitment components at an NPD outset. Hence, the results support Hypothesis 2.

Table 5: Effect of Personal Responsibility on EC at NPD Outset

Cross-sectional pre-failure difference of mean between managers responsible for initiating an NPD proejct and managers organizationally assigned the project at NPD outset.

Dependent Variable	Difference of Mean*
Felt Responsibility	-0.08
Affective Commitment	**0.39**
Normative Commitment	**0.43**
Continuance Commitment	0.33

* the difference shown in bold is significant based on LSD at 95%

Table 6: Effect of Rewards on EC at NPD Outset

Cross sectional pre-failure difference of mean between managers of assigned project with or without outcome-based reward at the outset

Dependent Variable	Difference of Mean*
Felt Responsibility	**0.36**
Affective Commitment	**0.72**
Normative Commitment	**0.82**
Continuance Commitment	**0.88**

* the difference shown in bold is significant based on LSD at 95%

Hypothesis 3 predicts that, at the outset of an NPD project, rewards would have a positive effect on an affective commitment (H3a), and a negative effect on normative commitment (H3b), continuance commitment (H3c) as well as felt responsibility (H3d) of NPD managers who are

personally responsible for initiating the project. Difference of mean felt responsibility and the commitment types at the NPD outset between managers responsible for initiating an NPD project with (high personal responsibility and reward group) or without reward (high personal responsibility group) was calculated o test these hypotheses. The differences and their significance are shown in Table 7. Hypothesis 3 is partially supported.

Specifically, the affective commitment of managers, responsible for initiating an NPD project, is greater when the managers will be rewarded for the success of an NPD project. The difference is significant and supports H3a. However, the differences of means for normative commitment, continuance commitment and felt responsibility do not support hypotheses H3b, H3c and H3d respectively. The result shows that the felt responsibility of managers who will be rewarded for a success of a self-initiated project is significantly higher instead of significantly lower as hypothesized. Furthermore, the results show no statistically significant difference in levels of normative commitment and continuance commitment of these managers.

Table 7: Effect of Personal Responsibility*Reward Interaction on EC at NPD Outset

Cross sectional pre failure difference of mean between rewarded and non-rewarded managers responsible for initiating an NPD project at the NPD outset.

Dependent Variable	Difference of Mean*
Felt Responsibility	**0.47****
Affective Commitment	**0.39**
Normative Commitment	0.09
Continuance Commitment	-0.02

* The difference shown in bold is significant based on LSD at 95%.

** While the difference of mean for felt responsibility is significant, it is positive instead of negative as hypothesized.

In summary, these results suggest that only affective commitment is escalated while normative commitment and continuance commitment has no significant change when a manager,

who is responsible for initiating a NPD project, is rewarded for a success of the NPD project. Contrary to O'Reilly and Caldwell's (1981) suggestion that rewards reduce felt responsibility of managers who initiate an NPD project, the managers have higher felt responsibility when they are to be rewarded for the success of the initiated NPD project.

The results of the experiment support Hypotheses 4, which predicts that affective commitment (H4a), normative commitment (H4b), continuance commitment (H4c) and felt responsibility (H4d) to an NPD project will be lower in a manager who initiated a failing NPD project will be rewarded for the success of a project. To test these hypotheses, difference of post NPD failure mean rating of respective variables between rewarded and non-rewarded managers responsible for initiating a NPD project were analyzed. As shown in Table 8, the mean ratings of post-failure affective commitment, normative commitment, continuance commitment and felt responsibility of managers, who initiated a NPD project, are significantly lower when managers will be rewarded for the success of an NPD project. Hence, Hypothesis 4 is supported.

Table 8: Effect of Personal Responsibility*Reward Interaction on EC at Post NPD Failure

Cross sectional post failure difference of mean between rewarded and non-rewarded managers responsible for initiating an NPD project.

Dependent Variable	Difference of Mean*
Felt Responsibility	0.01
Affective Commitment	**-0.43**
Normative Commitment	**-0.50**
Continuance Commitment	**-0.56**
Self Justification	**-0.65**
Continuation Intentions	**-1.21**

* The difference shown in bold is significant based on LSD at 95%.

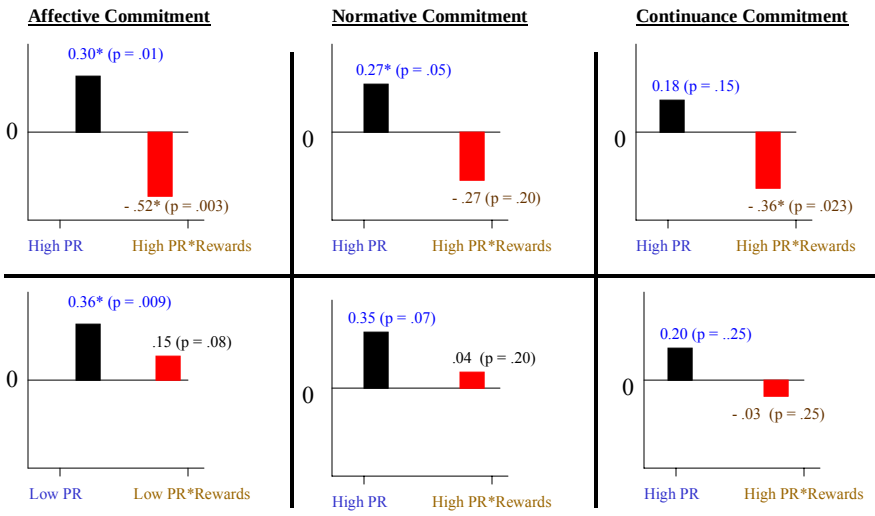
Finally, the results of this experiment support Hypotheses 5 which predicts that self-justification and an intention to continue a failing NPD project will be lower when a manager, who is personally responsible for initiating a failing NPD project, will be rewarded for the

project's success. The mean self-justification level for rewarded managers, who initiated an NPD project, is 4.13, and the mean self-justification level of non-rewarded managers, who initiated an NPD project is, 4.78. The difference, -.065, is statistically significant at alpha .05. Similarly, as shown in Table 8, managers, who initiated a failing NPD project, have a lower intention to continue the project when they will be rewarded for the success of a project. This difference is statistically significant.

Additional data analysis was conducted even though explicit hypotheses were not stated. The behavioral commitment view and self-justification theory based rationale for EC suggests an inertia effect of personal responsibility to initiate a NPD project. These rationales posit that when managers self justify and continue a failing NPD project, their commitment will not decrease. This claim is counter intuitive to a normative decision making that suggests a de-escalation[5] of commitments and a discontinuation of a failing NPD project. A multivariate analysis of variance (MANOVA) was employed to determine if any treatment has a significant effect on within subject difference with at least one dependent variable measured (affective commitment, normative commitment, continuance commitment and felt responsibility). The model examine the main effects of personal responsibility to initiate an NPD project and rewards associated with the success of an NPD project, as well as their interaction term as independent variables. The results indicate a significant change within subject ($p < .0001$ based on Wilk's lambda for both models). Hence, inter temporal difference of commitment components within subject was evaluated for statistical significance. Interestingly, the results of this research suggest that instead of managers' commitment remaining the same, managers escalate commitment to a self-initiated NPD project that is failing. As shown in Figure 9, managers, responsible for initiating a NPD project, exhibited a statistically significant increase in mean levels of affective and normative

[5] De-escalation of commitment is decrease in a force that binds managers to NPD project.

commitments after the failure of an NPD project. However, these managers showed significant decrease in affective commitment and continuous commitment when rewards were associated with a success of an NPD project. A similar analysis was conducted for managers who were assigned an NPD project. Interestingly, these managers also showed a statistically significant increase in affective commitment and marginally significant increase in normative commitment as shown in Figure 9. However, no significant change in affective, normative and continuance commitment between an NPD outset and post NPD failure was observed when these managers would be rewarded for the success of an NPD project.



Note: PR = Personal Responsibility * shows significance at .05 level.

Figure 9: Inter-Temporal Changes in Commitment (post failure levels – NPD outset levels)

CHAPTER VIII

DISCUSSION

This chapter discusses major findings from the research and provides a summary of the major findings.

1. Outline of the Research

This study posits three major issues against the current conceptualization of an EC, i.e. continuation of an NPD project in the face of feedback that the project is failing. First, EC is not defined based on commitment; second, EC's content domain is limited to failing projects; and third, EC could not be differentiated from commitment. In summary, the study shows that the current conceptualization of EC lacks discriminant, content and face validity. Hence, the study introduces new conceptualization of EC to an NPD project and defines an EC as an increase in a psychological force that binds a manager to a course of an NPD project. The new conceptualization of EC inherits three psychological components of commitment: affective commitment, normative commitment and continuance commitment. These EC components are driven by personal responsibility to initiate a NPD project and outcome based rewards. This study employs an experiment to investigate the effects of these antecedents of the psychological states of commitment that drive NPD managers to continue a failing NPD project. Based on the analysis of data collected for the experiment from managers, the following generalizations are made regarding managers' psychological states which influence their decision to continue an NPD project in the face of a feedback that the project is failing.

2. Major Findings

The study shows that personal responsibility to initiate NPD project escalates the affective and normative commitments at the outset of an NPD project. However, personal responsibility to initiate an NPD project does not escalate continuance commitment at NPD outset as predicted. These results suggest that managers, who are personally responsible for initiating an NPD project, are emotionally attached to and involved with the NPD project. Furthermore, these managers are likely bonded to the NPD project due to obligations and social expectations.

The study also finds that managers, who are responsible for initiating a NPD project, further escalate their affective and normative commitment in the face of feedback that the project is failing. Prior studies show that managers, who are personally responsible to initiate a NPD project, tend to persist with the NPD project in the face of a feedback suggesting its failure (Biyalgorsky et al. 2006; Schmidt and Calantone 2002). These prior studies posit that managers try to make the new project data fit previously held beliefs in this situation (Boulding et al. 1997). Augmenting this perspective, the current study find that managers actually escalate the affective and normative commitment in the face of feedback that suggests a potential failure of an NPD project. Furthermore, the current study delineate the process associated with EC due to personal responsibility to initiate an NPD project by showing that managers, who are personally responsible for initiating a NPD project, escalate their commitment at NPD outset and after the review of NPD failure data. Since evaluation of EC in behavioral terms (i.e. merely continuation of a failing NPD project) cannot facilitate such insights, the current study shows the advantage of viewing EC as an increase in the psychological aspects of commitment and charts a new research direction for EC scholars.

This research also shows that a manager, who is organizationally assigned an NPD project, escalates commitment when outcome-based rewards are associated with the project. However, in contrast to the results for personal responsibility to initiate an NPD project, outcome-based rewards escalate all three components of psychological commitment at an NPD outset. Furthermore, as it is expected for an attitudinal commitment-generating mechanism, this research shows that the effects of rewards remain unchanged after failure of the NPD project and no further escalation of psychological commitment from its level at NPD outset is observed. Researchers posit that entire organizations have a tendency to be enamored with NPD projects (Balachandra 1984; Schmidt and Calantone 2002). Perhaps the presence of outcome-based rewards explains this dynamic since rewards (e.g. money, satisfaction, achievement feeling) are typically tied to the successful outcome of any NPD project.

This study shows that the effect of outcome-based rewards on manager's psychological commitment at the outset of a NPD project is not the same among managers who are personally responsible for an NPD project. While outcome-based rewards escalate all three-commitment components for managers who are organizationally assigned an NPD project, the outcome-based rewards escalates only affective commitment when the manager is personally responsible for initiating the NPD project. Thus, the study identifies a significant effect of interaction between personal responsibility to initiate an NPD project and outcome-based rewards associated with the project on the psychological components of commitment at an outset of a NPD projects.

The study also finds that the effects of the interaction between personal responsibility to initiate an NPD project and outcome-based rewards associated with the project on NPD managers' commitment is significant after the failure of an NPD project. The effect of this interaction after an NPD failure differs from the effect of the interaction on commitment

components at an NPD outset. At the outset of an NPD project, the interaction only shows a positive effect on the affective commitment of the managers. However, after an NPD failure, the effect of the interaction is negative and significant for all three psychological commitments of such managers. Together, the effect of the interactions at NPD outset and post-failure enhances our understanding of the "reverse incentive phenomena" (Freedman et al. 1992). The focus of the extant research on the reverse incentive phenomena is on behavior. This research focuses on psychological states and indicates that only affective commitment may be involved in this phenomenon.

This research shows that the interaction between personal responsibility to initiate an NPD project and outcome-based rewards associated with the success of the NPD project reduces managers' self justification associated with continuing a failing NPD project. While previous studies have posited self-justification as a rationale for EC and evaluated it qualitatively, the current study employs a quantitative measure of self-justification and provides direct empirical evidence by showing that managers' self-justification is reduced in the presence of outcome-based rewards for a self-initiated NPD project. Furthermore, the study shows that the decrease in managers' self-justification is positively correlated with lower intention to continue a failing NPD project.

Finally, this study examines the effects of interaction between the personal responsibility to initiate an NPD project and the outcome-based rewards on managers' felt responsibility. The study identifies that at the outset of an NPD project managers, who are assigned to the project and managers who initiated the project, have equivalent felt responsibility towards the project. Furthermore, both groups of managers have an equal increase in felt responsibility when outcome-based rewards are associated with the NPD project. Interestingly, only the managers

who would be rewarded for a success of an initiated NPD project lowered felt responsibility after an NPD failure. Hence, this study provides an empirical evidence against O'Reilly and Caldwell's (1981) assertion that at an NPD outset rewards reduce the felt responsibility of a manager responsible for initiating the NPD project. Furthermore, the study shows that outcome-based rewarded managers, who are responsible for initiating a, NPD project, lowers felt responsibility only after NPD failure.

3. Summary of Findings

In summary, this research enhances our understanding of the EC phenomena and shows that personal responsibility to initiate an NPD project escalates commitment even before potential failure of the NPD project. While prior research has established a link between personal responsibility to initiate an NPD project and escalation of commitment to the project, the current study shows the process associated with EC when a manager is personally responsibility to initiate a NPD project. In addition, the study identifies effects of outcome-based rewards on escalation of commitment of managers who were organizationally assigned an NPD project. While the effect of outcome-based rewards on managers, who are assigned an NPD project organizationally, remains stable between NPD outset and NPD failure, the study shows that the personal responsibility to initiate an NPD project and the rewards associated with the success of an NPD project interact differentially on the components of commitment at the outset of an NPD project. Furthermore, the study shows that the effect of the interaction is different after the NPD failure and identifies affective commitment as the only salient component of commitment for the reverse incentive effect. Finally, since conceptualization of EC as a post failure continuation of an NPD project cannot provide such insight, the study introduce a new conceptualization of EC

and defines EC as increase in a force that binds a manager to an NPD project. Through this conceptualization, the study charts a new direction for the research on EC.

CHAPTER IX

IMPLICATIONS

This chapter discusses implications of the research findings. First, research implications are discussed. Then managerial implications are posited.

1. Research Implications

This study shows issues associated with a conceptualization of EC viewed as a behavioral continuation of a failing course and define EC as an increase in a psychological commitment. The study demonstrates advantages of evaluating EC as increase in a psychological commitment. When EC is evaluated merely as a behavioral continuation of a failing course, important intermediary psychological states possibly associated with this continuation of a failing course are ignored. Hence, the study steers EC research in a new direction and calls for researchers to pursue a mindset model of EC and to stress the mediatory influences of psychological and attitudinal commitment on explaining the wlys and wherefore of EC.

This research casts doubts against self-justification theory as a possible rationale for EC when a manager is personally responsible for initiating an NPD project. Self-justification theory employs behavioral commitment which suggests a retrospective mechanism for building commitment. However, this research shows that manager's psychological commitment is escalated at the outset of an NPD project when he is personally responsible for initiating an NPD project. This result suggests that a prospective commitment building mechanism is operating due to a personal responsibility. Self-justification theory also employs cognitive dissonances theory (Festinger 1957), which posits that individual's psychological discomfort arising from an existence of dissonance (inconsistency between two cognitions held concurrently) motivates the

individual to reduce discomfort by achieving consonance (consistency between two cognitions held concurrently). While it is unlikely for a person to have a positive affect when he/she feels psychological discomfort, this study also shows that a manager, who is personally responsible for initiating an NPD project, escalates his affective and normative commitments in the face of a feedback that the project is failing. Perhaps managers do not experience cognitive dissonance and the justification of managers is a consequence of escalated commitment and/or continuation of a failing NPD project but not a cause of EC as suggested by the self-justification theory.

This research indicates that managers, who are organizationally assigned a NPD project , escalate all three components of commitment when outcome-based reward is associated with a success of the project. Harrison and Harrell (1993) employ the agency theory (Eisenhardt 1989) and suggest that managers will tend to continue with a failing NPD project when the condition of adverse selection exists. However, the study shows that privacy of information is not a necessary condition for managers to continue a failing NPD project. Despite the fact that no guidance regarding private or public information was given to the participants in the high reward condition, the participants showed a tendency to continue a failing NPD project.

Harrison and Harrell (1993) also suggest that outcome-based rewards will curb agent opportunism since outcome-based rewards can be expected to co-align the preferences of managers with those of the firm. This research suggests that outcome-based rewards are not as effective as suggested in curbing failing NPD projects. One would expect that when a manager co-aligns his/her preferences with those of the firm, he/she would discontinue a failing NPD project when the project's performance is lower than the objective criteria established by senior managers of the firm. However, this study finds that an NPD manager is more likely to continue the NPD project despite it is failing when an outcome-based reward is associated with the

success of organizationally assigned NPD project, than when an outcome-based reward is not associated with a success of organizationally assigned NPD project.

The study shows that personal responsibility to initiate an NPD project and outcome-based rewards have differential effects on psychological commitment to an NPD project. While outcome-based rewards escalate only the affective commitment of a manager responsible for initiating a NPD project at the outset of an NPD project, the outcome-based rewards decrease felt responsibility as well as all three components of psychological commitment of a manager responsible for initiating an NPD project after the NPD failure. Hence, the study shows situation specific effects on felt responsibility and components of commitment when rewards and personal responsibility are involved in research.

2. Managerial Implications

Responsibility and rewards are two important tools available to organizations for promoting desired behaviors in NPD managers. While previous research has evaluated effects of personal responsibility or outcome based rewards on continuation of a failing NPD project, this research focuses on psychological states and shows a process associated with the continuation of a failing NPD project. Furthermore, this research shows effects of the interaction between personal responsibility to initiate NPD project and outcome-based rewards associated with the project on managers' psychological states. Understanding the joint effect is important because organizations use rewards and responsibilities simultaneously for promoting desired behaviors.

This study finds that outcome-based rewards are not effective in curbing a failing NPD projects as posited by Harrison and Harrell (1993). Hence, organizations should employ other rewards mechanisms such as process-based rewards when an NPD project is assigned to a manager. The study shows that managers, who are to be rewarded for a success of self-initiated

NPD project, escalate affective commitment at the outset of the NPD project. Furthermore, these NPD managers reduces their affective and continuance commitments after the NPD failure. For an organization, the increase in affective commitment due to rewards is desirable to promote "positive" behavior in the NPD manager. Similarly, the de-escalation of commitment and intention to discontinue a failing NPD project is desirable to avoid waste of resources on a failed NPD project. Hence, this research suggests for an outcome-based reward to managers responsible for initiating a NPD project. In summary, our research suggests differential reward mechanisms based on a personal responsibility to initiate an NPD project.

While the effects of personal responsibility at the outset of an NPD project may be beneficial to organizations, it is a concern to know that managers responsible for initiating a NPD project escalate affective commitment and normative commitment when the project is potentially failing. The escalation of affective commitment component suggests that managers continue a failing NPD project because of their emotional attachment to, identification with and involvement in the NPD project. Perhaps organizations should pre-commit these managers to a decision rule or assign decision-making responsibility to someone else as suggested by Boulding et al. (1997). Furthermore, escalation of the normative commitment component suggests that managers continue a failing NPD project because of norms or obligations. Hence, as suggested by Chandy and Tellis (1998), an organization should foster willingness to cannibalize a failing NPD project in its culture.

CHAPTER X

FUTURE RESEARCH

Several insights for future research can be obtained from this study. An implicit purpose of research on EC is to identify effective de-escalation strategies. This research suggests that managers responsible for initiating an NPD project escalate affective and normative commitments when the project is failing. Ideally, managers should reduce their affective and normative commitments towards the failing project. Hence, future research should focus on identifying de-escalation strategies that reduce the affective and normative commitments of managers.

This study suggests that personal responsibility to initiate a NPD project escalates the psychological commitment components at an outset of a NPD project. According to Meyer and Allen (1991), each component of commitment influences a diverse set of behaviors such as attendance at work, higher work effort and performance as well as willingness to engage in out-of-role behavior. While significant attention has been given to the effects of personal responsibility to initiate an NPD project on continuation of a failing NPD project, researchers need to understand broader behavioral consequences of personal responsibility to initiate an NPD project and guide practitioners to take advantage of escalated commitment.

Organizations use rewards to elicit desired behavior from employees. While outcome-based rewards may elicit desired positive behaviors, this research show that the outcome-based is a double-edged sword in that outcome-based rewarded managers, who are organizationally assigned a NPD project, continue the project in the face of feedback that it is failing. The

outcome-based rewards are not effective in aligning NPD managers' interests with organizational preferences. Hence, future research should focus on evaluating effectiveness of other rewards mechanisms such as process-based rewards.

This study introduces a view of evaluating escalation of commitment to understand a process associated with EC. Researchers have proposed and verified multiple theoretical rationales for EC. Furthermore, they have identified various antecedent conditions that trigger EC. Future research should employ the introduced view to identify process and psychological mindsets associated with EC based on these theoretical mechanisms and antecedent conditions.

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APPENDIX

Sample Data Collection Instrument

Introduction to the task

The purpose of this study is to survey your attitudes and opinions in a described business situation. Please follow the instructions throughout the booklet and give input as if you are working in a real company in a real work environment.

The information provided in this booklet is sufficient for your inputs. Hence, please ignore the need for additional data. You may use any blank space on this booklet to make notes as you wish. **No interaction is allowed between research participants until all participants finish their tasks**.

Please go to the next page and begin.

Company related description

Imagine that you are working for company Temp Control Corporation (TCC), a manufacturer of temperature control units to adjust home temperatures, with an annual turnover of $76 million. One of the products of TCC is a control unit for a single-family residence. It has four-fixed time slots through which the homeowner programs the temperature of his/her house for 6:00 am, 8:00 am, 5:00 pm and 10:00 pm for each day. The control unit starts the A/C or heater at the programmed time and maintains the temperature of all rooms to the programmed temperature till subsequent time slot.

TCC initiates many new product development (NPD) projects for the growth of the company. TCC executives prefer that new products achieve a 25% market share and 12% profitability. They have implemented a two- step process for NPD.

- First, an idea is accepted for development depending on available resources.

- Second, R&D develops the product based on defined specifications. In addition, marketing and production prepares for a potential product launch and generates estimates of market potential. Typically these estimates have 30% margin of error.

Typical estimates generated include market share, profit, sales and future cost projections, as well as an overall market desirability score between 1 (not desired) to 100 (desired). A desirability score of 60 or above is an indication of a really good market need while a desirability score of 85 or above is an indication of a strong market need.

At the end of the development, a "go/no-go" decision is made for the market launch.

Currently, two new product development ideas are being considered for development at TCC. Since company resources are limited, it is your responsibility to select and work on one of these two projects for product development. A bonus of $150,000 will be given to you if the project you worked on is successful in the market. Furthermore, TCC executive team may promote you if the developed product is a success in the market.

Please go to the next page.

Based on the description of these projects which of the following ideas will you choose for development? (*Please read project descriptions bellow and select a project)*

Project 1: This project involves a small upgrade of the software so that instead of four fixed time slots for temperature, it will be possible to have 6 fixed time slots for temperature. Thus, even though the change in technology is marginal, it enables homeowners to maintain the temperature of the house at fixed time slots of 6:00 am, 8:00 am, 12:00 pm, 5:00 pm, 7:00 pm and 10:00 pm automatically.

Project 2: This project requires minor enhancement of software so that the homeowners can program time slots (instead of fixed time slots of 6:00 am, 8:00 am, 5:00 pm, and 10:00 pm) as well as the temperature they wish to maintain. Thus, even though the change in technology is marginal, it enables homeowners to maintain the temperature of the house at four adjustable time slots automatically.

I will select project #: _____.

My reasons for selecting this project are:
Please write your reasons here to justify your selection to TCC executives and fellow team members.

Please go to the next page.

Please give the following input regarding the chosen project. The description you have reviewed is sufficient. Hence, please ignore the need for additional information. Please talk privately to the researcher if you have a question regarding any tasks. Please do not talk to other research participants. Please give this input as if you are working in a real company in a real work environment and based on consideration of the information provided. **Remember to check every scale and do not omit any**. **Please do not put more than one check mark on a single scale.**

In my view the chosen project is

1. Important ___: ___: ___: ___: ___: ___: ___ Unimportant
2. Irrelevant ___: ___: ___: ___: ___: ___: ___ Relevant
3. Means a lot to me ___: ___: ___: ___: ___: ___: ___ Means nothing to me
4. Matters to me ___: ___: ___: ___: ___: ___: ___ Doesn't matter
5. Boring ___: ___: ___: ___: ___: ___: ___ Interesting
6. Appealing ___: ___: ___: ___: ___: ___: ___ Unappealing
7. Unexciting ___: ___: ___: ___: ___: ___: ___ Exciting
8. Of no concern to me ___: ___: ___: ___: ___: ___: ___ of concern to me
9. Dull ___: ___: ___: ___: ___: ___: ___ Neat
10. Fun ___: ___: ___: ___: ___: ___: ___ Not fun

Please go to the next page

Now, please provide input regarding **your attitude towards this project** by selecting appropriate box. Please ignore the need for additional information. Please talk privately to the researcher if you have a question regarding any tasks. Please do not talk to other research participants. Please provide input as if you are working in a real company in a real work environment.

	Strongly Agree	Agree	Some What Agree	Neutral	Some What Disagree	Disagree	Strongly Disagree
11. I would feel a personal sense of responsibility for the success of the chosen project.	☐	☐	☐	☐	☐	☐	☐
12. It would be up to me to make the chosen project successful.	☐	☐	☐	☐	☐	☐	☐
13. I would take responsibility to introduce new procedures where appropriate for the success of the chosen project.	☐	☐	☐	☐	☐	☐	☐
14. It would not be my responsibility to correct problem related to the chosen project.	☐	☐	☐	☐	☐	☐	☐
15. I would not change or challenge status quo related to the chosen project.	☐	☐	☐	☐	☐	☐	☐
16. I would be very happy to spend my work time on chosen project.	☐	☐	☐	☐	☐	☐	☐
17. Staying with chosen project would be a matter of necessity as much as desire.	☐	☐	☐	☐	☐	☐	☐
18. I would not feel obliged to continue the chosen project.	☐	☐	☐	☐	☐	☐	☐
19. I would not feel “emotionally attached” to chosen project.	☐	☐	☐	☐	☐	☐	☐
20. I would feel guilty if I discontinue chosen project.	☐	☐	☐	☐	☐	☐	☐

	Strongly Agree	Agree	Some What Agree	Neutral	Some What Disagree	Disagree	Strongly Disagree
21. I would feel that chosen project's problems are my own.	☐	☐	☐	☐	☐	☐	☐
22. It would be hard for me to discontinue chosen project, even if I wanted to.	☐	☐	☐	☐	☐	☐	☐
23. Even if it were to my advantage, I would not feel it would be right to discontinue chosen project.	☐	☐	☐	☐	☐	☐	☐
24. Moving to other project would require considerable personal sacrifice; another project may not offer the overall benefits I would get from chosen project.	☐	☐	☐	☐	☐	☐	☐
25. I would not feel a strong sense of belonging to chosen project.	☐	☐	☐	☐	☐	☐	☐
26. I owe a great deal to work on chosen project.	☐	☐	☐	☐	☐	☐	☐
28. One of the few negative consequences of discontinuing chosen project would be the scarcity of similar opportunity.	☐	☐	☐	☐	☐	☐	☐
29. I would not feel that chosen project is my own project.	☐	☐	☐	☐	☐	☐	☐
30. The chosen project would deserve my loyalty.	☐	☐	☐	☐	☐	☐	☐
31. If so much were not at a stake with chosen project, I would consider discontinuing it.	☐	☐	☐	☐	☐	☐	☐
32. The chosen project would have great deal of personal meaning for me.	☐	☐	☐	☐	☐	☐	☐

Product Development Results

At the end of a development stage, project report indicates that the R&D has tested the technical modifications and has given a green signal. The production department has projected the cost of this project to be $3.6 million (net present value). Furthermore, marketing research estimates profits of approximately $175,000 per year from18% market share and 7% profitability for this product. The research also shows that the desirability score for this product is 85 and suggests a strong need for the product in the market.

Now, please provide input regarding **your attitude towards this project** by selecting appropriate box. The description you reviewed is sufficient. Hence, please ignore the need for additional information. Please talk privately to the researcher if you have a question regarding any tasks. Please do not talk to other research participants. Please provide input as if you are working in a real company in a real work environment.

	Strongly Agree	Agree	Some What Agree	Neutral	Some What Disagree	Disagree	Strongly Disagree
33. I would feel a personal sense of responsibility for the success of the chosen project.	☐	☐	☐	☐	☐	☐	☐
34. It would be up to me to make the chosen project successful.	☐	☐	☐	☐	☐	☐	☐
35. I would take responsibility to introduce new procedures where appropriate for the success of the chosen project.	☐	☐	☐	☐	☐	☐	☐
36. It would not be my responsibility to correct problem related to the chosen project.	☐	☐	☐	☐	☐	☐	☐
37. I would not change or challenge status quo related to the chosen project.	☐	☐	☐	☐	☐	☐	☐
38. I would be very happy to spend my work time on chosen project.	☐	☐	☐	☐	☐	☐	☐
39. Staying with chosen project would be a matter of necessity as much as desire.	☐	☐	☐	☐	☐	☐	☐

	Strongly Agree	Agree	Some What Agree	Neutral	Some What Disagree	Disagree	Strongly Disagree
40. I would not feel obliged to continue the chosen project.	☐	☐	☐	☐	☐	☐	☐
41. I would not feel "emotionally attached" to chosen project.	☐	☐	☐	☐	☐	☐	☐
42. I would feel guilty if I discontinue chosen project.	☐	☐	☐	☐	☐	☐	☐
43. I believe that I have too few options to discontinue chosen project.	☐	☐	☐	☐	☐	☐	☐
44. I would not discontinue chosen project because I would have a sense of obligation to continue it.	☐	☐	☐	☐	☐	☐	☐
45. I would feel that chosen project's problems are my own.	☐	☐	☐	☐	☐	☐	☐
46. It would be hard for me to discontinue chosen project, even if I wanted to.	☐	☐	☐	☐	☐	☐	☐
47. Even if it were to my advantage, I would not feel it would be right to discontinue chosen project.	☐	☐	☐	☐	☐	☐	☐
48. Moving to other project would require considerable personal sacrifice; another project may not offer the overall benefits I would get from chosen project.	☐	☐	☐	☐	☐	☐	☐
49. I would not feel a strong sense of belonging to chosen project.	☐	☐	☐	☐	☐	☐	☐
50. I owe a great deal to work on chosen project.	☐	☐	☐	☐	☐	☐	☐

	Strongly Agree	Agree	Some What Agree	Neutral	Some What Disagree	Disagree	Strongly Disagree
51. One of the few negative consequences of discontinuing chosen project would be the scarcity of similar opportunity.	☐	☐	☐	☐	☐	☐	☐
52. I would not feel that chosen project is my own project.	☐	☐	☐	☐	☐	☐	☐
53. The chosen project would deserve my loyalty.	☐	☐	☐	☐	☐	☐	☐
54. If so much were not at a stake with chosen project, I would consider discontinuing it.	☐	☐	☐	☐	☐	☐	☐
55. The chosen project would have great deal of personal meaning for me.	☐	☐	☐	☐	☐	☐	☐

56. How likely is it that you would authorize the funds necessary to launch the product in the market?

Not at all Likely — Extremely Likely

1 2 3 4 5 6 7 8 9

57. a) Would you continue the project and launch the product in a market? (Please check one of the answer)

Yes _____ No _____

b) Please indicate how likely you are to continue the project and launch the product in the market?

Not at all Likely — Extremely Likely

1 2 3 4 5 6 7 8 9

Please write your rationale for answers to question #57.

58. If your department has 3 million dollar budget for new projects how much will you request for the project? (Please write your answer)

I will request _____ for the project. (Please write $ amount)

Please go to the next page

	Strongly Agree	Agree	Some What Agree	Neutral	Some What Disagree	Disagree	Strongly Disagree
59. I have strong reasons for continuing the project.	☐	☐	☐	☐	☐	☐	☐
60. The project description provides sufficient information suggesting potential success of the project.	☐	☐	☐	☐	☐	☐	☐
61. There is little negative information pertaining to the project.	☐	☐	☐	☐	☐	☐	☐
62. It was difficult decision for me to continue the project.	☐	☐	☐	☐	☐	☐	☐
63. I do not want to explain my decision to others.	☐	☐	☐	☐	☐	☐	☐

64. If you have an option of switching to work on different new product development project would you switch to a new project?

Definitely Would Not Switch				Even Chance				Definitely Would Switch
1	2	3	4	5	6	7	8	9

Please go to the next page

Your observations about your role.

Please provide the following information about the role you assumed in this survey.

	Strongly Agree	Agree	Some What Agree	Neutral	Some What Disagree	Disagree	Strongly Disagree
65. I selected the new product development project to work on.	☐	☐	☐	☐	☐	☐	☐
66. My predecessor selected the new product development project to work on.	☐	☐	☐	☐	☐	☐	☐
67. Significant rewards were explicitly tied to the success of the chosen project.	☐	☐	☐	☐	☐	☐	☐
68. No financial rewards were explicitly tied with the success of the project.	☐	☐	☐	☐	☐	☐	☐
69. I can identify with the scenario as described.	☐	☐	☐	☐	☐	☐	☐
70. The scenario described here has realistic information.	☐	☐	☐	☐	☐	☐	☐
71. I was involved in the scenario during my participation	☐	☐	☐	☐	☐	☐	☐

Please go to the next page

Demographics and Work Related Information

Please provide the following information. Your input is anonymous. Please be as candid as you can.

72. Your Age: _____

73. Male / Female _____

74. Professional Experience: _____ years ____ months (Please give numbers)

75. Tenure at current job: _____ years _____ months (Please give numbers)

76. Approximate Number of Employees in your Company _____

77. Approximate Revenue of your company _____

78. Are you working on or have you worked on a new product development project for your company? (Please indicate Yes or No) _____

    a. If answer is yes, approximately how many new product development projects you have worked on? _____

    b. If answer is yes, approximately how many years you have worked on new product development? _____

    c. If answer is yes what is the largest financial decision you were involved in for a new product development? _____ (Please write $ amount)

79. Are you involved in resource allocation decisions for projects other than new product development projects at your company? (Please indicate Yes or No) _____

    a. If answer is yes what is the largest financial decision you were involved in for a non-new product development project? _____ (Please write $ amount)

Thank you for volunteering. Please return this booklet to administrator.