

THE IMPACT OF CREATIVITY AND INFORMATION LOAD ON ESCALATION OF COMMITMENT

Complete Research

Roetzel, Peter Gordon, University of Stuttgart, peter.roetzel@bwi.uni-stuttgart.de

Abstract

This experimental study analyzes how two key factors, information load and creativity, influence decision making in escalation situations in which decision makers reinvest further resources in a losing course of action even when information indicates that the IT project is performing poorly and should be discontinued. Whereas previous studies focus on the complexity of information, this study investigates how different quantities of information influence escalation of commitment and how information load interacts with a decision maker's interpretation of negative feedback regarding earlier decisions. In situations in which escalation of commitment can occur, information load is relevant for decision making for two reasons. First, in escalation situations in which decision makers face negative feedback, information load exacerbates the tendency to escalate commitment. Second, when an escalation tendency is absent, information load can lead to a decision to continue a losing course of action, which can be mistaken for escalation of commitment. Furthermore, decision makers with a higher level of creativity tend to invest more than decision makers with a lower level of creativity. Surprisingly, creative decision makers do not change their behavior when facing negative consequences while less creative decision makers show an escalation of commitment tendency.

Keywords: Creativity, escalation of commitment, information load.

1 Introduction

Accounting information plays an important role in project management, particularly for the management of information technology (IT) projects (Keil et al., 2000; Lee et al., 2014; Montealegre and Keil, 2000). However, decision makers regularly fail to use information appropriately when evaluating negative feedback and prefer a losing course of action, a phenomenon termed “escalation of commitment” (Hsieh et al., 2015; Sleesman et al., 2012). Although many experiments investigating escalation of commitment have presented participants with large amounts of feedback information, these studies have not controlled for the effects of the amount of information provided (i.e., information load) and the extent to which the amount of information influences the decision maker's behavior (e.g., Ding and Beaulieu, 2011; Lee et al., 2014; Roetzel et al. 2014; Schultze et al. 2012).

Despite the vast research on escalation of commitment, knowledge regarding the influence of the decision maker's creativity on escalation of commitment is lacking. In many organizations, creativity is viewed as providing a competitive advantage (Amabile, 1996; Amabile and Kramer, 2011). However, creativity and dishonesty are similar to a certain extent because both types of behavior involve a tendency to disregard the rules (Gino and Wildermuth, 2014). Prior research has shown that creativity is associated with a stable set of core personality characteristics (e.g., intrinsic motivation, attraction to complexity, intuition, tolerance for ambiguity, risk taking, perseverance, and self-esteem (Amabile and Kramer, 2011; Oldham and Cummings, 1996; Sternberg and Lubart, 1993)). Although escalation of

commitment research has found that many of these core personal characteristics (e.g., risk taking behavior (Brockner, 1992; Keil et al. 2000); self-esteem (Staw, 1976; Sivanathan et al., 2008)) influence a decision maker's tendency toward escalation of commitment, no study has investigated the influence of creativity on escalation of commitment. Furthermore, prior research has found that creative individuals tend to select jobs in creativity-intense environments such as R&D IT projects (e.g., Amabile and Kramer, 2011).

Moreover, prior research has suggested that too high levels of information load reduce decision-making performance (Davis and Ganeshan, 2009; Edmunds and Morris, 2000; Eppler and Mengis, 2004; Grise and Gallupe, 1999/2000) and that extremely high levels of information impair performance in daily IT work tasks (Davis and Ganeshan, 2009; Straub et al., 2007). Regarding escalation of commitment, when an individual faces information overload, the decision to persist in a losing course of action may result from poor decision-making performance. In this case, an apparent effect of escalation of commitment might actually be due to too high levels of information load which causes an information overload.

Information load effects might contribute to escalation of commitment in three ways. First, a high information load might exacerbate escalation of commitment because high levels of negative information increase cognitive dissonance (Festinger, 2010), which strengthens the tendency toward self-justification. Second, a decision maker confronting a high information load might exhibit poorer performance due to information-processing errors, which manifests as the decision to persist in a losing course of action. Third, highly creative decision makers are able to process more information than less creative decision makers (e.g., Ruth and Burren, 1985; Turner and Makhija 2012). Thus, if the level of information load is relevant in escalation situations, the decision maker's level of creativity should also be considered.

The aim of this paper is threefold: First, this paper investigates the influence of creativity on escalation of commitment. Second, this paper explores the extent to which information load is relevant to escalation situations, and if so, to what extent does information load influence the decision to continue a poorly performing IT project. Finally, the study analyzes whether the effect of information load effect be mistaken for escalation of commitment, when the tendency to escalate commitment is absent.

Understanding the influence of creativity and information load in escalation situations is relevant to both the experimental design of studies investigating escalation of commitment and the design of effective executive information systems that ensure the optimal use of accounting information in allocating resources. Thus, the failure to control for creativity and information load in the literature has reduced the comparability of studies with different levels of creativity and information load among participants and raised methodological concerns regarding the effectiveness of the treatment for escalation of commitment when creativity and information load influence the decision-making process. Moreover, decision maker creativity might influence escalation of commitment in tasks that demand creative performance (e.g., a R&D IT project or strategic IT planning). The findings of this study thus might enable managers and researchers to identify and reduce the effects of information overload on decision maker performance in escalation situations. Furthermore, the results offer a first indication that creativity is relevant to the investigation of escalation of commitment.

The present study integrates self-justification theory with the psychological theory of cognitive load to explain how information load influences decisions and examines the role of creativity and information load in escalation situations in which decision makers are responsible for an initial funding decision.

In the present experiment, participants were responsible for a decision regarding initial funding that resulted in negative feedback. The Remote Association Task (RAT; Mednick, 1962) was then used to evaluate participant creativity. The results indicate that participants facing a high information load are more likely to continue a poorly performing IT project than are participants facing a low information load. Furthermore, the findings indicate that decision maker creativity influences escalation of commitment by increasing the effect of information load in escalation situations.

The present research contributes to the literature in three ways. First, the study shows that both escalation of commitment and information load are influenced by creativity, which indicates that both creativity and information load are relevant to experiments evaluating escalation situations. Second, the study demonstrates that the effect of information load on decision making in escalation situations depends on the amount of information provided by the experimenter. Finally, this study extends prior research on escalation of commitment (e.g., Hsieh et al., 2015; Keil and Robey, 1999; Keil et al., 2000; Pan et al., 2006; Slesman et al., 2012) by providing a critical link to IS research on information load (Davis and Ganeshan, 2009; Edmunds and Morris, 2000; Eppler and Mengis, 2004; Hiltz and Turoff, 1985).

The remainder of the paper is structured as follows. The next section reviews the existing literature and develops the study hypotheses; the third section presents the design of the experiment and describes the sample, variables, and data analysis; the fourth section presents the results of the analyses; the fifth section discusses the study findings; and the final section presents the conclusions and limitations of the study.

2 Theory and Hypotheses

Escalation of commitment refers to the widespread tendency of individuals to persist in a failing course of action despite receiving negative feedback, such as information that an IT project is performing poorly (Keil, 1995; Keil et al., 2000; Pan et al., 2006; Staw, 1976). Following the seminal work of Staw (1976), numerous studies have replicated his findings (e.g., Bazerman et al., 1982; Brockner, 1992; Fox and Staw, 1979; Ross and Staw, 1993; Staw, 1981).

Previous research has analyzed escalation of commitment in situations in which decision makers are personally responsible for a course of action (Bazerman et al., 1982; Keil, 1995) and examined the extent to which incentive and control procedures prevent escalation of commitment (Keil, 1995).

Based on Festinger's (1957) cognitive dissonance theory and Kiesler's (1971) psychological commitment theory, self-justification theory predicts that decision makers often discount or reject negative feedback information and escalate their commitment to a losing course of action to justify their earlier decisions (Bazerman et al., 1982; Brockner, 1992; Staw, 1981). Cognitive dissonance theory assumes that dissonance between an individual's opinions, beliefs, knowledge of the environment, and knowledge of his or her own actions and feelings produces cognitive discomfort. Individuals feel pressure to reduce or eliminate this dissonance by modifying one or more of the involved beliefs, opinions, or behaviors. Decision makers also attempt to obtain new information to increase existing consonance and thus reduce dissonance (Festinger, 2010). Psychological commitment theory explains that consistent behavior over a particular period results from both personal factors, such as the demand to reduce cognitive dissonance, and external factors, such as social pressure.

When decision makers receive negative feedback, they experience cognitive dissonance because the negative information conflicts with their positive self-perception (Festinger, 1957). This phenomenon, referred to as the "self-justification effect" and is one of the main explanatory approaches of escalation of commitment (Fox and Staw, 1979; Staw, 1981; Ross and Staw, 1993), is produced by the decision maker's desire to maintain a positive self-perception. Decision makers' efforts to reduce this dissonance produce a "motivational change" (Teger, 1980) in which individuals shift their focus away from the organization's goals toward the personal goal of justifying prior decisions. They typically achieve this change by committing themselves to their earlier decisions to protect their self-perception. For example, decision makers who are responsible for an initial investment decision tend to invest additional funds to justify their prior behavior, decisions and investments (Schulz and Cheng, 2002; Staw, 1976).

The present study draws on cognitive load theory as the basis for investigating a decision maker's information processing. Cognitive load theory is a psychological theory relevant to situations with high

levels of information load or complexity (Sweller et al. 2011). In cognitive load theory, decision makers (the information recipients) are defined as systems that transform information inputs into decision-making performance (Driver and Mock 1975; Driver and Streufert 1969).

Previous research on escalation of commitment has generally provided decision makers with relevant information during the experimental task (Bazerman et al., 1982; Brockner et al., 1981; Ghosh, 1997; Keil, 1995; Keil et al., 1995). Initially, as the information processed by a decision maker increases, the information that the individual integrates into his or her decision outputs rises. However, the positive relation between decision-making performance and information load persists only to a certain point. Beyond this point, the decision-making performance indicates that the individual is employing less of the available information (Driver and Mock, 1975; Newell and Simon, 1972). Thus, when the information load exceeds the decision maker's information-processing capacity, the information load that is actually integrated into the decisions declines and "information overload" occurs (e.g., Davis and Ganeshan, 2009; Straub et al., 2007; Sweller et al. 2011).

Experimental evidence indicates that the relationship between information load and decision outputs takes the form of an inverted U-shaped curve (Chewning and Harrell, 1990; Davis and Ganeshan, 2009; Ding and Beaulieu, 2011; Edmunds and Morris, 2000; Eppler and Mengis, 2004; Shields, 1983). For instance, Shields (1980) examined the relationship between decision inputs and information load and found that increasing decision input leads to a higher variability in information search behavior. Shields (1983) then examined decision outputs and found that judgment accuracy follows an inverted-U function of the supply of information. In a management context, O'Reilly (1980) argued that information load impairs managers' ability to integrate additional information into the decision-making process. Furthermore, higher information load influences the quality of decision making in financial distress situations (Chewning and Harrell, 1990), leads to fewer systematic and thorough search strategies in budgeting (Swain and Haka, 2000) and reduces the predictive accuracy of financial analyses (Simnet, 1996).

Both information load and the tendency toward escalation of commitment are viewed as maladaptive and dysfunctional behavior patterns (e.g., Brockner et al., 1981; Milford and Perry, 1977; Staw, 1981). In an IT project situation, Schultze et al. (2012) found that in the "worst case," the decision maker persists in a losing course of action with adverse consequences for both the project and the organization. In extreme cases, persisting in a losing course of action might ultimately bankrupt organizations or waste public funds. When decision makers must cope with information overload in an escalation situation, whether poor decisions result from self-justification (i.e., escalation of commitment) or information-processing error remains unclear (Roetzel et al., 2014). Nevertheless, visible result of persisting in a losing course of action is the same whether it is due to escalation of commitment or an information-processing error.

Information overload leads to a decreasing decision output. In escalation situations, the decision to discontinue a poorly performing IT project can be viewed as a decision output. Although decision makers receive more information, subsequent decisions might not be based on the additional information when the decision maker receives negative feedback. An decision maker facing information overload who exhibits a negligible tendency toward self-justification might nevertheless persist in a poorly performing IT project due to a decline in the decision-making performance related to higher information load. In that case, the apparent escalation of commitment is actually an information-processing error produced by information overload. Thus, this study hypothesizes that information load might produce two types of effects on the decision to continue or discontinue a losing course of action: In the exacerbation case, when the tendency toward self-justification is high, a high information load would increase the tendency toward self-justification and thus increase the tendency toward escalation of commitment. In the error case, when the tendency toward self-justification is low, a high information load would be associated with a decision to continue with a losing course of action but a low information load would be associated with a decision to terminate a failing project. This leads to the following hypotheses:

H1: In escalation situations, information load increases escalation of commitment for decision makers who exhibit higher tendencies toward self-justification.

H2: In escalation situations, information load increases the allocation of resources for decision makers who exhibit fewer tendencies toward self-justification.

Note that the first hypothesis predicts that the effect of information load is due to the interaction between information load and a tendency toward self-justification, whereas the second hypothesis predicts that information load produces a direct effect.

Creativity provides many organizations with a competitive advantage (Amabile and Kramer, 2011), and these companies rely on employee creativity to develop or produce unique products or services. A large stream of research on the relationship between creativity and decision-making behavior has revealed the adverse effects of extrinsic incentives on creativity and the critical role of intrinsic motivation and freedom for effective performance in creative environments (e.g., Amabile, 1996; Amabile and Kramer, 2011; Shalley et al., 2000).

Creativity is associated with divergent thinking and “thinking outside the box” (Guilford, 1967; Simonton, 1999). Divergent thinking requires that decision makers break certain rules to establish associations between previously unassociated cognitive elements (Bailin, 1987; Gino and Wiltermuth, 2014). This process produces the unusual mental associations that form the basis for novel ideas (Sternberg, 1988). Thus, the creative process requires that decision makers break rules to exploit existing opportunities or create new ones (Brenkert, 2009). Previous studies on creativity have analyzed ways in which organizations might foster creativity, such as encouraging employees to depart from accepted practices (Winslow and Solomon, 1993) or bend the rules (Baucus et al., 2008).

Prior research shows that decision makers’ personal characteristics of are essential determinants of their decision-making behavior (Amabile and Kramer, 2011; Oldham and Cummings, 1996; Sternberg and Lubart, 1993). Thus, regarding escalation of commitment, self-justification might be influenced by creativity-related personal characteristics (Staw, 1976; Sivanathan et al., 2008). Moreover, continuing a poorly performing IT project might be interpreted as breaking the mold, and prior research has found that highly creative individuals are more likely than less creative people to bend rules or try something new (Cropley et al., 2003; Sternberg and Lubart, 1995). Thus, I propose the following hypothesis:

H3: In escalation situations, decision makers higher levels of creativity are more likely to continue a poorly performing IT project than decision makers with lower levels of creativity.

Figure 1 presents the research model.

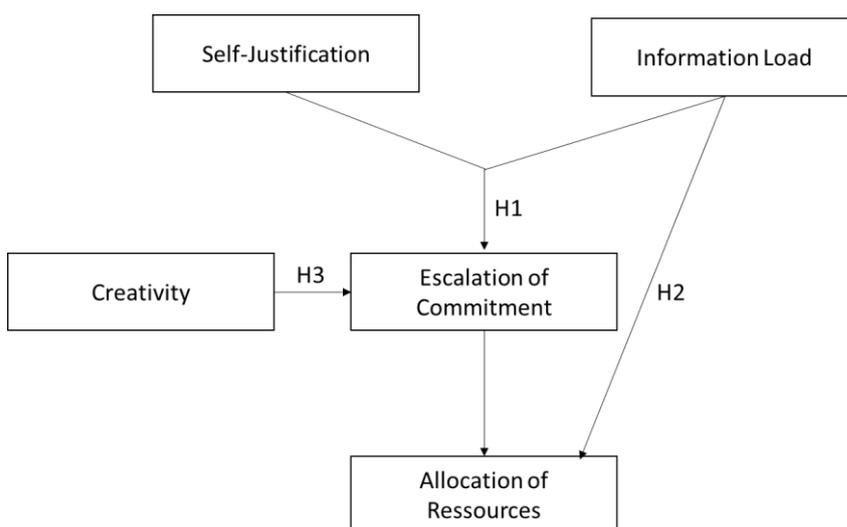


Figure 1. Research model

3 Method

3.1 Participants

The sample comprised 230 students at a German university who voluntarily participated in the experiment. All participants had courses in Finance, Investment and Accounting. Because 9 individuals were excluded because of incomplete data, the final sample included 223 participants. The mean participant age was 21.22 years; 34.53% of the participants were female, and 21 participants were from outside Germany. No participant reported previously participating in a similar study. Prior research has shown that students constitute an appropriate proxy for young managers, and student samples have been frequently used in escalation of commitment experiments (e.g., Lee et al. 2014; Schultze et al. 2012). Nevertheless, initial findings from a student sample must be replicated using nonstudent samples.

3.2 Design

The experiment consisted of a 2 (initial decision consequence: positive feedback vs. negative feedback) X 3 (information load: low, low, medium, high) factorial design in which all treatments were manipulated between participants. Each participant was randomly assigned to one of the between-subjects conditions.

I employed low, medium, and high levels of information load, and following prior research (Miller 1956; Newell and Simon 1972), I used information loads consisting of different dimensions or cues. Prior research has found that the information loads with more than four to eight cues decreases decision quality (e.g., Chewning and Harrell, 1990; Eppler and Mengis, 2004; Tuttle and Burton, 1999). Following Chewning and Harrell (1990), I used financial ratios as decision cues.

Staw's (1976) original case consisted of the 2 performance measures of sales and earnings over a period of 8 business years. This case was used to create the low information load category in the present study. The medium information load category then included 4 performance measures (i.e., twice as much information as the low information load category). Finally, the high information load category included 8 performance measures (i.e., 4 times as much information as the low information load category).

The financial information report consisted of performance measures (i.e., sales and earnings) that were included in the basic Adams & Smith case. I used two additional ratios in the medium category: EBITA (earnings before interest, taxes, and amortization) and EBSA (earnings before interest and tax/sales). Then, four additional ratios were used in the high information load category: ROI, ROCE, RONA (return on net assets), and WACC (weighted average cost of capital). The KPI ratios were based on the financial indicators used by Staw (1976). In the present study, the data used in the reports were identical to those used in the Adams & Smith case with the modification that the additional ratios were related to Staw's (1976) financial indicators. The present study used consistent information only, and apart from earnings and sales, other components were kept constant.

3.3 Procedure

The study procedures were based on Staw's (1976) Adams & Smith case, which was adapted for speakers of German. All participants were provided with the history of a hypothetical IT company, Adams & Smith, Inc., which consisted of two divisions: Consumer Apps and Industrial Management Information Systems. This setting was employed to model free choice resulting in personal responsibility.

The experimental task consisted of two stages. The first stage involved the decision to provide an initial €5 million of R&D funding (no splitting) for an IT project in one of two divisions after the participants were provided with information about the performance of the two divisions for the past eight-

month period. Each participant was individually responsible for deciding which of the two IT products divisions received funding for the new R&D IT project, with the provision that funding could not be split between the divisions.

Because earlier research has found that responsibility for the initial decision increases the tendency toward escalation of commitment (Bazerman et al., 1982; Keil, 1995; Staw, 1976), I did not use responsibility as a treatment but as an experimental setting in which each participant decided both initial and subsequent allocations of resources. To control for responsibility, Whyte's approach (1991) was used to measure the participants' self-reported degree of responsibility for the initial funding and the resulting feedback. This study solicited information using a postexperimental questionnaire containing a 5-point Likert scale (Bazerman et al., 1982; Whyte, 1991). Specifically, "responsibility" (manipulation check) was assessed by the following question: "To what extent do you feel responsible for the future development of the division of products you selected?" (1 = not at all; 5 = very much).

In the second stage, the participants received either positive or negative feedback regarding the outcome of the initial IT project funding for a time point three months after the initial resource allocation decision. The project information report indicated that the chosen division either experienced stable, positive economic development (positive feedback) or experienced increased losses (negative feedback). After receiving the feedback information, the participants were asked to determine how to allocate an additional €5 million in funding; they were able to continue to fund the original IT project (i.e., initial IT project funding) and to fund a new IT project, which might involve terminating funding of the initial IT project. In contrast to their initial decision, the participants were allowed to split the additional funding between divisions. In addition, the participants were administered the 20-item Remote Association Task (RAT; Mednick, 1962). Completing these procedures concluded the experiment.

Following Staw (1976) and Bazerman et al. (1984), this study did not use a time limit, and the participants were provided with as much time as they wished to make decisions at both stages of the experiment because time pressure might increase the likelihood of information-processing errors. In an information load experiment that used "time" as a treatment, Tuttle and Burton (1999) demonstrated that an individual's information-processing capacity imposed a limit on the amount of information processed per unit of time rather than on the total amount of information processed. Moreover, experiments by Pennington and Tuttle (2007) and Schick et al. (1990) found that decision makers rarely filtered information, which suggests that decision makers are unable to process all the information under time pressure.

4 Results

4.1 Preliminary Analysis and Manipulation Checks

Prior to performing the main analyses, I performed a manipulation check to determine the extent to which the manipulation of positive or negative feedback was successful. As in Staw (1976), the choice of IT division did not significantly affect decision behavior, $t(221) = 0.832$, n.s., $d = 0.296$. Table 1 presents summary statistics.

To determine the extent to which the resource allocation differed for the different categories of information load, I performed a Kruskal-Wallis-Test, which supported the manipulation ($\chi^2 = 115.200$, $p < 0.01$).

This study also examined demographic data on the participants to determine the extent to which the experimental groups differed. The experimental groups did not differ significantly with respect to age or sex, regarding Kruskal-Wallis-Tests (creativity: $\chi^2 = 6.635$, $p = 0.675$; investment: $\chi^2 = 13.997$, $p = 0.122$). Checking for a cultural impact on escalation tendency, level of creativity and information load, I found no significant differences between German and non-German participants. I therefore concluded that the experimental groups were equivalent for purposes of the between-group comparisons.

Treatment	Allocation of Resources		N
	Mean	S.D.	
Positive Feedback - 2 KPI	2.00	1.07	35
Negative Feedback -2 KPI	2.97	0.76	36
Positive Feedback - 4 KPI	4.13	1.08	23
Negative Feedback - 4 KPI	4.05	0.61	56
Positive Feedback - 8 KPI	4.71	0.74	35
Negative Feedback - 8 KPI	4.50	0.60	38

Table 1. Summary Statistics

4.2 Escalation of Commitment

First, this study analyzed the extent to which the type of feedback participants received after their initial funding decisions influenced the amount of resources they allocated in the second stage of the experiment. Self-justification theory predicts that decision makers escalate their commitment to a losing course of action to justify their prior funding (Bazerman et al., 1982; Brockner et al., 1981; Fox and Staw, 1979). The results showed that the participants who received negative feedback ($M = 3.89$) allocated more resources than those who received positive feedback ($M = 3.55$), $t(221) = 2.037$, $p < 0.05$, $d = 0.336$, which is consistent with the findings of prior research (Keil, 1995; Staw, 1976).

In an ANOVA in which allocation of resources was the dependent variable (see Table 2), the main effect of information load was significant, indicating that participants with a high information load were more likely to decide to allocate resources to a greater extent than participants with a low information load. Specifically, a 2 (decision consequence: positive consequence vs. negative consequence) X 3 (information load: low, medium, high) ANOVA indicated that information load increased the allocation of resources for decision makers who received negative feedback about the initial decision.

Source	df	M.S.	Sig.
Decision Feedback	1	2.909	.008
Information Load	2	14.474	.000
Creativity	4	4.473	.000
Decision Feedback X Information Load	2	1.820	.013
Decision Feedback X Creativity	4	1.838	.002
Information Load X Creativity	7	.785	.068
Decision Feedback X Information Load X Creativity	4	.455	.350
Error	198	.408	

Table 2. Results of an ANOVA of the Effects of Feedback, Information Load, and Creativity on Allocation of Resources to a Previously Chosen Alternative

4.3 Information Load

Following Staw's (1976) approach, I analyzed the extent to which increasing information load influenced participants' funding behavior. Based on earlier research on information load (Casey, 1980;

Chewning, and Harrell, 1990; Shields, 1983), I checked for the existence of a U-curve shaped curve between allocation of resources and information load and found that the allocation of resources (A) was a quadratic function of the amount of information supplied (L) ($F = 120.316$, $p < 0.01$). The equation of this function was $A(L) = -0.528L^2 + 2.111L + 2.493$ (adj. $R^2 = 0.518$).

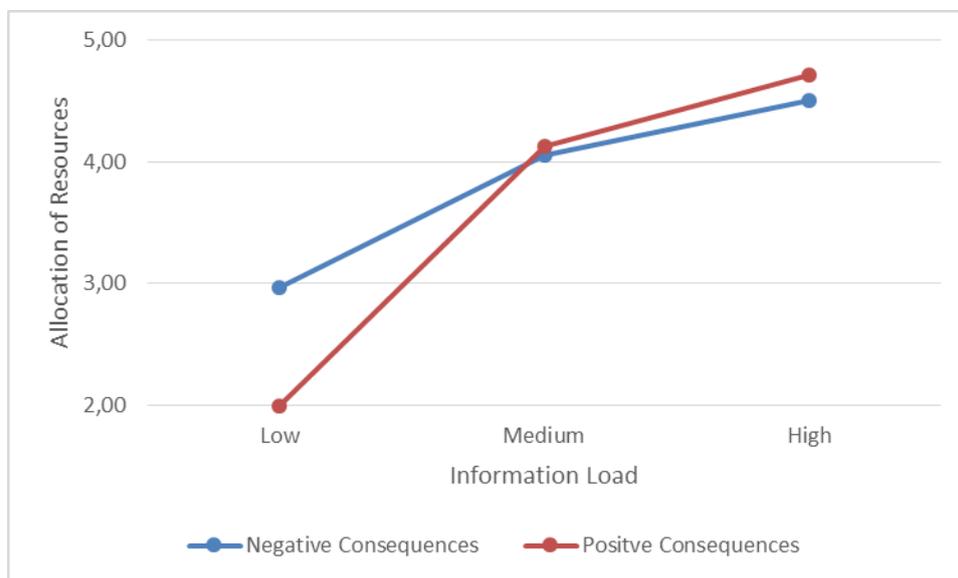


Figure 2. Escalation of Commitment and Information Load

An ANOVA for allocation of resources and information load revealed a significant main effect, $F(2,220) = 120.316$, $p < 0.01$, $\eta^2 = 0.522$. Table 2 further shows that the interaction between decision feedback (D) and information load (L) was significant, supporting H1. Thus, information load exacerbated escalation of commitment. As Figure 1 indicates, planned contrasts revealed that decision makers with a low information load invested less ($M = 2.49$) than those in the medium information load ($M = 4.08$; $t(148) = 10.521$, $p < 0.01$, $d = 1.58$) and the high information load conditions ($M = 4.60$; $t(142) = 14.302$, $p < 0.01$, $d = 2.10$), supporting H2.

The results show that information overload rather than escalation of commitment might drive overallocation of resources and that an interaction arises between decision feedback and information load in escalation situations. Furthermore, as Table 2 shows, H2 was supported because the tendency toward escalation of commitment increased with information load.

4.4 Creativity

Regarding the relationship between creativity and decision-making behavior, an ANOVA on escalation of commitment and creativity revealed a significant main effect, $F(4,218) = 78.160$; $p < 0.01$, $\eta^2 = 0.589$. As Figure 2 indicates, planned contrasts supported H3, revealing that decision makers with lower levels of creativity invested less ($M = 2.71$) than those with higher levels of creativity ($M = 4.11$; $t(128) = 8.098$, $p < 0.01$, $d = 1.40$). Surprisingly, decision makers with higher levels of creativity were not influenced by negative consequences, while decision makers with lower levels of creativity exhibited a tendency toward escalation of commitment.

Figure 3 illustrates the different levels of allocation of resources for different types of feedback. However, the ANOVA did not reveal a significant interaction between creativity and information load (see Table 2).

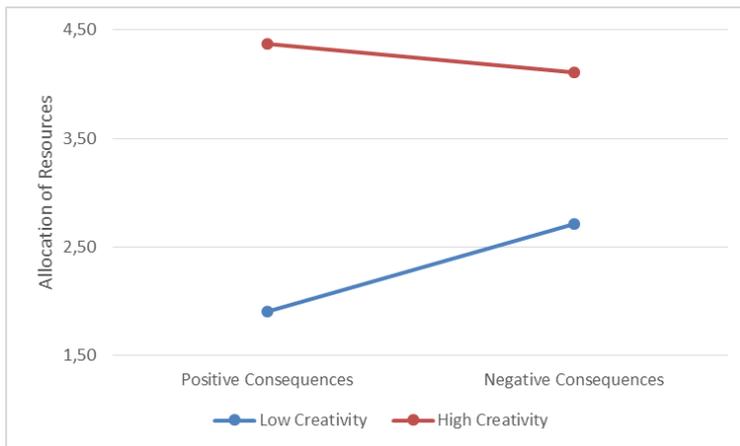


Figure 2. Escalation of Commitment and Creativity

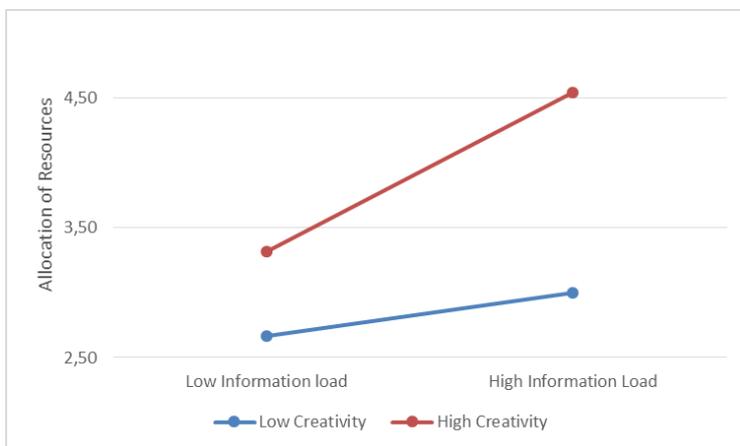


Figure 3. Escalation of Commitment, Information Load and Creativity for the Negative Feedback Condition

5 Discussion

Previous research on escalation of commitment has shown that decision makers who receive negative feedback feel the need to justify their earlier behavior, decisions and funding to avoid experiencing cognitive dissonance (Festinger, 1957) and protect their positive self-perceptions. They thus tend to continue to fund or even increase the allocation of resources to poorly performing projects (Bazerman et al., 1982; Brockner et al., 1981; Fox and Staw, 1979; Keil et al., 1995; Staw, 1981; Teger, 1980). In line with self-justification theory, the result of this study showed that decision makers who receive negative feedback after an initial funding decision allocate significantly more resources to the initial project than those who receive positive feedback.

In this study, I integrated self-justification theory with psychological cognitive load theory to explain how information load influences escalation of commitment. Accordingly, my study extends the existing literature on escalation of commitment and information load, which has focused merely on the quality of information, by demonstrating that information load influences escalation of commitment (Denison, 2009; Schultze et al., 2012). I draw attention to the effect of different information loads on escalation of commitment to analyze the impact of information load on escalation of commitment. In my experiment, I compared the extent to which participants coping with low, moderate, and high in-

formation loads escalated their commitment in a typical setting. The results showed that overallocation of resources might result from information overload rather than from escalation of commitment.

Furthermore, this study shows that decision makers' level of creativity might be critical for escalation of commitment, as decision makers with higher levels of creativity tended to invest more than decision makers with lower levels of creativity. Surprisingly, however, decision makers with higher levels of creativity also invested more when they faced negative consequences, while decision makers with lower levels of creativity exhibited a tendency toward escalation of commitment. Regarding the exacerbation effect of information load on escalation of commitment, decision makers with higher levels of creativity allocated considerably more resources to a poorly performing IT project than those with lower levels of creativity.

By replicating prior experiments (e.g., Staw, 1976), I found that the effect of information load on escalation of commitment increased for participants who received negative feedback. Both the direct effect of information load on allocation of resources and the interaction effect between information load and escalation of commitment on allocation of resources should alert researchers that an increase in the tendency to escalate commitment might be due to information load rather than the experimental treatment. Notably, information load influenced both decision makers who receive negative feedback and those who do not.

As a result of my findings, prior studies on escalation of commitment in which participants faced a higher level of information (Schulz and Cheng, 2002; Staw, 1976) might be viewed in a different light. Superficially, a decision maker facing negative feedback might persist in a losing course of action based on a decision-making error due to information overload that would not occur if he or she were not faced with information overload. Thus, persistence in a losing course of action might not satisfactorily measure escalation of commitment when experimental procedures produce information overload.

The present study contributes to the research literature by demonstrating that information load increases the tendency toward escalation of commitment and that future research investigating escalation of commitment should control for information load. Moreover, the study results confirmed the inverted U-shaped curve revealed by previous research on information load (Chewning and Harrell, 1990; Davis and Ganeshan, 2009; Shields, 1983; Tuttle and Burton, 1999). Understanding the sources of escalation of commitment is essential to enable managers and researchers to design management information systems and controls that ensure the optimal use of information in resource allocation.

6 Conclusions

In this study, I examine the effect of information load on a decision maker's tendency to continue a losing course of action. The study framework, which integrated cognitive load theory with self-justification theory, predicted that higher information loads would impair information processing in situations associated with escalation of commitment, and the study findings supported this hypothesis. The participants' decisions were influenced by both negative feedback and information load. Information load also exerted a strong positive effect on the allocation of resources. Furthermore, the decision maker's level of creativity exerted a positive effect on the allocation of resources in both escalation and nonescalation situations.

The theoretical model used to analyze escalation of commitment, information load, and creativity can also be applied to other situations involving escalation of commitment. The finding that both information load and creativity increased the tendency toward escalation of commitment extends previous studies on the psychological mechanisms underlying this phenomenon. The mechanism of self-justification explains why decision makers are unwilling to admit that they have made a mistake despite their awareness of it. The study findings indicate that information load amplifies this effect, possibly because correctly assessing a situation is difficult when the amount of information provided ex-

ceeds the decision maker's information-processing capacity. Thus, the amount of available information that becomes integrated into a decision seems to decline rapidly as information load increases.

However, when one considers that information overload biases the decision maker's perception of the chances of an IT project succeeding, escalation of commitment appears to be a rational decision. Similarly, based on self-justification theory, Schultze et al. (2012) have argued that the biased evaluation of information might lead to escalation of commitment. Thus, decision makers may continue to pursue projects that should be abandoned from an economic point of view. The view that information load and self-justification might either simultaneously or sequentially produce escalation of commitment complements rather than contradicts the traditional view of the phenomenon.

Furthermore, no interaction between information load and creativity was found in the present study. Surprisingly, in the face of negative feedback, highly creative decision makers did not modify their behavior, while less creative decision makers exhibited a tendency toward escalation of commitment.

Swain and Haka (2000) found that decision makers exposed to a high information load employed less systematic information search strategies, although this effect was weaker for highly experienced decision makers. Thus, investigating the effects of information load on information search strategies would be worthwhile research endeavor (Hart et al. 2009).

The findings presented in this paper must be interpreted in light of the limitations of the present study. First, the use of simple decision scenarios and student samples limits the external validity of the experimental findings, which is often the case for experimental studies on escalation of commitment. Future research should thus employ the present experimental design with other participant groups, such as experienced IT project managers. Second, the study did not examine the personal characteristics of decision makers that were associated with creativity. Further research studying the relationship of creativity and information load in escalation situations should also investigate decision makers' personal characteristics. Third, the present experiment employed correlated information. Future studies should therefore investigate the extent to which correlated or noncorrelated information reduces or intensifies bias in situations associated with escalation of commitment. Finally, the experiment employed retrospective KPIs. Because previous research indicates that decision makers evaluate retrospective and prospective information differently, assessing the effect of prospective information on decision makers provides a promising avenue for future research.

References

- Amabile, T.M. 1996. *Creativity in Context*. Boulder, CA: Westview Press.
- Amabile, T.M. and S.J. Kramer. 2011. *The Progress Principle: Using Small Wins to Ignite Joy, Engagement, and Creativity at Work*. Boston: Harvard Business School Press.
- Amabile, T.M., R. Conti, H. Coon, J. Lazenby, and M. Herron. 1996. "Assessing the Work Environment for Creativity." *Academy of Management Journal* 39 (5), 1154–1184.
- Baucus, M.S., W.I. Norton, D.A. Baucus, S.A. Human. 2008. "Fostering creativity and innovation without encouraging unethical behavior." *Journal of Business Ethics* 81 (1), 97–115.
- Bailin, S. 1987. "Critical and creative thinking." *Informal Logic* 9 (1), 23–30.
- Bazerman, M.H., R.I. Beekun, and F.D. Schoorman. 1982. "Performance Evaluation in a Dynamic Context: A Laboratory Study of the Impact of a Prior Commitment to the Rate." *Journal of Applied Psychology* 67 (6), 873–876.
- Brenkert, G. G. 2009. "Innovation, rule breaking and the ethics of entrepreneurship." *Journal of Business Venturing* 24 (4), 448–464.
- Brockner, J., J.Z. Rubin, and E. Lang. 1981. "Face-Saving and Entrapment." *Journal of Experimental Social Psychology* 17 (1), 68–79.
- Chewning, E.G., Jr., and A. Harrell. 1990. "The Effect of Information Load on Decision Makers' Cue Utilization Levels and Decision Quality in a Financial Distress Decision Task." *Accounting, Organizations and Society* 15 (6), 527–542.

- Cropley, D.H., J.C. Kaufman, A.J. Cropley. 2003. "Malevolent creativity: A functional model of creativity in terrorism and crime." *Creativity Research Journal* 20 (1), 105–115.
- Conlon, E.J., and J.M. Parks. 1987. "Information Requests in the Context of Escalation." *Journal of Applied Psychology* 72 (3), 344–350.
- Davis, J.G. and S. Ganesan. 2009. "Aversion to Loss and Information Overload: An Experimental Investigation." in: *Proceedings of International Conference on Information Systems*.
- Denison, C.A. 2009. "Real Options and Escalation of Commitment: A Behavioral Analysis of Capital Investment Decisions." *The Accounting Review* 84 (1), 133–155.
- Ding, S. and P. Beaulieu. 2011. "The Role of Financial Incentives in Balanced Scorecard-Based Performance Evaluations: Correcting Mood Congruency Biases." *Journal of Accounting Research* 49 (5), 1223–1247.
- Driver, M.J. and S. Streufert. 1969. "Integrative Complexity: An Approach to Individuals and Groups as Information Processing Systems." *Administrative Science Quarterly* 14 (2), 272–285.
- Driver, M.J. and T.J. Mock. 1975. "Human Information Processing, Decision Style Theory, and Accounting Information Systems." *The Accounting Review* 50 (3), 490–508.
- Edmunds, A. and A. Morris. 2000. "The Problem of Information Overload in Business Organizations: A Review on the Literature." *International Journal of Information Management* 20 (1), 17–28.
- Eppler, M.J. and J. Mengis. 2004. "The Concept of Information Overload: A Review of Literature from Organization Science, Accounting, Marketing, Mis, and Related Disciplines." *The Information Society* 20 (5), 325–344.
- Festinger, L. 1957. *A Theory of Cognitive Dissonance*. Stanford: Stanford University Press.
- Festinger, L. 2010. "Cognitive dissonance theory." In: R. West and L.H. Turner (eds.), *Introducing communication Theory Analysis and Application* 4, 112–128.
- Fox, F.V. and B.M. Staw. 1979. "The Trapped Administrator: Effects of Job Insecurity and Policy Resistance Upon Commitment to a Course of Action." *Administrative Science Quarterly* 24 (3), 448–471.
- Galbraith, J.R. 1974. "Organization Design: An Information Processing View." *Interfaces* 3 (1), 28–36.
- Ghosh, D. 1997. "De-Escalation Strategies: Some Experimental Evidence." *Behavioral Research in Accounting* 9 (1), 88–112.
- Gino, F. and S. S. Wilthermuth. 2014. "Evil Genius? How Dishonesty Can Lead to Greater Creativity." *Psychological Science* 25 (2), 414–421.
- Greitemeyer, T. and S. Schulz-Hardt. 2003. "Preference-Consistent Evaluation of Information in the Hidden Profile Paradigm: Beyond Group-Level Explanations for the Dominance of Shared Information in Group Decisions." *Journal of Personality and Social Psychology* 84 (2), 322–339.
- Grise, M. and R.B. Gallupe. 1999/2000. "Information Overload: Addressing the Productivity Paradox in Face-to-Face Electronic Meetings." *Journal of Management Information Systems* 16 (3), 157–185.
- Guilford, J.P. 1967. *The nature of human intelligence*. New York: McGraw-Hill.
- Hart, W., D. Albarracín, A.H. Eagly, I. Brechan, M.J. Lindberg, and L. Merrill. 2009. "Feeling Validated Versus Being Correct: A Meta-Analysis of Selective Exposure to Information." *Psychological Bulletin* 135 (4), 555–588.
- Hiltz, S. and M. Turoff. 1985. "Structuring Computer-Mediated Communication Systems to Avoid Information Overload." *CACM* 28, 680–689.
- Hsieh, K.H., W. Tsai, and M.-J. Chen. 2015. "If They Can Do It, Why Not Us? Competitors as Reference Points for Justifying Escalation of Commitment." *Academy of Management Journal* 58 (1), 38–58.
- Keil, M. 1995. "Pulling the Plug: Software Project Management and the Problem of Project Escalation." *MIS Quarterly* 19 (4), 421–447.

- Keil, M. and D. Robey. 1999. "Turning around Troubled Software Projects: An Exploratory Study of the Deescalation of Commitment to Failing Courses of Action." *Journal of Management Information Systems* 15 (4), 63–87.
- Keil, M., B.C. Tan, K.K. Wei, T. Saarinen, V. Tuunainen, and A. Wassenaar. 2000. "A Cross-Cultural Study on Escalation of Commitment Behavior in Software Projects." *MIS Quarterly* 24 (2), 299–325.
- Keil, M., R. Mixon, T. Saarinen, and V. Tuunainen. 1995. "Understanding Runaway Information Technology Projects: Results from an International Research Program Based on Escalation Theory." *Journal of Management Information Systems* 11 (3), 67–87.
- Kiesler, C.A. 1971. *The Psychology of Commitment: Experiments Linking Behaviour to Belief*. New York: Academic Press.
- Koehler, J.J. 1993. "The Influence of Prior Beliefs on Scientific Judgments of Evidence Quality." *Organizational Behavior and Human Decision Processes* 56 (1), 28–55.
- Lee, J.S., H.K. Lee, and M. Keil. 2014. "Using Perspective Taking to De-Escalate Commitment to Software Product Launch Decisions." in: *Proceedings of International Conference on Information Systems*.
- Mednick, S.A. 1962. "The Associative Basis of the Creative Process." *Psychological Review* 69 (2), 220–232.
- Milford, J.T. and R.P. Perry. 1977. "A Methodological Study of Overload." *Journal of General Psychology* 97 (1), 131–137.
- Montealegre, R. and M. Keil. 2000. "De-Escalating Information Technology Projects: Lessons from the Denver International Airport." *MIS Quarterly* 24 (3), 417–447.
- Newell, A. and H. Simon. 1972. *Human Problem Solving*. Upper Saddle River: Prentice Hall.
- O'Reilly, C.A. I. 1980. "Individuals and information overload in organizations: Is more necessarily better?" *Academy of Management Journal* 23 (4), 684–696.
- Oldham, G. and A. Cummings. 1996. "Employee Creativity: Personal and Contextual Factors at Work." *Academy of Management Journal* 39 (5), 607–634.
- Pan, S.L., G.S.C. Pan, M. Newman, and D. Flynn. 2006. "Escalation and De-Escalation of Commitment to Information Systems Projects: Insights from a Project Evaluation Model." *European Journal of Operational Research* 173 (3), 1139–1160.
- Pennington, R. and B. Tuttle. 2007. "The Effects of Information Overload on Software Project Risk Assessment." *Decision Sciences* 38 (3), 489–526.
- Roetzel, P.G., D. Fischer, and B. Pedell. 2014. "Impact of Information Load on Escalation of Commitment", in: *Proceedings of the 20th Conference of the International Federation of Operational Research Societies*, Barcelona.
- Ross, J. and B.M. Staw. 1993. "Organizational Escalation and Exit: Lessons from the Shoreham Nuclear Power Plant." *Academy of Management Journal* 36 (4), 701–732.
- Ruth, J.-E. and J.-E. Birren. 1985. "Creativity in adulthood and old age: relations to intelligence, sex and mode of testing." *International Journal of Behavioral Development* 8 (1), 99–109.
- Schick, A.G., L.A. Gordon, and S. Haka. 1990. "Information Overload: A Temporal Approach." *Accounting, Organizations and Society* 15 (3), 199–220.
- Schroder, H., M.J. Driver, and S. Streufert. 1967. *Human Information Processing*. New York: Holt, Rinehart and Winston.
- Schultze, T., F. Peiffer, and S. Schulz-Hardt. 2012. "Biased Information Processing in the Escalation Paradigm: Information Search and Information Evaluation as Potential Mediators of Escalating Commitment." *Journal of Applied Psychology* 97 (1), 16–32.
- Schulz, A.K.-D. and M.M. Cheng. 2002. "Persistence in Capital Budgeting Reinvestment Decisions - Personal Responsibility Antecedent and Information Asymmetry Moderator. A Note." *Accounting and Finance* 42 (1), 73–86.

- Shalley, C.E., L.L. Gilson, and T.C. Blum. 2000. "Matching creativity requirements and the work environment: Effects of satisfaction and intention to leave." *Academy of Management Journal* 43 (2), 215–223.
- Shields, M.D. 1980. "Some Effects of Information Load on Search Patterns Used to Analyze Performance Reports." *Accounting, Organizations and Society* 5 (4), 429–442.
- Shields, M.D. 1983. "Effects of Information Supply and Demand on Judgment Accuracy: Evidence from Corporate Managers." *The Accounting Review* 58 (2), 284–303.
- Simnet, R. 1996. "The Effect of Information Selection, Information Processing and Task Complexity on Predictive Accuracy of Auditors." *Accounting, Organizations and Society* 21 (7/8), 699–719.
- Simonton, D. K. 1999. Creativity as blind variation and selective retention: Is the creative process Darwinian? *Psychological Inquiry* 10 (2), 309–328.
- Sivanathan, N., D. Molden, A. Galinsky, and G. Ku. 2008. "The Promise and Peril of Self-Affirmation in De-Escalation of Commitment." *Organizational Behavior and Human Decision Processes* 107 (1), 1–14.
- Sleesman, D.J., D.E. Conlon, G. McNamara, and J.E. Miles. 2012. "Cleaning up the Big Muddy: A Meta-Analytic Review of the Determinants of Escalation of Commitment." *Academy of Management Journal* 55 (3), 541–562.
- Staw, B.M. 1976. "Knee-Deep in the Big Muddy: A Study of Escalating Commitment to a Chosen Course of Action." *Organizational Behavior and Human Performance* 16 (1), 27–44.
- Staw, B.M. 1981. "The Escalation of Commitment to a Course of Action." *Academy of Management Review* 6 (4), 577–587.
- Sternberg, R.J. and T.I. Lubart. 1993. "Investing in Creativity." *Psychological Inquiry* 4 (1), 229–232.
- Straub, D., M. Kalika, and C. Elie-dit-cosaque. 2007. "Information Quantity and IS Success." in: *Proceedings of International Conference on Information Systems*.
- Swain, M.R. and S.F. Haka. 2000. "Effects of Information Load on Capital Budgeting Decisions." *Behavioral Research in Accounting* 12 (1), 171–198.
- Sweller, J., P. Ayres, and S. Kalyuga. 2011. *Cognitive Load Theory*. Springer: New York.
- Teger, A.I. 1980. *Too Much Invested to Quit*. New York: Pergamon.
- Turner, K.L. and M.V. Makhija. "The role of individuals in the information processing perspective." *Strategic Management Journal* 33 (6), 661–680.
- Tuttle, B. and F.G. Burton. 1999. "The Effects of a Modest Incentive on Information Overload in an Investment Analysis Task." *Accounting, Organizations and Society* 24 (8), 673–687.
- Winslow, E.K. and G. T. Solomon. 1993. "Entrepreneurs: Architects of innovation, paradigm pioneers and change." *Journal of Creative Behavior* 27 (1), 75–88.
- Whyte, G. 1991. "Diffusion of Responsibility: Effects on the Escalation Tendency." *Journal of Applied Psychology* 76 (3), 408–415.