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# Escalating IT-projects: A text-analysis of risk-framing effects of managers

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# Escalating IT-projects:
## *A text-analysis of risk-framing effects of managers*

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**Abstract**
*Despite significant research in the area, many IT projects fail to realize their targets with regards to time, budget or functionality. Resources continue to be committed to projects even though information is available which indicates that they are no longer viable. Prospect theory explains that these decisions can result from the risk preferences of individuals. A framing effect occurs when specific words are used, or attributes are emphasized, which influence these risk preferences. This research uses text analysis to determine which types of framing are applied by project managers when discussing a project. This information is used to gain insight into their so-called 'project frame' which helps to predict their decision making behavior. The findings demonstrate that the three main types of framing are indeed applied during conversations and that these can be linked to either a positive or a negative project frame.*

**Keywords:** Project escalation, Framing, Prospect Theory, IT projects

# 1 Introduction

Several studies indicate that up to fifty percent of IT projects fail to realize their targets with regards to time, budget or functionality (Du et al., 2007; Jani, 2008; Ernst&Young, 2009). Resources continue to be committed to projects despite information which indicates that they are no longer viable. This phenomenon is known as project escalation

(Korzaan and Morris, 2009; Sabherwal et al., 2003). IT projects in particular are susceptible to escalation due to their complex task nature and intangibility (Mähring and Keil, 2008; Zhang et al., 2003). Prospect theory explains that this continued commitment of resources can be caused by the risk preferences of the decision makers (Kahneman and Tversky, 1979). Framing is a part of prospect theory and it describes that specific words or phrases can be used to influence these risk preferences (Tversky and Kahneman, 1981).

This research aims to contribute to the existing literature by performing text analysis based on in-depth interviews with experienced project managers. This was done in order to gain insight into which types of framing decision makers apply when discussing a project. This information is useful in predicting either risk seeking or risk averse decision making and can also serve as an early warning for project escalation.

# 2 Theoretical Background

Prospect Theory explains that the risk preferences of individuals are dependent on whether they perceive their options as either gains or losses with regards to their current situation (Kahneman and Tversky, 1979). If a situation is perceived from the domain of gains, individuals are more risk averse in their decisions. When a situation is perceived from the domain of loss, individuals make more risk seeking decisions. Presenting people with the choice between a 25% chance of winning a $4.000 prize or a 100% chance of winning $1000, for example, will typically result in them choosing the risk free option. However, if the same alternatives were related to fines instead of cash prizes, this would lead the individuals to perceive the choice from the domain of losses instead of gains. In this situation, most would prefer the risky option (Kahneman and Tversky, 1979; Tversky and Kahneman, 1981).

Framing describes that whether a situation is perceived from the domain of gains or the domain of losses can be influenced by using specific words or by emphasizing certain aspects (Sabherwel et al., 2003; Kuhberger, 1998; Tversky and Kahneman, 1981). For example, emphasizing the amount of lives that could be saved when selecting a disease treatment option causes individuals to evaluate the options from the domain of gains. This is described as positive framing. When the emphasis for the same options was on the amount of lives that could be lost, the situation was interpreted from the domain of losses. This is described as negative framing (Tversky and Kahneman, 1981).

Framing is relevant to the field of project escalation since it influences the risk attitude of decision makers with regards to a project. Negative framing could lead to stronger risk seeking behavior which can affect the decision to continue or abandon a project (Karevold and Teigen, 2010; Sabherwal et al., 2003). One example of this is that placing emphasis on the amount of resources already invested in a project can increase the commitment to the project and the determination to keep investing in its completion. This is known as the ‘sunk cost’ effect (Arkes and Blumer, 1985). The article describes that “*The basic sunk cost finding that people will throw good money after bad appears to be well described by prospect theory*”.

After the original framing experiment (Tversky and Kahneman, 1981) there have been many experiments involving framing. One set of studies (Levin et al., 1998; Levin et al., 2002) provides an overview of the various types of framing and their workings. This has led to three main framing categories:

1. *Risky Choice framing*: where emphasis is put on either the gains/benefits or on the losses/disadvantages of the alternatives.
2. *Attribute framing*: where the focus is either on attributes which are typically considered to be desirable or those that are undesirable.
3. *Goal framing*: where attention is placed on either the advantages of choosing a specific alternative or the disadvantages of failing to do so.

The article by Levin et al. (1998) lists the key characteristics of each framing category, which have been copied in table 1 below. Due to the distinct nature and workings of each category, it is important to differentiate between the three when performing an experiment. Few studies and experiments however have taken into consideration all three types of framing (Levin et al., 1998; Levin et al., 2002).

| Frame type | What is framed | What is affected | How effect is measured |
|---|---|---|---|
| Risky choice | Set of options with different risk levels | Risk preference | Comparison of choices for risky options |
| Attribute | Object/event attributes or characteristics | Item evaluation | Comparison of attractiveness ratings for the single item |
| Goal | Consequence or implied goal of a behavior | Impact of persuasion | Comparison of rate of adoption of the behavior |

**Table 1**: Characteristics of the framing categories as described by Levin et al. (1998)

# 3 Research Objective

Most prior framing research involved '*valence framing effects'* (Levin et al., 1998) where individuals are presented with information which is either framed positively or negatively. In our research the focus is placed on the framing that is used by decision makers when discussing a project. Previous research in this area (Buiten and Keren, 2009) demonstrates that people use framing to bring across their opinion or goals. There is, however, little prior research performed in this area and none in a project setting. This is where this research aims to contribute.

The term "Project frame" is used in this research to describe the perceptions, goals or attitude that an individual has in relation to a project. This project frame can be positive or negative in nature. Gaining insight into a decision maker's project frame is useful since it can be indicative of his or her risk preferences. Several articles describe that the course of action which is perceived to be the most favorable is dependent on their personal goals or perspective (Forlani, 2002; Kuhberger, 1998). Another article mentions that the view or frame that individuals have with regards to a project can be an antecedent condition for project escalation (Mähring and Keil, 2008).

There are four main goals, which this research aims to accomplish:

1. To provide insight into the categories of framing that decision makers apply when discussing a project. Additionally, to provide insight into which exact words or attributes are mentioned in an IT project setting.
2. To analyze and describe the link between each category of framing and either a positive or a negative project frame.
3. To describe how text analysis can be used to identify, categorize and connect words and attributes associated with framing.

4. To determine whether or not individuals also have a frame in relation to IT projects as a whole and on which factors this frame is based.

# 4 Methodology

It was important to select a suitable research methodology to support the descriptive nature of this research. A grounded theory methodology is useful for research settings, such as this one, where there is limited information available and where the goal is to gain more insight into a subject (Strauss and Corbin, 1998). Additionally, it supports and recommends the practices of performing interviews and performing text analysis on the transcripts. Grounded theory provided the research with a structured framework to analyze the relationship between the three framing types and the project frame of individuals. There are two types of grounded theory. This research follows the Strauss & Corbin approach because it recommends establishing a basic goal or hypothesis in preparation of the research and interviews (Strauss and Corbin, 1998). The Glaser methodology on the other hand purposely avoids having pre-conceived goals or performing a preliminary literature review (Glaser, 1992).

The Strauss & Corbin methodology includes four distinct phases, namely theoretical sampling, open coding, axial coding and finally selective coding (Strauss and Corbin, 1998). In the theoretical sampling phase research subjects are contacted and the data is collected. This meant contacting project managers with knowledge in the field of IT and IT projects. In-depth interviews were performed with three project managers, each with over 20 years of experience with business implementations of IS projects. During the interviews they were each asked to discuss a project of which they had a positive view and a project of which they had a negative view. They were also asked to describe which factors contributed to them having this specific view. This was done in order to identify which types of framing and which words and attributes were mentioned in relation to each of the projects. The managers were also asked about which project factors they take into consideration themselves when forming an opinion on a project or when asked to give advice.

The questions used in the interviews were broad and open to allow them to discuss the subjects or factors which they believed to be the most influential or important, as grounded theory prescribes (Strauss and Corbin, 1998). Prior to the interviews the project managers were ensured that they would remain anonymous and that confidential information would not be mentioned in this research. The goal was to reduce the risk of interviewees giving socially acceptable answers instead of stating their honest opinions. The interviews lasted about 60 minutes on average and were recorded on tape in their entirety, as is recommended by grounded theory (Strauss and Corbin, 1998).

The open coding phase involves a line-by-line analysis of the text. Specific words or segments, which are deemed of interest for the research are marked and assigned with a descriptive ‘code’. The text analysis software ATLAS.ti was used in order to facilitate the coding process in a structured manner. The interview recordings were transcribed and points of interest were assigned with codes such as ‘positive framing’, ‘negative framing’ or ‘attribute framing’, which allowed for easy identification later on.

It was then time to move on to the axial coding phase. Here, codes with similar meaning were collected and categorized. For example, various statements regarding a project attribute, such as failing to meet time deadlines, were grouped together. These were

categorized as attribute framing and a potential causal condition for a negative project frame. Up next was the process of analyzing and describing the relationships between the various codes and code categories. In the selective coding stage the findings were analyzed and used as a basis to generate new information on the subject in question. Figure 1 provides an overview of the coding network, which resulted from the text analysis process. The data in parentheses represents the groundedness for that specific code. These findings will be discussed in greater detail in the next section.

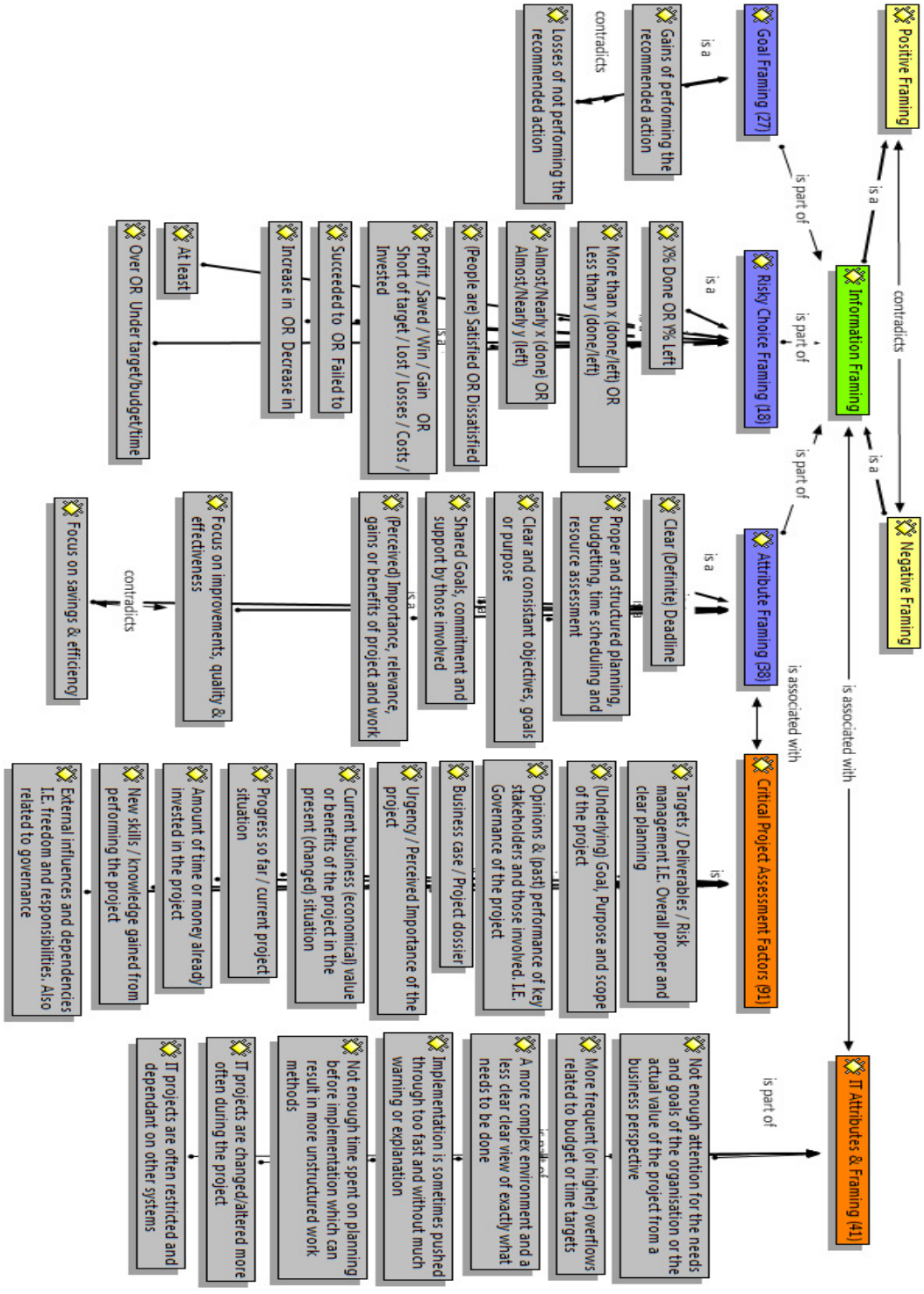


**Figure 1**: The code network generated from the interviews

# 5 Results

## 5.1 Risky choice framing

The transcripts of the interviews were scanned for words, which have been identified in literature to be associated with either positive or negative risky choice framing. These are summarized in table 2. Each of the elements in the table was applied at least once by the project managers during the interviews. The most important outcome for risky choice framing is that in all cases positive framing was related to a positive project frame. The same match was there with regards to negative framing. No instance was found where the nature of the framing and the nature of the project frame did not match. This is an interesting finding since it suggests a potential role for applied risky choice framing as an indicator of either a positive or a negative project frame. It could also have a valuable function as an early warning for project escalation as was mentioned earlier in this paper.

| Positive frame related | Negative frame related | Source(s) |
|---|---|---|
| X% done | Y% left | (Karevold and Teigen, 2010) |
| More than X% done<br>Less than Y% left | More than Y% left<br>Less than X% done | (Karevold and Teigen, 2010) |
| Almost X% done<br>Nearly X% done | Almost Y% left<br>Nearly Y% left | (Karevold and Teigen, 2010) |
| X% people satisfied | Y% people dissatisfied | (Sabherwal et al., 2003) |
| Amount of profit<br>Amount of money saved<br>Win / Gain | Amount short of target<br>Amount of losses<br>Loss / Lose | (Buiten and Keren, 2009)<br>(Kuhberger, 1998) |
| Has succeeded to place X% | Has failed to place Y% | (Davis and Bobko, 1986) |
| Increase in positively perceived factor A<br>Decrease in negatively perceived factor B | Decrease in positively regarded factor A<br>Increase in negatively regarded factor B | (Davis and Bobko, 1986) |

**Table 2**: Words used in risky choice information framing experiments

Additionally, two other phrases were used by the project managers which are not mentioned in table 2. The first of these is involves the words ‘at least’. It was used in a context such as ‘Project X has resulted in at least Y gains’ or ‘Project A has already cost at least B dollars’. The term ‘at least’ seems to be similar in nature to the ‘more than’ constructed from the table. The second term is specifically project related and involves statements regarding projects going over or under budget and meeting or failing to meet targets. These were more closely related to ‘the amount or percentage done/left’ factor from table 2. For a more detailed description of the exact workings and effects of these constructs we refer you to the research by Karevold and Teigen (2010).

## 5.2 Attribute Framing

Attribute framing does not have a specific list of positive or negative words like risky choice framing does. The reason for this is that which attributes are perceived as desirable or undesirable is based on the subject to which they refer. For that reason it is interesting to identify attributes which are of influence in a project setting specifically.

Several of these types of factors were found during the text analysis process and they are listed in table 3.

| Attributes | Positive or negative in nature |
|---|---|
| Clear and consistent objectives, goals or purpose | Positive |
| Clear and definite project deadline | Positive |
| Proper and structured planning, budgeting, scheduling and resource assessment | Positive |
| Shared goals, commitment and support for the project by those involved | Positive |
| High (perceived) importance, relevance or benefits of the work being done or the project as a whole | Positive |
| Focus on improvement, quality and/or attainable benefits | Positive |
| Focus on cost savings and/or efficiency | Negative |

**Table 3**: Attributes used for attribute framing during the interviews

The most important finding with regard to attribute framing is that positive framing was not exclusively applied in relation to a positive project frame. Nor did negative attribute framing always relate to projects of which the interviewees had a negative view. This is relevant since it indicates that the link between the nature of the attribute framing used and the nature of the project frame is not as direct as with risky choice framing. A single instance of attribute framing by itself would not be a reliable indicator of either a positive or a negative project frame. However, the overall amount of occurrences where the nature of the framing matched the nature of the project frame was several times greater than situations where the both conflicted. Thus, performing text analysis on attribute framing usage as a whole can still be a suitable indicator of predicting someone's project frame.

It is also interesting to mention that some of the attributes mentioned in table 3 seemed to have a more prominent impact on the decision makers' project frames. Having 'shared, goals commitment and support for the project by those involved', for example, was mentioned over twice as many times during the interviews as any other attribute. This indicates that it is either perceived to be one of the more relevant aspects of a project or that it has a strong impact on the project frame that individuals develop. Also, having a 'clear and definite deadline' was only mentioned for projects in which this was not the case. This could indicate that not having a clear or definite deadline can lead to a (more) negative project frame but that having such a deadline doesn't necessarily lead to a more positive project frame.

## 5.3 Critical Project Factors

As was stated in the methodology section, the project managers were also asked about which project factors they take into consideration themselves when forming an opinion on a project or when asked to give advice. Many of these 'critical project factors' mentioned by the interviewees share similarities with the project attributes used for positive or negative attribute framing. Interestingly enough, there were however also some differences between the subjects mentioned for both categories which are listed in table 4. These differences indicate that some factors can be important for forming a project frame but not so much when giving advice or making the decision to continue or abandon the project, and vice versa. Overall though, these results indicate that the

differences between the factors mentioned for both categories is relatively low. This is a logical result considering that if someone thinks it is best to discontinue a project he or she will likely also have a negative project frame and vice versa.

| Factors used in attribute framing but not mentioned as a critical project factor | Factors mentioned as a critical project factor but not used in attribute framing |
|---|---|
| Focus on improvement, quality and/or attainable benefits | Progress so far and/or the current project situation |
| Focus on cost savings and/or efficiency | Amount of time or money already invested in the project |
| | New skills or knowledge that can be gained from performing the project |
| | External influences and dependencies I.E. freedom and responsibilities |

**Table 4**: Differences in factors mentioned for attribute framing and critical project factors

## 5.4 Goal Framing

When goal framing was used by the interviewees, it was mostly in relation to specific project attributes and in explaining the benefits of having these factors or the problems when these are not present within the project. Goal framing is different from the other two types of framing in that it involves making a certain action, alternative or project more desirable, both in the positively and negatively framed forms, by either emphasizing its advantages or the disadvantages of passing it up. Since both frames involve promotion of a certain subject it is not suited for linking positive goal framing instances to either a positive or a negative project frame, or vice versa. However, since goal framing was used in relation to specific desirable features or attributes, it can still play a role in identifying project attributes which are considered to be important by the decision makers. These attributes themselves could also influence the project frame in a positive or negative manner and therefore goal framing still has its uses for linking statements made by decision makers to their project frame in an (IT) project setting.

## 5.5 Decision frame with regards to IT projects in general

As was described earlier in this research, individuals might also have specific categorical frames with regards to IT projects in general. This is related to Norm Theory and category norms in particular. This theory is based on the idea that "*events in the stream of experience are interpreted and evaluated by consulting precomputed schemas and frames of reference"* (Kahneman and Miller, 1986). In a project-related setting this means that individuals could develop prior views or frames of reference regarding specific types of projects, such as ones revolving around or containing a significant IT component. These specific associations can become strong anchors which could potentially influence the decision frame that an individual has, be it positive or negative, prior to even beginning to work on the project (Kahneman and Miller, 1986; Kahneman, 2003).

The interviews with the decision makers in this research were used as an opportunity to investigate whether or not project managers could have a specific positive or negative frame with regards to IT projects in general. And if so, on associations or expectations these views are based. Several such factors were mentioned during the interviews and are listed in table 5. As the table demonstrates, the overall associations of the project

managers with IT projects are not very positive. Some of these factors, such as the ones in the middle three rows of the table are related. This could be because of shared underlying principles, which influence how IT projects are perceived. This supports the notion that the frame of reference with regards to the project category is also of importance when attempting to elicit the project frame of decision makers.

| Factors associated with typical IT projects | Positive or negative in nature |
|---|---|
| Not enough attention for the needs and goals of the organization or the actual value of the project from a business perspective | Negative |
| More frequent, or higher, overflows in time and budget than other projects | Negative |
| A more complex environment and, as a result, typically a less clear view of what needs to be done | Negative |
| Implementation is sometimes pushed through too fast and without much warning or explanation | Negative |
| Not enough time spent on planning before implementation which can result in less structured work methods | Negative |
| IT projects are changed or altered more often | Negative |
| IT projects are often restricted and dependant on other systems | Negative |

**Table 5**: Factors that were associated with IT projects by interviewees

## 5.6 Overview

Table 6 provides an overview of how often each of the types of framing were applied by the project managers. The same information is also provided for the critical project and the factors mentioned in relation to IT projects in general. Critical project factors were mentioned noticeably more often than the other subjects during the interviews. One explanation for this is that answers to prior questions involved attribute framing. The factors mentioned during this stage of the interview were often mentioned again when discussing the critical project factors and were typically even elaborated on. In addition the amount of factors associated with critical project factors are simply greater in number than those associated with attribute framing.

| Subject | Occurrences |
|---|---|
| Goal Framing | 27 |
| Risky Choice Framing | 18 |
| Attribute Framing | 38 |
| Critical Project Factors | 91 |
| Factors related to IT projects in general | 41 |

**Table 6**: Summary of occurrences of framing categories, critical project factors and IT project factors

# 6 Conclusions

With regards to the risky choice category of framing the link between the framing applied and the corresponding project frame was very strong. Positive framing was applied exclusively in relation to a project of which the individual held a positive project frame and vice versa. Each of the words associated with this category of framing, as described in table 2, was applied by the interviewees at some point or

another. This shows potential for performing text analysis aimed at these specific words as a reliable indicator for identifying either a positive or negative project frame.

Attribute framing does not have a specific list of positive or negative words like risky choice framing does. For that reason it is interesting to identify attributes which are of influence in a project setting specifically. Multiple such factors were found during the text analysis process and they are listed in table 3. The most important finding with regards to attribute framing is that positive framing was not exclusively applied in relation to a positive project frame. Nor did negative attribute framing always relate to projects of which the interviewees had a negative view. This means that a single instance of attribute framing by itself would not be a reliable indicator of either a positive or a negative project frame. However, the overall amount of occurrences where the nature of the framing matched the nature of the project frame was several times greater than situations where the both conflicted. Thus, performing text analysis on attribute framing usage as a whole can still be a suitable indicator of predicting someone's project frame.

Since goal framing involves the promotion of a certain course of action in both the negative and the positive form, it is less suited as a means for identifying and distinguishing between a positive or negative project frame. It does however aid in the process of identifying project attributes, which influence the project frame and in better understanding why they do so. The interviews also indicated that, in addition to a project frame, the managers also had a specific view and expectations with regards to IT projects as a whole. This too is relevant to take into consideration when analyzing the project frame of individuals.

Most prior framing research involved '*valence framing effects'* (Levin et al., 1998) where individuals are presented with framed information. Our findings demonstrate that the three main types of framing are also applied by the decision makers themselves when they are discussing a project. It is shown that text analysis works as a method for identifying framing used by individuals in a project setting. In addition, text analysis supports and facilitates the process of linking framing usage to either a positive or a negative project frame. This is relevant to the field of project escalation since the project frame influences the risk attitude of decision makers with regards to a project. For example, negative information framing could lead to stronger risk seeking behavior, which affects the decision to continue or abandon a project. The additional insight provided into the workings of each category of framing helps to better understand the outcomes of prior framing experiments. In addition, it can function as a basis for further research on the subject of framing in a project setting.

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