Master's thesis Organization Studies

Do team relationships matter? A research on team risk-taking

The mediating effect of team discussion quantity in the relationship between TMX and team risk-taking, and the influence of precision of information on team risk-taking

V. Witkam
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Name: Vincent Witkam

ANR: 353217

Thesis circle: Risk-taking behavior of small groups

First supervisor: R. Leenders

Second reader: H. van Dijk

MTO reader: J. Mulder

Abstract

This research studies risk-taking behavior of organizational teams. An experiment is conducted in 51 organizational teams operating in various Dutch industries. An experimental design is used to test the relationship between team-member exchange quality and team risk-taking, and the relationship between precision of information and team-risk taking. The experiment focuses on organizational decision-making involving risk under conditions of subsequently imprecise and precise information. It is hypothesized that team discussion quantity will partially mediate the positive relationship between team-member exchange quality and team risk-taking. Furthermore it is expected that precision of information will be positively related to team risk-taking. None of the hypotheses where confirmed with the data collected in this research. This would imply that team-member exchange quality and precision of information do not have an effect on the risk taking behavior of organizational teams, furthermore the role of team discussion quantity is not confirmed. The control variable team size was found to have an effect on the team participation and team active participation.

Preface

I don't remember much from the introduction of the circles somewhere around October last year. However, what I was sure of was that this circle 'risk taking behavior of small teams' was my first choice right from the beginning. I don't know what triggered me to join this circle, but I think it was the teamwork or the experimental design that drew me towards this decision. This was probably already the first risk I took during the process of writing my Master's thesis because teamwork can be very hard when you do not have the right team members, and furthermore an experimental design was something completely new to me. Luckily our circle group were all motivated and smart individuals eager to work together on an exciting experiment. At first I thought designing an experiment would be quite easy, however months of work was invested into this. The results was a completely new experiment designed to research the risk taking behavior of teams in real-life organizational settings. Although not completely perfect yet, it gives satisfaction to know that you built this new experiment. Apart from the designing of the experiment there were only two things I enjoyed equally during this Master's thesis. First the conduction of the experiment in all different organizations, and second the intensive teamwork during the Master's thesis.

I would like to thank a number of people for their help and support during the past year. First of all, I would like to thank my supervisors Roger Leenders and Hans van Dijk for their feedback and input. I have noticed that Roger is someone who only provides help when he knows we did our best to search for solutions ourselves. He is not the kind of guy to just give away the answers, but he is more the guy who helps you search for the right answers yourself. I think this helped me and my fellow students to learn more during the process of our Master's thesis. For that I sincerely want to thank him. Furthermore I want to thank my fellow students Nicolai, Melvin, Max, Twan, Mirelle, and Yvonne. I think we formed a superb team, with the necessary critical views for constructive discussion. Therefore I would like to end this preface just as I will end my Master's thesis with a special thanks to my fellow student/research companions.

- A special thanks towards my fellow student/research companions, I couldn't have done it without you guys! -

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Definitions

Risk

The extent to which there is uncertainty about whether potentially significant and/or disappointing outcomes of decisions will be realized.

Team

A team is a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems (for example, business unit or the corporation), and who manage their relationships across organizational boundaries.

Team risk-taking

A team's deliberate decision of which the expected outcomes are uncertain and the goals difficult to achieve.

Team-member exchange quality

Team-member exchange quality focuses on the perceptions of exchange relationships between members and the team as a whole.

Work unit team-member exchange quality

Work unit TMX refers to the overall pattern of team-member exchange relationships displayed to the entire work unit

Team discussion quantity

Team discussion quantity in this research is defined as the extent or quantity to which the members of an organizational team discuss and participate during decision-making processes.

Precision of information

Precision of information in this research represents the specificity of information about the probability of success/failure of the different choice alternatives.

1. Introduction

1.1 Research problem

In nowadays society we see an increasing utilization of group-based work for accomplishing organizational objectives, along with a trend towards flatter organizational structures (Harrison, Johns, and Martocchio, 2000). Through this trend lateral interactions among employees and their peers have become more frequent and thus play a more central role for employee and organizational effectiveness (Liao, Yang, Wang, Drown, and Shi, 2013). This assumes that better organizational performance is achieved by empowered individuals working together and contributing their knowledge, skills, and capabilities to the full (Martínez-Miranda & Pavón, 2012). Numerous outcomes of group interactions have been researched over the years, among which commitment (Liu, Keller, & Shih, 2011; Liao et al., 2013), satisfaction (Seers, 1989), performance (Jordan, Feild, & Armenakis, 2002; Haynie, 2011), decision-making effectiveness (Alge, Wiethoff, & Klein, 2003) etc. Many organizational decisions are made by groups rather than individuals, and it is also acknowledged that virtually every organizational group makes decisions involving risk (Valacich, Sarker, Pratt, & Groomer, 2009)

Several researchers have observed that teams tend to take riskier decisions than individuals do. This phenomenon was called ‘the risky shift’. Stoner (1961) was the first to observe this phenomenon in groups consisting of male graduate students of Industrial Management. Wallach and colleagues confirmed this risky shift in their follow-up studies. There are also some studies that refute the risky shift, and propose a cautious shift (Hong, 1978). What seems to lie central in these shifts is the concept of team discussion (Stoner, 1961; Wallach, Kogan, and Bem, 1962; Wallach & Kogan, 1965).

Team discussion implies some degree of group interaction, and intra-group relationships are thus very important for team discussion. A concept that describes relationships among team members that is very much debated and researched in the literature is team-member exchange quality (TMX). Team-member exchange quality measures a member’s perception of his/her willingness to assist other members, to share ideas and feedback, and in turn, how readily information, help, and recognition are received from other members (Seers, 1989). The concept of team-member exchange thus seems to be very important for team discussion per se, but also for the quantity of team discussion.

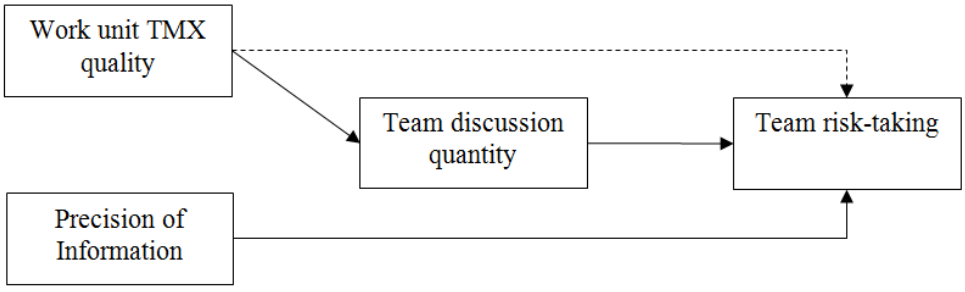
It is surprising however that TMX has neither been explicitly linked to team discussion quantity nor to risk-taking behavior of teams. Furthermore, prior research has examined group risk-taking behaviors focusing primarily on the differences between individual members and groups (the risky shift) however differences in risk-taking between groups have only rarely been studied. It is therefore that in this research I propose that team-member exchange relationships will influence team discussion quantity, and subsequently influence the risk-taking of the group.

Furthermore the role of precision of information is explored in this research. As Han and Ahn (2005) mention in their paper, there are many researches on decision making however few of these are geared to consider incomplete information in group decision making processes. Incorporating precision of information is important in research on decision making because (1) decisions are often made when there is a lack of knowledge or data, (2) many attributes are intangible, and (3) decision makers have limited attention and information processing capabilities (Kahneman, Slovic, & Tversky, 1982; Han & Ahn, 2005).

1.2 Research question

To explore the mediating effect of team discussion quantity on the relationship between team-member exchange quality and team risk-taking and the direct effect of precision of information on team risk-taking the following research question is formulated:

> *To what extent does team discussion quantity mediate the relationship between work unit team-member exchange quality and team risk-taking, and to what extent is there a direct relationship between precision of information and team risk-taking?*



1.3 Relevance

The scientific relevance of this research lies in the fact that research on team risk taking behavior is very scarce up until now. Only a few studies, such as Valacich et al. (2009), have been designed to study the risk taking behavior of teams. Prior research has examined group risk-taking behaviors focusing primarily on the differences between individual members and groups (the risky shift) however differences in risk-taking between groups have only rarely been studied. This study aims to contribute to this relatively unexplored field of research. Not only is team risk taking behavior research scarce, also the determinants of risk taking on team-level are relatively unexplored. This implies that team relationship concepts have not been linked to team risk taking before. This research can be the scientific start of research on team relationships and team outcomes such as risk. Furthermore, the process is often ignored in scientific research. This research aims to incorporate the process of team decision-making, and further our understanding of the impact the process of decision-making can have on a team's outcomes.

The practical relevance of this research is focused on the designing and managing of teams. Practitioners reading this paper could conclude that they should invest in team relationships within their team, because these could be determinants of innovativeness or other team outcomes. This paper could conclude that the team discussion quantity matters in a team's decision-making process. Furthermore the results of this paper could indicate that precise information has a major impact on a team's decisions. A result of the above could be that teams are designed to have good team-member exchange relationships. Furthermore, when an important team decision has to be made, managers will make sure that the process of decision making is not rushed, and that the information provided is as precise as possible.

2. Theoretical background

This chapter gives a theoretical review of the relevant concepts in this research. In this chapter several hypotheses will be formulated in accordance with the discussed theory. The chapter will close with a conceptual model summarizing the research objectives of this research.

2.1 Risk-taking behavior

Two of the key authors in the field of risk-taking behavior are Sim B. Sitkin and Amy L. Pablo. In 1992 they wrote an article on the reconceptualization of the determinants of risk behavior. In their thesis they proposed a conceptualization of risk and risk behavior which is frequently cited up to the present day. Sitkin & Pablo define risk as "the extent to which there is uncertainty about whether potentially significant and/or disappointing outcomes of decisions will be realized" (Sitkin & Pablo, 1992, p. 10). In their thesis they argue that this definition consists of three key dimensions: outcome uncertainty, outcome expectations, and outcome potential. Outcome uncertainty is mostly defined in terms of variability of outcomes, lack of knowledge of the distribution of potential outcomes, and the uncontrollability of outcome attainment (Sitkin & Pablo, 1992). The second dimension that Sitkin and Pablo include in their definition is outcome expectations. This implies that their definition of risk includes a full range of outcomes, both positive and negative. The third and last dimension that Sitkin and Pablo discuss is outcome potential. Outcome potential is twofold and states that the potential consequences of choice must be perceived to be of sufficient magnitude, and the range of outcomes should be conceptualized as a categorical rather than continuous variable.

Risk behavior can be characterized by the degree of risk associated with the decisions made (Sitkin & Pablo, 1992). According to Furby and Beyth-Marom (1992) engaging in risk behavior is defined as risk taking. In line with the dimensions described above, Sitkin and Pablo (1992) define decisions as riskier to the extent that (a) their expected outcomes are more uncertain, (b) decision goals are more difficult to achieve, or (c) the potential outcome set includes some extreme consequences. This conception of risk is chosen in this paper because of its versatility. The three dimensions described above represent several distinct conceptions of risk. Nickerson and Feehrer (1975) for instance conceived of risk as expected value, encompassing both the outcomes of a decision and some representation of the probability of the outcomes. Libby and Fishburn (1977) described variance or dispersion of outcomes as a surrogate for risk, which has some overlap with the first dimension of Sitkin and Pablo (1992). Risky situations involve two

or more alternatives, each of which differs in its riskiness and a least one alternative exposes the decision maker to a chance of loss (McCrimmon & Wehrung, 1986). In a paper by Watson and Kumar (1992) it is stated that risk problems can be viewed as decision problems that require a choice among alternative courses of action (Fischoff, Lichtenstein, Slavic, & Derby, 1981; Fischoff, Slavic, Lichtenstein, Reed, & Combs, 1978).

2.2 Choice shifts

The previous section discussed risk taking behavior of individuals. It would be premature to assume that risk taking behavior in groups and teams will be similar to risk taking behavior on the individual level. Team risk taking behavior can be derived from the conceptualizations of Sitkin and Pablo (1992). Team risk-taking can then be defined as a team's deliberate decision of which the expected outcomes are uncertain and the goals difficult to achieve (Sitkin & Pablo, 1992; Tjosvold & Yu, 2007; Valacich et al., 2009). A team then is defined by Cohen and Bailey as "a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems (for example, business unit or the corporation), and who manage their relationships across organizational boundaries" (Cohen & Bailey, 1997, p. 241).

Stoner was the first researcher to find that group decisions were not comparable to the average of the members' individual decisions. For his Master Thesis in 1961 Stoner did an experiment with 101 male graduate students at the School of Industrial Management of the Massachusetss Institute of Technology. The experiment was designed to compare the riskiness of decisions made by groups with decisions made by individuals (Stoner, 1961). Stoner (1961) observed a phenomenon now called the risky shift, which implies that individuals increase the riskiness of their decisions after participating in a group discussion. The initial report of a choice shift towards risk was thus found by Stoner in 1961 (Sanders & Baron, 1977). According to Sanders and Baron (1977) this was a provocative finding because previous research on conformity, by for instance Asch (1956) and Sheriff (1935), stated that individuals would conform to the central tendency in the group. Whyte (1956) even found significant results indicating a shift towards conservatism through group discussion. Whyte's (1956) argument here was that group decision-making leads to a fear of appearing irresponsible through making extreme recommendations. In contrast, the risky shift phenomenon observed by Stoner resulted in positions more extreme than the mean of the individual preferences (Sanders & Baron, 1977).

Following the somewhat limited study of Stoner in 1961, several researchers have attempted to confirm these findings in other settings than merely male graduate students of Industrial Management. Wallach, Kogan, and Bem (1962) were among the first to confirm the findings of Stoner (1961) in other settings. Explaining the results of Stoner in terms of males' perceiving their appropriate role as one of willingness to be bold and daring, and being reinforced in this view by interaction with other likeminded males, is ruled out by the study of Wallach et al. (1962). Furthermore, explaining the results of Stoner in terms of professional role that graduate students assign to themselves is also ruled out in the study of Wallach et al. (1962). Bateson (1966) began to suspect that the results of Stoner (1961) could be explained by the fact that group discussion might result in familiarization with the particular task, and that familiarization in turn would result in the risky shift. However, Bateson (1966) found that next to familiarization also group processes, such as group discussion, had a significant contribution to the risky shift. In contrast to confirmation of Stoner's findings, there are also some researchers that find contradicting results. Nordhoy (1962) was the first to find that group discussion might also lead to more cautious decisions. Nordhoy (1962) found that the effects of group discussion were not consistent for all of the 12 life-situation items used by Stoner (1961) and by Wallach et al. (1962). It is not these cautious-shifting problems alone that pose a serious problem for the risky shift hypothesis. In fact, any life situation problem that consistently fails to demonstrate a significant risky shift is a serious challenge to the risky shift hypothesis (Stoner, 1968). This is why Stoner writes a new article in 1968 arguing for a value hypothesis. This value hypothesis can deal with items that consistently shift in either direction, both cautious and risky (Stoner, 1968). Risky shifts arise because of the dominance of values favoring the risky alternative; cautious shifts come from the dominance of values favoring the cautious alternative; and the absence of a systematic shift would be explained by the failure of the problem to engage, in a consistent manner, values favoring one alternative over the other (Stoner, 1968). Marquis and Reitz (1968) confirmed this hypothesis proposed by Stoner (1968) and found that group discussion enhances prior expected value.

Several arguments have been proposed since 1961 to explain the choice shifts that have been observed by Stoner, Nordhoy and other researchers. The possible explanation Stoner (1961) proposed is the suggestion that the presence of other individuals allowed the subjects to feel less responsible for an unsuccessful outcome and that this change made it easier for them to choose a more risky course of action. This diffusion or spreading of responsibility would be a result of knowing that one's decisions are being made jointly with others rather than alone

(Wallach et al., 1962). According to Stoner (1961) and Wallach et al. (1962) this increased willingness to take risk would be caused by a decreased feeling of responsibility. Wallach et al. (1962) add another argument for the risky shift, they propose that high risk takers exert more influence and may be a cause of the group's movement toward greater risk taking. The diffusion of responsibility and high influence of risk prone people arguments are not believed to be mutually exclusive, and can both contribute to the risky shift. Sanders and Baron (1977) propose two similar hypothetical explanations for the choice shifts. The first hypothetical explanation is one derived from Festinger's (1954) social comparison theory. According to this social comparison hypothesis, people often value opinions that are more extreme than those they personally espouse (Sanders & Baron, 1977). People fail to adopt these ideal (extreme) positions as their own due to fear of being labeled an extremist or deviate (Sanders & Baron, 1977). However, during a group discussion, members get exposed to the opinions of others, which often reveal that others are not as risk averse as they thought. Through this social comparison, moderate members may then move towards more extreme (or risky) positions (Sanders & Baron, 1977; Sia, Tan, & Wei, 2002; Valacich et al., 2009). Likewise, members initially holding extreme positions may not feel significant pressure to "moderate" their opinions (Dion, Baron, & Miller, 1970). As such, interaction can lead groups toward a more extreme (or risky) position (Sanders & Baron, 1977). The net result is an overall polarization of opinions, that is, a choice shift (Sanders & Baron, 1977). The second hypothetical explanation Sanders and Baron (1977) proposes is one called the persuasive argumentation hypothesis. This persuasive argumentation hypothesis argues that compelling arguments during a discussion result in the decision being more extreme than that of the average group member. Discussion serves to make these compelling arguments available to members who had initially chosen relatively moderate positions (Sanders & Baron, 1977). According to Sanders and Baron (1977) this is of course an incomplete argument since it does not account for why the most compelling arguments favor a particular and relatively extreme position. The social comparison explanation would suggest that it is the presence of a social value for a given position that lends cogency to arguments favoring that position (Sanders & Baron, 1977). Therefore, the social comparison and persuasive arguments explanations are not mutually exclusive. Both processes are operating in a complementary manner, whereby the social comparison tendency to shift toward extreme positions is facilitated by the generation of persuasive arguments favoring those extreme positions (Sanders & Baron, 1977).

2.3 Team risk-taking

As seen in the previous section, a large number of prior studies have examined group risk-taking behaviors. This work however has primarily focused on comparing pre-discussion positions of individual group members to their post discussion group decision. In the previous section this was termed the choice shift of groups. According to Valacich et al. (2009) the arguments provided in the previous section which attempt to explain the choice shift can also be drawn upon to explain and understand the overall risk-taking behavior of groups or teams, and the differences between groups or teams. Research in risk-taking of teams is very scarce up until today. Valacich et al. (2009) did some research on the differences between face-to-face teams and computer-mediated teams in their risk-taking behavior, however no significant result was found on this account. The argument here was that only anonymity could cause a difference between face-to-face teams and computer-mediated teams. They did find a significant result of the firm's risk preference on team risk-taking behavior. Furthermore, Tjosvold and Yu (2007) did some research on team risk-taking. They researched whether a concept called constructive controversy would have an effect on team risk-taking behavior. Findings indicate that constructive controversy, the open-minded discussion of opposing views for mutual benefit, is an important foundation for teams to take risks effectively (Tjosvold & Yu, 2007). This team risk-taking can subsequently lead to more innovative decisions (Tjosvold & Yu, 2007). Group or team risk-taking behavior is thus a relatively unexplored field of research.

2.4 Team-member exchange quality

In 1989 it was Anson Seers who recognized that team working relationships are of interest from several viewpoints. Since the time of the Hawthorne studies it has been apparent that group dynamics have a major impact on the behavior of industrial workers (Seers, 1989). Since the nineties the use of groups and teams in organizations has grown rapidly, which is why research in group dynamics is requisite. Seers (1989) first introduced the concept of team-member exchange quality (TMX) as a concept closely related to the leader-member exchange quality (LMX). Where LMX focuses on perceptions of exchange relationships between a team-leader and a team-member (Graen & Cashman, 1975; Graen, Cashman, Ginsburgh, and Schiemann, 1977), TMX focuses on the perceptions of exchange relationships between members and the team as a whole (Seers, 1989). TMX is thus a way to assess the reciprocity between a member and the peer group (Seers, 1989). It measures a member's perception of his/her willingness to assist other members, to share ideas and feedback, and in turn, how readily information, help,

and recognition are received from other members (Seers, 1989). The quality of the team-member exchange relationship indicates the effectiveness of the member's working relationship to the peer group (Seers, 1989). TMX contrasts with LMX in that it is not dyadic because it involves the employee's relationship to that group of peers with which he or she identifies as a member (Seers, 1989). According to Liden, Wayne, and Sparrowe (2000) low team-member exchange quality is limited to exchanges required for the completion of work tasks, whereas high team-member exchange quality involves exchange of resources and support that extends beyond what is necessary for task completion. High-quality TMX is indicated by an open and safe psychosocial environment (Liao et al., 2013). According to Liu, Loi, and Lam (2011) high-quality TMX relationships can be characterized as social exchange, whereas low-quality TMX relationships can be characterized as economic exchange. The concept of TMX draws on the underlying assumptions of social exchange theory developed by Blau (1964). In social exchange theory economic exchange only involves the exchange of concrete resources while social exchange tends to be long term in nature and involves the exchange of socio-emotional benefits and reciprocity (Gouldner, 1960). Research on TMX has found that there exist relationships between TMX and numerous outcomes. TMX has been found to result in job performance (Seers, 1989), production efficiency (Seers, Petty, & Cashman, 1995), organizational commitment (Liden et al., 2000; Witt, Hochwarter, Hilton, & Hillman, 1999), and job satisfaction (Major, Kozlowski, Chao & Gardner, 1995). Furthermore high-quality TMX relationships were found to result in recognition, appreciation, encouragement, and mutual respect and trust (Tse & Dasborough, 2008), as well as increased intention to share knowledge with team members (Liu et al., 2011), and a positive interpersonal context for employees to exchange resources and feedback with each other (Liao et al., 2013).

Seers et al. (1995) extend the previous work with considering the average level of team-member exchange across a team as a meaningful variable at the aggregate level. Teams high in team-member exchange quality should be effective teams as well as provide satisfying experiences to members (Seers et al., 1995). However, when data is aggregated to the team-level this cannot be assumed to mean the same thing as the individual level data. When TMX is aggregated to the group level, we are dealing with the average reciprocity across the group, which may reflect the extent of teamwork in that group (Seers et al., 1995). And indeed Seers et al. (1995) found that teams high on average TMX correspond to effective teams (Jordan et al., 2002). Liu, Keller, and Shih (2011) proposed the concept 'work unit TMX quality' for the aggregated level of team-member exchange quality within a team. Work unit TMX refers to the overall pattern of

team member exchange relationships displayed to the entire work unit (Liu, Keller, & Shih, 2011). It can be viewed as a climate indication of a positive social exchange characterized by the flexibility, discretion, and open-ended relationships shared among unit members (Liu, Keller, & Shih, 2011).

The first relationship that is expected is between work-unit TMX quality and team risk taking. As mentioned before, TMX relationships indicate a climate indication of positive social exchange characterized by flexibility, discretion, trust, respect, and open-ended relationships shared among unit members. Trust, respect, and especially discretion are closely related to an environment characterized by psychological safety, which could result in team-members feeling safe to make risky suggestions or decisions. Teams will take more risky decisions when TMX is high, because they feel that the negative interpersonal consequences will be lower. Furthermore, trust could indicate that the team has confidence in its own abilities to take risky courses of action. TMX was also found to result in job performance and production efficiency. This could indicate that teams high on TMX feel that they can perform better or more efficient, and thus are more comfortable taking risks because they feel they can handle the risks effectively. Thus, when members of a team collectively perceive that their team-member exchange relationships are good, then these teams will be more likely to take risk. A positive relationship is expected between work unit team-member exchange and team risk taking.

H1: Work unit TMX quality will be positively related to team risk-taking

2.5 Team discussion quantity

In our society, most important decisions are made by teams rather than individuals (Parks & Cowlin, 1995). Each team member brings a slightly different set of task-relevant knowledge to the table, and through discussion these sets of task-relevant knowledge become known to all team members. As a result the team can draw from a larger pool of facts than an isolated individual could (Davis, 1969). It is however questionable whether team discussion in fact creates a larger pool of facts. Stasser and Titus (1985) argue that teams most of all discuss shared knowledge instead of unique facts. This concept is referred to as ‘biased sampling’ (Stasser & Titus, 1985). This implies that teams actually tend to revolve around facts that are already known to all members, instead of discussing unique facts.

Hewes (as cited in Pavitt & Johnson, 1999) one of the key authors on group decision making and group communication argues that researchers should consider both the input and process together as dual determinants of group output. The argument behind this thesis is that when only considering input, such as statements, one might just find the impact of one particular highly skilled individual within the group on the group output. When the process of the group discussion is also considered this effect can be controlled for (Pavitt & Johnson, 1999). What Hewes (1986, 1996) also argues is that communication is coherent in its nature. In other words, if discussants are not making their comments relevant to what is said earlier, they are not communicating. Researchers should thus demonstrate the coherency of group discussion using evidence of sequential structure (Pavitt & Johnson, 1999). But, since Hewes argues that group members do not generally strive for coherent discussion because they are more concerned with formulating their own thoughts about the group decision, this research will not take the sequential structure of discussion into consideration.

Team discussion quantity in this research is defined as the extent or quantity to which the members of an organizational team discuss and participate during decision-making processes. Team discussion quantity depends partly on the quantity of decision alternatives that are made during the team discussion, further referred to as ‘proposals’. Since these statements can also be made by only one particular participant in the team discussion it is also important to check for the process (Hewes) in the team discussion. This implies that the participation of all the team members is considered during the team discussion. The number of proposals made by the team is the first dimension of team discussion quantity and the participation of the team members is the second dimension. The third dimension of team discussion is in line with the theory on process, and checks the percentage of team members actively participating in the team discussion. This controls for the fact that only a small percentage of the group could be participating actively. The fourth dimension of team discussion quantity will be the duration of the discussion, further referred to as ‘discussion time’. Discussion quantity will thus consist of the amount of proposals made by the team, the participation rate of the team, the active participation rate of the team, and the discussion time of the team.

As indicated in the previous section, work unit TMX quality was found to result in reciprocity, sharing of information, and a positive interpersonal context for employees to exchange resources and feedback with each other. When members of a team collectively perceive that they are willing to assist other members, share ideas and feedback, these teams will actually

share more ideas and feedback with each other. The psychologically safe environment along with discretion and trust indicated by high work unit TMX quality will ensure that team members feel safe and open to share their ideas with the team. These characteristics of work unit TMX quality could result in more proposals (ideas, feedback, and information sharing) and more participation (trust and psychological safety) by the team, as well as more discussion time. A positive relationship is therefore expected between work-unit team-member exchange and team discussion quantity.

H2: Work unit TMX quality will be positively related to team discussion quantity

As Tjosvold and Yu (2007) mention in their paper, research has begun to show that social interaction among group members can help team members deal with the uncertainties of decision making and develop confidence and a willingness to make risky decisions (Tjosvold & Yu, 2007). It is proposed by Tjosvold and Yu (2007) that groups are more likely to have the confidence and abilities to take risks when their members are able to discuss their opposing views directly and constructively. Watson and Kumar (1992) describe some factors that influence the risk taking behavior of groups. One of the factors Watson and Kumar (1992) discuss is cohesion. This factor covers the exchange of ideas, listening, compatibility, and combining individual resources. Team interaction and team discussion are thus important antecedents of risky decisions. I argue that team discussion is not only important in shifting the risk from the individual level to the group level, but that team discussion quantity can also explain variance in risk-taking between groups. Teams that discuss more will feel more safe and open to share their risky opinions, and subsequently have more opportunities to share these ideas. In teams with a high discussion quantity the mechanisms of social comparison and persuasive argumentation will be more forthcoming. The risky opinions of some team members will pull the safe or moderate opinions of other team members more to the risky decision. Therefore a positive relationship is expected between team discussion quantity and team risk taking.

H3: Team discussion quantity will be positively related to team risk-taking

Hypotheses two and three indicate that there is a mediating role of team discussion quantity in the relationship between work unit TMX quality and team risk taking. But, since work unit TMX quality is also proposed to have a direct effect on team risk taking regardless of team

discussion quantity, it is expected that team discussion quantity only partly mediates the relationship between work unit TMX quality and team risk taking. A part of the variance in team risk taking is proposed to be explained by work unit TMX quality even if team discussion quantity is added to the equation.

H4: Team discussion quantity partially mediates the relationship between work unit TMX quality and team risk-taking

2.6 Uncertainty and precision of information

Uncertainty nowadays constitutes a major obstacle to effective decision-making in realistic settings (Lipshitz & Strauss, 1997). According to Anderson, Deane, Hammond, McClelland, and Shanteau (1981) uncertainty implies a situation in which one has no knowledge about which of several states of nature has occurred or will occur, or a situation is which one knows only the probability of which of several possible states of nature has occurred or will occur. Marquis & Reitz (1968) differentiated between pure risk and uncertainty. Pure risk describes a situation in which the decision maker knows all possible outcomes and can assign definite probabilities to each outcome. Uncertainty describes a situation in which the decision maker is unable to assign definite values to outcomes and/or is unable to assign definite probabilities to each outcome (Marquis & Reitz, 1968). Marquis and Reitz (1968) argue that a decision maker might take a different attitude toward a pure risk situation than toward an uncertain, but otherwise equivalent, situation. Marquis and Reitz (1968) hypothesized that uncertainty reduces the propensity of individuals to take risk. Their findings indicated that uncertainty has a systematic effect on an individual's willingness to take risk. Individuals tented to risk less in uncertain situations. When uncertainty is high, people create a sense of doubt which might block or delay actions and therefore decrease the willingness to take risks (Lipshitz & Strauss, 1997). According to the arguments of Marquis and Reitz (1968) and Lipshitz and Strauss (1997) there is a direct relationship between uncertainty and risk-taking.

Dahlstrom, Dudo, and Brossard (2012) define precision of information as the specificity of information about a risk's pervasiveness, potency, or effects. Precision of information in this research represents the specificity of information about the probability of success of the different choice alternatives. The explanatory variable precision of information varies in levels of uncertainty, meaning that under conditions of imprecise information there exists more uncertainty. Assuming the arguments above would aggregate to the team level, then precision

of information is positively related to team risk-taking. This is why it is expected that precision of information will have a positive effect on team risk taking. Figure 1 shows the conceptual model of this research.

H5: Precision of information will be positively related to team risk-taking

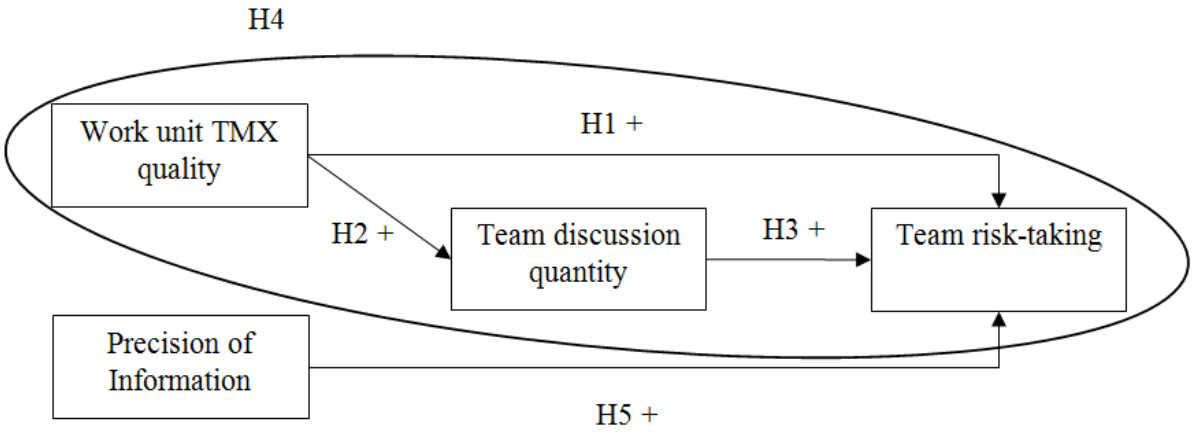


Figure 1 – Conceptual model; Hypothesis 4 represented in the oval shape indicates the mediating model.

3. Methodological framework

In this chapter the methodological aspects of this research are described. In the following sections subsequently the research design, sample, data collection, data analysis, and quality indicators are discussed. Furthermore some preliminary data analysis are presented in the data analysis section of this chapter.

3.1 Research design

An experimental design was used to study the effects of work unit TMX quality and team discussion quantity on risk-taking behavior of teams. The experimental study involved a manipulation of precision of information. A group of 7 researchers conducted the experiments in teams consisting of three to ten team-members. Teams that were above ten team-members were excluded, because it would be too difficult to code the team discussion. According to Jones and Bearley (2001) a team of ten people already involves forty-five dyadic relationships, which might already be a stretch. The experiment involved data collection through questionnaires, observation sheets, and answer sheets. As mentioned before, teams were the subject of experimentation in this research. The teams were asked to assess different organizational problems and make a decision/choice involving some level of risk. The teams had to solve these organizational problems under conditions of imprecise and precise information. The experimental design entailed a team discussion, in which the team discussed the decision/choice they were going to make. The experiments were performed on location at the organizations.

The experiment was inspired by Shupp & Williams's (2008) lottery evaluation experiment where participants allocated money between decision alternatives, and by Wallach, Kogan, and Bem's (1962) experiment where participants chose between different risk scenarios (like expansions and new projects). The experiment strived to facilitate a decision-making process and a level of risk-taking identical to the teams' real-life situations by providing the teams with realistic organizational decisions and conducting the experiments in-house. Additionally, an amount of money based on the teams' performances during the experiment was donated to the charity fund 'KWF Kankerbestrijding'. This was done to increase the dedication and seriousness of the teams during the experiment, but also to make the experiment more attractive for participation. The teams were also offered a client report and an evaluative report in return for their participation in the experiment.

The experiment was designed to cover approximately one hour depending on the number of team members. During every experiment a detailed word-for-word protocol was followed (included in Appendix 1). The logistics in the form of necessary materials and room set-up is shown in Appendix 2).The number of researchers present varied based on team size, but was between three and four persons, consisting of one game host and two or more observers (watching a maximum of three participants each). The experiment consisted of three questionnaires, A, B and C (See appendix 3 for the questionnaire with TMX included), and four decision rounds (see appendix 4). These decision rounds differ in scenario (new project and expansion) and in condition (precise or imprecise). The purpose of similar rounds with a slightly different scenario was meant to control for any effects of the task itself on the outcome of the experiment. The purpose of similar rounds with a different condition was meant as the manipulation of precision of information. To control for learning effects the order in which the scenarios and manipulation conditions were provided to the teams was varied. In each round the participants had to allocate a sum of 1 million Euros between two alternatives (See Appendix 5 for allocation/answer sheet). An excel sheet calculates the charity donation based on the allocations of the teams, and the probabilities provided in each scenario. For a detailed description of the experimental design, calculations, and the excel sheet see Appendix 6.

3.2 Sample

The data was collected from 51 existing real-life organizational teams from diverse Dutch industries. This amount was realized, because it is probably the most feasible amount of teams to be realized on such a short notice, and with only few resources at dispense. A Power analysis will be conducted afterwards to check the chance of wrongfully rejecting or confirming hypothesis. Convenience sampling was used in diverse Dutch industries to select participating teams. Teams were only selected on their willingness to participate in our experiment with an organizational team consisting of 3 to 10 team members. No further restrictions were applied to the sampling of the teams, since this would have resulted in a far smaller sample size than preferred. Teams were contacted through LinkedIn, Facebook, Twitter, Email, and mouth-to-mouth communication. Most of these teams were derived from personal relationships with one or more of the researchers. A website was built to refer possible teams to, and to provide them with an opportunity to enroll in the experiment. This website provided the reader with information regarding the research, as well as a short section on the charity fund KWF Kankerbestrijding. Furthermore an email address was set up to contact the teams about logistics regarding the experiment, and also for enrollment of teams in the experiment.

The final sample consisted of 51 teams with a total of 232 participants. There were 102 men (44%) and 129 females (55.6%) in the sample. The youngest participant in the sample was 18 years young, while the oldest participant in the sample was 64 years old. The average age of the participants in the sample was 38.55 years. The size of the teams in the sample ranged from 3 to 9 team members with an average of 4.5 team members. The actual size of the whole team, not only the present team members, was also measured. Team size of the whole team ranged from 3 to 19 participants per team with an average of 7.1 team members. Team tenure in months ranged from 1 week up to 12 years.

3.3 Data collection

Team-member exchange is a quantitative continues variable which was measured beforehand through a questionnaire consisting of 13 items (Appendix 7). These items were derived from Ford and Seers (2006), and are included in Questionnaire A items 47 to 59 (see Appendix 3). The items in Appendix 7 were translated from English to Dutch. To ensure that this translation was performed correctly, the items were translated back into English by a third party. The items are assessed on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). A sum score was calculated for every participant to create a team-member exchange (TMX) quality score for that participant. The individual scores were aggregated to the team-level to create a work unit team-member exchange (work unit TMX) quality score.

Team discussion quantity is also a quantitative continues variable and was measured through an observation scale handled by the present observers. For measuring the variable ‘team discussion quantity’ observation sheets were used. In Appendix 8 the individual and team observation sheets are presented and explained. Live observation was conducted with these observation sheets during each decision round. For reasons of time restraints and a lack of appropriate materials, coding was not done on the bases of video and audio recordings. The experiment however was videotaped to ensure that there is some form of backup when for instance coding-sheets get lost. The individual observation sheet consists of two measures of team discussion quantity; number of proposals and participation rate. The number of proposals was tallied on the observation sheet for every observed participant individually. A proposal implies an applicable allocation of the money between the decision alternatives. The participation of each participant was rated on a 10 point scale ranging from 0-10%, 10-20%, 20-30% participation etc. The team observation sheet consists of one measure of team

discussion quantity; number of team members actively participating. This entails that each participant that participates more than 20% of the time was considered as actively participating in the team discussion. The amount of participants actively participating was weighted against the number of team members in the team, creating a fraction of team members actively participating. The host furthermore kept track of the discussion time during each round, and this time was noted on the observation sheet of the host. A sum of proposals was calculated for every team, as well as an average participation rate, an average percentage of actively participating team members, and an average discussion time. These scores would then, after standardization, together form the 'team discussion quantity' variable.

Team risk taking was measured through the decisions/choices made by the teams during the experiment. The teams were assigned to allocate an investment of 1.000.000 Euros over two different choice alternatives (one safe, one risky). The teams did this in four rounds consisting of two different scenarios, and two different conditions. The more money a team allocated to the risky options, the more risky the team was. The risk score of the team per round was expressed as a score ranging from 0 to a 100. Investing 200.000 Euros in the risky option would result in a risk score of 20. Three different risk scores were calculated to analyze the hypotheses proposed earlier. An average risk score was computed for both the precise and imprecise rounds, making it possible to research the effect of precision of information on team risk taking. And a total risk score was calculated taking the average of all four risk scores. Team risk-taking is thus a continuous variable consisting of the average risk scores of the team in different decision rounds. The operationalization table can be found in Appendix 9.

Four control variables were included in this research. These control variables are the team size, the average age of the team, the team tenure, and the risk preference of the team. The controls were collected through the questionnaires handed out to the participants. These control variables were included in this research because they are suspected to have an effect on the dependent variable team risk taking. Compared to members of larger teams Bradner, Mark, and Hertel (2003) found that members of smaller teams participated more actively in the team. As indicated in this thesis before, participation was expected to affect team risk taking positively. Research by Vroom and Pahl (1971) showed that younger people tended to take more risk than older people. Finkelstein and Hambrick (1990) concluded that teams with short tenures have fresh, diverse information and are willing to take risks. Risk seeking decision makers prefer relatively high risk (March & Shapira, 1987), which implies that risk preference has an effect

on risk taking. And indeed Otten and van der Pligt (1992) found a positive relation between risk preference and future risky behavior.

3.4 Data analysis

Data analysis was done using a SPSS Macro developed by Hayes (2013). This plug-in for SPSS is able to analyze several processes in one model. It would be unnecessary and unadvisable to analyze every single effect separately, and therefore the Hayes (2013) process macro was used. Model 4 of Hayes' process macro was used to analyze the indirect effect of work unit TMX quality on team risk taking through team discussion quantity and the direct effect of work unit TMX quality on team risk taking. Since the process macro of Hayes is not able to analyze the effect of multiple exogenous variables on a dependent variable, the effect of precision of information on team risk taking was analyzed separately. This effect was estimated using a paired samples t-test comparing team risk taking scores under precise situations with team risk taking scores under imprecise situations.

Control variables

The control variables relevant to this research were the size of the team, the mean age of the team, the team's tenure, and the team's risk preference. Since these variables were gathered on the individual level, these variables first had to be aggregated to the team level. All the relevant individual variables were gathered in a SPSS file called 'Vincent_IndividualScores'. After aggregating the control variables to the team-level they were inserted into a SPSS file called 'Vincent_TeamScores'. These control variables were then called TeamSize, TeamAge, TeamTenure, and TeamRiskPreference (see Appendix 16 syntax step 1). To derive the variable TeamRiskPreference from the individual risk preference scale first a sum variable called RiskPreference was computed. On the risk preference scale a Factor Analysis was first performed to determine whether the risk preference scale actually measures a person's risk preference. The Principal Components method was used along with an analysis based on correlations. Extraction was based on Eigenvalues greater than 1. Oblimin was used as a rotation method. Unfortunately these analyses did not show that the risk preference items actually measure the concept 'risk preference'. A Reliability Analysis was also conducted, but did not show a Cronbach's Alpha above 0.7. Nevertheless, the RiskPreference variable was aggregated to the team-level. Since risk preference is only used as a control variable in this research, the flaws of the scale are consciously ignored. Risk preference will thus be used as a control variable however it isn't expected to have an effect on team risk taking because of the

low reliability of the scale. See Appendix 10 for the Principal Component Analysis and the Reliability Analysis, and Appendix 16 for step 1 in the syntax.

Team-member exchange

To test whether the items of the TMX quality scale actually measure TMX quality, the Kaiser-Meyer-Olkin (KMO) value should be higher than or equal to 0.6 and the Bartlett's Test of Sphericity should be significant ($p<0.05$) (Pallant, 2010). The TMX quality scale has a significant KMO value of 0.687, which implies that Factor Analysis is actually suitable (see table 1). The Principal Components method was used along with an analysis based on correlations. Extraction was based on Eigenvalues greater than 1. Oblimin was used as a rotation method, and showed four components in the TMX quality scale all contributing to the variance in team-member exchange quality.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**,681**
Bartlett's Test of Sphericity	Approx. Chi-Square	**867,748**
	df	**78**
	Sig.	**,000**

Table 1 – KMO and Bartlett's Test on team-member exchange quality

To test the internal consistency of the team-member exchange quality scale, the Cronbach's Alpha should have a value higher than or equal to 0.7. The team-member exchange quality scale has a significant Cronbach's Alpha of 0.815 (see table 2). All corrected item-total correlations are above 0.3 which implies all 13 items have a meaningful contribution to the scale. No item was found to increase the Cronbach's Alpha when deleted, which implies all items can be used for analysis. The within-group agreement ($r_{wg(j)}$) will be used to assess whether there is agreement in terms of judgments on the variable 'work unit TMX quality' within the team (James, Demaree, & Wolf, 1984). Because all Rwg values were above 0.7 (Mean=0.981, Median=0.983) as recommended by James et al. (1984) the TMX quality scores will be aggregated to the team level using SPSS aggregation methods, creating the new variable work unit TMX quality indicated as 'TeamTMX' in SPSS (see Appendix 16 for syntax step 1). See Appendix 11 for the Principal Component Analysis and the Reliability Analysis, and Appendix 16 for the syntax step 1.

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,815	,816	13

Table 2 – Reliability statistics on team-member exchange quality

Team discussion quantity

First, a Factor Analysis was conducted on the items measuring the variable 'team discussion quantity'. This analysis shows a significant KMO value of 0.728, which is higher than the minimum of 0.6 (see table 3). Factor Analysis is thus appropriate. The Principal Components method is used again along with the correlation based analysis. Extraction was based on Eigenvalues greater than 1, and Oblimin was used as rotation method.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**,728**
Bartlett's Test of Sphericity	Approx. Chi-Square	**1076,077**
	df	**120**
	Sig.	**,000**

Table 3 – KMO and Bartlett's Test on team discussion

The pattern matrix showed 5 components, of which amount of proposals was located in the last two components with minimal explanation of variance in team discussion quantity. Therefore amount of proposals made by participants was left out of the 'team discussion quantity' variable. The other three items loaded on one component each but not on the same component, which implies they do no measure team discussion quantity together. Team discussion quantity can thus not be analysed using the measurement items in this research. Analysis were done separately on the three remaining components; participation rate, active participation rate, and discussion time.

A one-way ANOVA was conducted on the variable participation rate to test its reliability (See Appendix 12). Ideally, the variance in scores between teams should be larger than the variance in scores within teams. This would imply that all team members within a team look alike, however that they are different from team members of other teams. For the measurements of

participation in the precise situations this was actually the case, however only significantly in the project scenario (p=0.037). For the measurements in the imprecise situations this was not the case. The reliability of the component 'participation rate' is thus somewhat limited due to the fact that the variance between groups was not always larger than the variance within groups.

Before analyses on team-level can be done, first the individual scores on the participation rate had to be aggregated to the team-level. The within-group agreement ($r_{wg(j)}$) showed a mean of 0.847 and a median of 0.873 which are both above 0.7. Individual participation scores were aggregated to the team-level using SPSS aggregation methods. The items were called TeamParticipation, TeamActivePart, and TeamDiscussionTime (see Appendix 16 for syntax step 3 and 7). These three items will be treated as separate mediating variables in the remainder of this thesis.

Precision of information

For the second exogenous variable precision of information a subdivision of the variable team risk taking was made. This subdivision consists of a variable called TeamRiskScore_X and a variable called TeamRiskScore_Y. These two variables represent a team risk score under subsequently the precise and imprecise situations. Step 4 of the syntax in Appendix 16 shows the calculation of these two risk scores.

Team risk taking

The dependent variable team risk taking was computed by taking the average risk allocation of the four decision rounds in the experiment. First a division was made between team risk score precise (TeamRiskScore_X) and team risk score imprecise (TeamRiskScore_Y), but later these two were merged into one variable called 'TeamRiskScore' in SPSS. For exact calculations of the team risk score see the syntax steps 4 and 7 in Appendix 16.

Checking assumptions

To check some assumptions underlying linear and multiple regression, some additional preliminary analysis were conducted. In the previous sections the reliability of the variables used in the regression was already discussed. All variables in the model were checked for multicollinearity, resulting in VIF values all close to 1 (see table 4). This implies no multicollinearity among the researched variables.

Model		Collinearity Statistics	
		Tolerance	**VIF**
	TeamSize	,531	**1,885**
	TeamAge	,672	**1,488**
	TeamTenure	,759	**1,317**
	TeamRiskPreference	,859	**1,164**
	TeamTMX	,914	**1,094**
	TeamParticipation	,605	**1,653**
	TeamActivePart	,579	**1,727**
	TeamDiscussionTime	,710	**1,408**

Table 4 –Collinearity statistics on all variables with dependent variable TeamRiskScore

Also a Pearson's correlation matrix was plotted showing only a significant correlation between TeamAge and TeamTenure, which are both merely control variables. See the results chapter for the complete correlation matrix and for some correlation based findings. The assumptions of linearity and homoscedasticity were checked for, using standardized residuals. The standardized and studentized residuals were non-significant which implies that H0, residuals are normally distributed, cannot be rejected (see table 5). The residuals were normally distributed which implies linearity and homoscedasticity. All variables were also separately tested on normality and outliers. These normality tests, shown in Appendix 13, show fairly normal distributions for all variables including the residuals. Some outliers are reported, however there was no reason to assume that these outliers were errors in the dataset.

	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
Standardized Residual	,071	50	**,200***
Studentized Residual	,070	50	**,200***

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Table 5 –Tests of Normality for standardized and studentized residuals

3.5 Quality indicators

Construct validity was ensured by using an existing scale for the team-member exchange quality scale. This scale was derived from Ford and Seers (2006) and was found reliable several times in the literature and more recently in this research. One limitation of the TMX scale used in this research, however, is that the scale was translated into the Dutch language. This could very well have led to a decrease in validity and reliability of the scale. To accommodate for this limitation, the translated Dutch TMX quality scale was translated back to English by a third party. The two English versions of the scale were compared, and were found to be highly convergent. The construct validity for the team discussion quantity variable is harder to establish. The scale was not derived from an existing scale, but merely used some observation techniques often used in behavioral research. Using factor analysis and reliability analysis it was found that the items used to measure team discussion quantity do not actually measure team discussion quantity reliable. Team discussion quantity was therefore not used as a variable in this research. Each component of the variable was used separately as a mediating variable (except for amount of proposals), which ensures some of the reliability of these three new individual variables. Team risk taking itself was measured using the allocations of the team in a risky alternative. This is off course a valid and reliable way of measuring team risk taking if, and only if, the risky alternative is also considered risky by the participants. Therefore about half of the participating teams were asked to rate each decision alternative on its riskiness. Participants (N=87) rated the risky alternatives higher (7.2 on a 10-point risk scale) on riskiness than the safe alternatives (3.4 on a 10-point risk scale), which ensures some of the validity of the team risk taking measure.

The internal validity of the research is off course limited by the absence of a control group. The use of control variables does add something to the internal validity of this research. Variables that were expected to have an effect on the dependent variable, but that were not subject of examination in this research, were included as control variables. Real-life cases were used along with an incentive to perform well to ensure that the experiment represented a situation which comes close to the participants' natural working environments. A fully transcribed protocol was used for every participating team resulting in a standard procedure for every single experiment. Reliability was further ensured by collecting videotape footage during all experiments in order to analyze in case of doubt or errors in the data. Furthermore, it could have been the case that teams vary in risk taking depending on a particular moment in the experiment, or the particular

task that had to be completed. To control for these effects, the order in which the teams received the tasks and the conditions of precise and imprecise information were varied.

The external validity of this research is limited. Generalizability is very difficult to assess using a research based on convenience sampling. Basically all sorts of teams were included in the sample, and since the sample only consists of 51 teams it is difficult, if not impossible, to subdivide teams in classes according to size, industry, sector etc.

4. Results

In this chapter the results of this research will be described. The five hypotheses outlined in the theoretical framework are tested using the statistical methods described in the methodological framework. First the descriptive statistics of the variables and the correlations between the variables will be presented. Hereafter, the results of the process analysis as well as the paired samples t-test will be discussed. This chapter will close with hypothesis confirmation and/or rejection, and some additional results.

4.1 Descriptives and correlations

	N	Range	Min.	Max.	Mean	SD	Skewness	Kurtosis
TeamSize	51	6	3	9	4,53	1,701	1,038	,342
TeamAge	51	33,10	18,80	51,90	37,549	10,602	-,589	-1,105
TeamTenure	51	143,80	,30	144,00	21,701	36,329	2,506	5,453
TeamRiskPreference	51	1,37	2,60	3,97	3,150	,287	,397	,244
TeamTMX	51	1,07	3,33	4,40	3,847	,228	,066	,499
TeamParticipation	50	3,71	3,10	6,81	5,123	0,757	-,349	,121
TeamActivePart	50	0,27	0,73	1,00	0,930	0,075	-,829	-,279
TeamDiscussionTime	50	4,00	1,38	5,38	3,850	0,936	-,736	0,149
TeamRiskScore	51	70,00	7,50	77,50	38,086	14,710	,395	,584

Table 6 –Descriptive statistics

In table 6 above the descriptive statistics of the independent, mediating, and dependent variables are presented. These descriptives describe the distributions of the variables in question. The table summarizes the mean, the range, the standard deviation of the mean, and the normal distribution of the variables. In table 6 the average team size of 4.53 team members can be observed. With a standard deviation of 1.7 it can be concluded that teams above 7 members are relatively scarce. The independent variable work unit team-member exchange quality seems to have a low variance in scores. These scores have a range between 3.33 and 4.40 on a five-point Likert scale. The mean of the work unit TMX quality scale almost reaches 4 on a five-point Likert scale. From these descriptive statistics it could be concluded that teams generally score themselves above average on work unit TMX quality. The range in the variable team participation is clearly higher than for the variable work unit TMX quality. The desciptives show that the team with the lowest participation had a participation rate of 31%, while the team

with the highest average participation had a participation rate of 68%. The active participation measure varies very little because it represents the percentage of team members that are participating for more than 20% of the time. Team members not actively participating (participation<20%) is very rare, since the mean of the team participation never exceeds 31%. Team discussion time varied between 1.3 and 5.3 minutes, and teams had an average discussion time of 3.8 minutes. This implied that on average teams read the cases for about 3 minutes and 12 seconds, and discussed that cases in about 3 minutes and 48 seconds. The N of the variables that supposed to measure team discussion quantity is only 50, because of the missing observations for the first team. The team risk score variable shows that the most risk averse team invested on average only 75.000 Euros in the risky option, while the most risk prone team invested 775.000 Euros in the risky option. On average teams invested about 380.000 Euros in the risky option, which implies teams are generally quite risk averse assuming 500.000 Euros in each alternative is an even distribution.

Table 7 is a correlation matrix based on Pearson product-moment correlation coefficient (r). In the original correlation matrix the number of cases (N) is all 51 except for the variables that were supposed to measure team discussion quantity. This implies that there is no missing data except for the known missing data of the first team. After checking the sample information, the direction of the relationships can be observed from the Pearson correlation matrix below.

Scale	1	2	3	4	5	6	7	8	9
1. TeamSize	-	,233	-,188	-,137	-,122	**-,402****	**-,468****	,244	,185
2. TeamAge		-	**,339***	**-,281***	,107	,020	-,169	-,043	,196
3. TeamTenure			-	-,183	,040	0,100	,154	-,234	-,028
4. TeamRiskPreference				-	-,102	,064	,021	,107	,118
5. TeamTMX					-	,012	-,055	-,016	-,025
6. TeamParticipation						-	**-,439****	,217	,015
7. TeamActivePart							-	,090	-,228
8. TeamDiscussionTime								-	,062
7. TeamRiskScore									-

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 7 –Pearson correlation matrix

As can be seen from the matrix, there are five significant correlations ($p<0.05$). There are significant negative correlations between TeamSize and TeamParticipation and also between TeamSize and TeamActivePart. This implies that when the size of the team increases the participation rate and active participation rate of the team decrease, and vice versa. There is a significant positive correlation between the average age of team members and the tenure of the team. This implies that high scores on TeamAge are associated with high scores on TeamTenure and vice versa. In other words, the older the team members in a team the longer the team has been together and vice versa. Another significant Pearson correlation is that between TeamAge and TeamRiskPreference. This correlation is significantly negative which implies that high scores on one variable are associated with low scores on the other variable. As the average age of the team members is lower, the risk preference of the team will be higher. Lastly, TeamParticipation is significant and negatively correlated with TeamActivePart. This implies that when the participation rate of the team increases the actively participating team members decrease, and vice versa. According to Cohen (1988, pp. 79–81) as cited in Pallant (2010) correlations between 0.1 and 0.29 are small, correlations between 0.3 and 0.49 are medium, and correlations between 0.5 and 1.0 are large. The Pearson correlations can nearly all be considered as medium except for the Pearson correlation between TeamAge and TeamRiskPreference which can be considered as small to medium. If we calculate the coefficients of determination (r^2) we can see that TeamSize explains 16.2% of the variance in TeamParticipation and 22% of the variance in TeamActivePart. TeamAge explains 7.9% of the variance in TeamTenure, and 11.5% of the variance in TeamRiskPreference. Lastly, TeamParticipation explains 19.3% of the variance in TeamActivePart.

4.2 Process analysis

Model 4 in the process analysis developed by Hayes (2013) will be used to analyze the simple mediation effect hypothesized in this research. This simple mediation consists of the direct effect of work unit TMX on team risk taking, and the indirect of work unit TMX on team risk taking through team participation rate, team active participation rate, and team discussion time. These analysis will be conducted using four control variables; team size, team age, team tenure, and team risk preference. The full output of the Hayes (2013) process macro can be found in Appendix 14.

The first model in the output derived from Hayes' (2013) process macro includes the control variables, the independent variable, and the mediating variable TeamParticipation. The R^2 tells us that 17.9% of the variance in team participation is explained by work unit TMX and the control variables, however this effect was not found to be significant (p=0.111). TeamTMX, TeamSize, and TeamTenure are shown to have a negative effect on TeamParticipation, while TeamAge and TeamRiskPreference have a positive effect on TeamParticipation. Only the negative effect (β=-.1951) of TeamSize on TeamParticipation is shown to be significant (p<0.05). The confidence intervals of 95% does not include zero here, which implies that with a 95% certainty the effect of TeamSize on TeamParticipation is between -.0614 and -.3288.

The second model in the output from Hayes' process macro includes the control variables, the independent and the mediating variable TeamActivePart. The R^2 is this model is .2470, which implies that 24.7% of the variance in TeamActivePart is explained by the team size, team age, team tenure, team risk preference, and work unit TMX. This total explained variance is found to be significant (p=.0244). As well as in the previous model, only the effect of TeamSize is found to be significant (β=-.0198, p=.0031). Moreover the 95% confidence does not include zero for the effect of this control variable. This implies that the variance in the mediating variable team active participation can solely be explained by the size of the team.

The third model in the output produced by Hayes' (2013) process macro includes the control variables, the independent and the mediating variable TeamDiscussionTime. The R^2 in this model is .1065, which implies that 10.7% of the variance in TeamDiscussionTime is explained by team size, team age, team tenure, team risk preference, and work unit TMX. This explained variance was however not significant on a significance level of 5% (p=.4012). None of the variables shown in this model have a significant effect on TeamDiscussionTime (p>0.05). Furthermore, the confidence interval of 95% includes zero in every case. This implies that with a 95% certainty zero or 'no effects' are found in this model.

The fourth model in Hayes' process macro output includes all variables with team risk taking as a dependent variable. The control variables, the independent variable, and the mediating variables explain 12.5% of the variance in team risk taking, however this effect is not found to be significant (p=.6641). None of the variables shown in this model have a significant effect on team risk taking (p>0.05). Furthermore, the confidence interval of 95% includes zero in every

case. This implies that with a 95% certainty for all the variables 'no effect' is found in this model.

The total variance explained in team risk taking by work unit TMX and the control variables is found to be 9%, however this effect was not found to be significant (p=0.5083). None of the effects of the control variables or work unit TMX were found to be significant (p>0.05) on team risk taking. Furthermore, all the 95% confidence intervals included zero or 'no effect'.

Lastly, the output of Hayes' (2013) process macro shows the indirect effect of work unit TMX on team risk taking through the mediating variables. The indirect or mediating effects through TeamParticipation, TeamActivePart, and TeamDiscussionTime are not found to be significant according to the output. The 95% confidence intervals include zero, and furthermore the Sobel tests do not show any significance on a 5% significance level (p>0.05).

Hypothesis 1 predicted a positive effect between work unit team-member exchange quality and team risk taking. A higher level of work unit team-member exchange quality was expected to result in more team risk taking. The output from Hayes' (2013) process macro shows a negative direct effect of work unit team-member exchange quality on team risk taking (β= -2.0214). This would imply that when work unit TMX increases by 1, team risk taking would decrease with 2.02. This effect however was not found to be significant (p=0.8355). Since the results show no significant results, hypothesis 1 is rejected.

Hypothesis 2 predicted a positive effect of work unit team-member exchange quality on team discussion quantity. A higher level of work unit team-member exchange quality was expected to result in higher team discussion quantity. The output from Hayes' (2013) process macro shows that for all three mediating variables, originally thought to measure team discussion quantity together, an insignificant effect is found. Work unit TMX does not have a significant effect on TeamParticipation (β= -.1778, t= -.3865, p=.7010), TeamActivePart (β= -.0367, t= -.8347, p=.4084), and TeamDiscussionTime (β= .1280, t= .2156, p=.8303). No significant results were found for this hypothesis, so hypothesis 2 will also be rejected.

Hypothesis 3 predicts that team discussion quantity will be positively related to team risk-taking. More team discussion will lead to more team risk taking. None of the mediating variables, TeamParticipation (β= 2.6161, t= -.7493, p=.4579), TeamActivePart (β= -41.8077,

t= -1.1866, p=.2422), and TeamDiscussionTime (β= .1666, t= .0627, p=.9503), have a significant effect on team risk taking. Since the effects of the mediating variables that were supposed to measure team discussion quantity together are all insignificant it is safe to conclude that hypothesis 3 should be rejected.

Hypothesis 4 predicted that team discussion quantity would partially mediate the relationship between work unit TMX quality and team risk taking. This would mean that a part of the variance in team risk taking is explained by work unit TMX quality directly, and a part of the variance in team risk taking is explained by work unit TMX quality indirect through team discussion quantity. Derived from hypothesis 1 being rejected there can be concluded that the direct effect of work unit TMX quality on team risk taking is already ruled out. This finding leaves the indirect effect of work unit TMX quality on team risk taking through team discussion quantity. The process analysis shows that all three indirect effects are non-significant (p>0.05). The 95% confidence intervals all include the value zero, which implies a 95% certainty of the absence of mediating effects. Hypothesis 4 is therefore rejected.

4.3 Paired samples t-test

A paired samples t-test is used to test hypothesis 5 (see Appendix 15). Hypothesis 5 predicted that precision of information would be positively related to team risk taking. This would imply that more precise information results in teams taking more risk. From the paired samples t-test it can be concluded that there is a statistically insignificant increase in team risk scores from the precise (M=34.82, SD=17.82) to the imprecise (M=41.35, SD=19.91) information condition, t (51) = 1.965, p = 0.055. The mean increase in team risk scores when information was more imprecise was 6.52 with a 95% confidence interval ranging from -.144 to 13.19. The eta squared statistic (0.072) indicates a moderate effect size. These results would imply a negative effect of precision of information on team risk taking, however this effect was not found to be significant (p=0.055). The results for the paired samples t-test imply that hypothesis 5 is rejected.

4.4 Hypothesis confirmation/rejection

In table 8 below the results of the process analysis and the paired samples t-test are summarized. No significant results were found to confirm the hypothesis predicted in the theoretical framework of this paper.

Hypothesis	Coefficients (β)	Significance (p)	Result
1. Work unit TMX quality will be positively related to team risk-taking.	-2.0214	0.8355	**Rejected**
2. Work unit TMX quality will be positively related to team discussion quantity.	-.1778 -.0367 .1280	0.7010 0.4084 0.8303	**Rejected**
3. Team discussion quantity will be positively related to team risk-taking.	2.6162 -41.8077 .1666	0.4579 0.2422 0.9503	**Rejected**
4. Team discussion quantity partially mediates the relationship between work unit TMX quality and group risk-taking.	-.4652 1.5331 .0213	0.8248 0.5740 0.9895	**Rejected**
5. Precision of Information will be positively related to team risk-taking.	-6.525	0.055	**Rejected**

**Order of the multiple β scores in one cell is; TeamParticipation-TeamActivePart-TeamDiscussionTime*

Table 8 –Results

4.5 Power analysis

A post hoc power analysis was conducted to check the chance of wrongfully rejecting or confirming hypothesis. The first 4 hypotheses were tested using Hayes' (2013) process macro, and therefore the power analysis for multiple regression from Soper (2014) is used. For hypotheses 1, 3, and 4 the statistical power was 0.3589, which implies that with a 36% certainty these hypotheses are rightfully rejected. For hypothesis 2 Hayes' (2013) process macro plotted three models, which is why three power analysis were done on this hypothesis. The effects of work unit TMX on TeamPartcipation, TeamActivePart, and TeamDiscussionTime respectively had statistical powers of 0.6617, 0.8543, and 0.3878, which implies that it is not at all certain that these effects are rightfully rejected. The 5th hypothesis was tested using a paired samples t-test. The eta squared of this effect was already mentioned in the paragraph titled; paired samples t-test. In figure 2 below, an example of the statistical power analysis is presented.

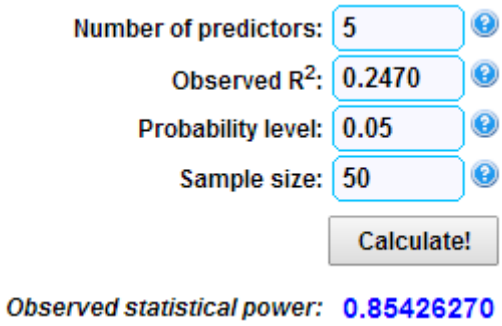


Figure 2 - Example statistical power tool (Soper, 2014)

4.6 Additional results

Here I will shortly describe some results which are not directly related to the hypotheses proposed, but which are interesting to mention. First of all the effects of some key features of teams on team risk taking were researched. The size of the team, as well as the tenure and average age of the team did not appear to have significant effects on the teams' risk taking behavior, however the size of the team did have a significant effect on two of the mediating variables; TeamParticipation and TeamActivePart. Team size has a significant negative effect on team participation (β = -.1951, t = -2.9401, p = 0.0052), and a significant negative effect on team active participation (β = -.0198, t = -3.1245, p = 0.0031). This implies that when team size increases, teams participate less and team members participate less active. The two graphs in figure 3 below show these significant effects graphically.

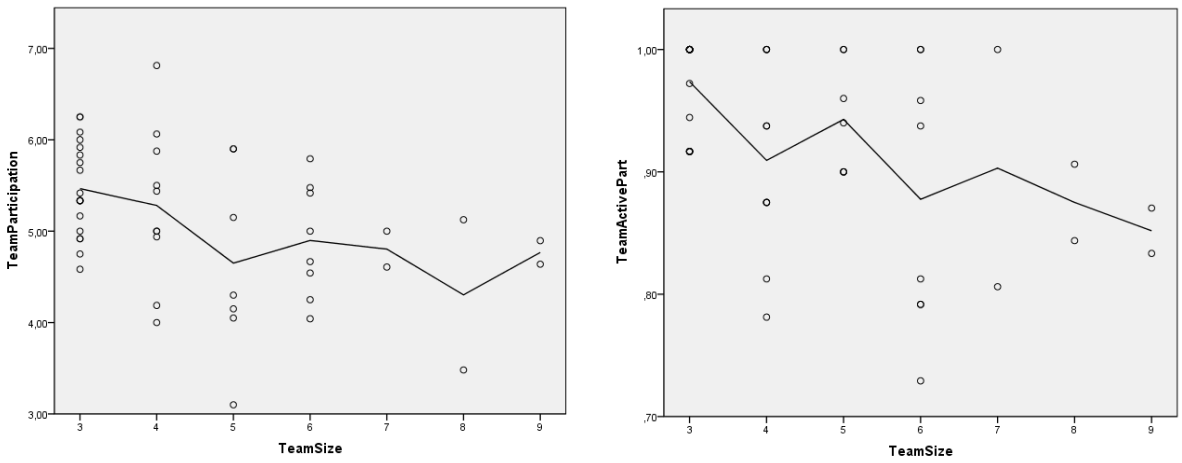


Figure 3 - Significant effects of team size on team participation and team active participation

Furthermore the data was off course checked for outliers. Several outliers were found in the risk scores for both precise and imprecise situations. These outliers indicate decisions by teams that are more extreme or deviate from the average of the participating teams. Researchers do not entirely agree on the case of deleting outliers from a dataset. Some researchers claim that outliers should be deleted from the sample because they do not represent the behavior of the entire sample. However other researchers state that deviate behavior is also relevant behavior for in the dataset. In this research it appears that the deletion of outliers can have vigorous effects on the findings of the research. When deleting the largest outlier in the risk scores for the precise cases (risk score=87.5) the relationship in hypothesis 5 would show a significant ($p=0.04$) but negative effect. When the largest outlier in the risk scores for the imprecise cases (risk score=100) would be deleted, then hypothesis 5 would be still rejected ($p=0.09$). Deleting both outliers would also result in a rejection of hypothesis 5 ($p=0.067$).

An unexpected result was with regard to one of the control mechanisms. As indicated in the method section this research wanted to control for the task that was presented to the teams. Two separate tasks, both a new project and an expansion, were presented to the teams. Proposed was that the only thing that would impact the teams' risk taking behavior was the precision of information presented to the team. However after a paired samples t-test comparing the risk scores of the new project cases with the risk scores of the expansion cases it appeared that there is a significant ($p=0.002$) difference between these two tasks. Teams took considerably more risk in the new project cases than in the expansion cases. On average they invested 10% more in the risky alternatives of the projects than in the risky alternatives of the expansions.

The results of this research also consisted of a small amount of qualitative data. General remarks were noted during each experiment by the present observers. It would be a waste to not report some findings in these remarks. With regard to the first hypothesis, participants in the experiment did provide some qualitative support for this hypothesis. Hypothesis 1 proposed that work unit team-member exchange quality would have a positive effect on team risk taking. Qualitative findings indicate that teams that perceive themselves to be capable and trust their own team tend to take more risk. Notes from the observers that seem to support this thesis are "We are a good team, we can go for it", "They mention 'how capable is our team' and 'how much do we trust our team', leading them to take the risky option", "Feeling that the team can do it and that it doesn't depend on external factors", "Leader says they should focus on the fact that they are capable to do it - they believe in themselves", and "Trust in own team".

Another phenomenon observed during the experiments is that teams feel that some risk is necessary to keep developing as a company. Risk taking is numerously associated as a survival method, a development, a challenge, and a long term investment. Teams do recognize that it is essential that a solid basis is developed before risk can be taken. Notes from the observers that support this thesis are "Want to take a certain amount of risk, because they want to keep developing", "Want to explore risky option in order to learn/develop but with a safe basis", and "Risk taking needed according to the team, because otherwise you won't survive as organization => but need a solid basis, and current expertises". This is probably the reason for a recurrent phenomenon called 'the compensation argument'. This argument entails that the teams aimed to cover the possible losses of the risky option with the profit of the safe option. Lastly, the observers during the experiments noted several times that the women in a group are more conservative than the men. This effect was noticed several times, while the reversed effect was not noticed at all.

5. Discussion

This chapter discusses the findings of this research presented in the previous chapter. The previous chapter merely discussed statistical findings with regard to the hypotheses formulated in the theoretical framework. This chapter will give some meaning to the statistical results presented in the previous section by discussing each hypothesis separately. The chapter will further elaborate on some limitations regarding this research along with some recommendations for future research.

This research was designed to explore the effect of team relationships on the risk taking behavior of the team. Team relationships were proposed to have an effect on the discussion quantity of a team and subsequently the risk taking behavior of that team. Since information is almost always scarce in decision-making processes this research aimed to incorporate incomplete information and its effect on team risk taking behavior. To research the relationships outlined above five hypotheses were proposed. These five hypotheses will be discussed separately below.

The first hypothesis proposed was the positive effect of work unit team-member exchange quality on team risk taking. TMX quality relationships were said to indicate a climate with positive social exchange characterized by flexibility, discretion, trust, respect, and open-ended relationships shared among unit members. This environment characterized by psychological safety was proposed to result in team-members feeling safe to make risky decisions. Furthermore teams high on TMX quality relationships were found to perform better, and could thus feel more confident to take risky decisions. This relationship however was not found to be significantly positive. No significant results were found on this relationship in the quantitative data. Some qualitative data gathered during the observations does indicate a relationship as proposed in the first hypothesis. Several times during the experiments teams used arguments supporting a claim that high TMX quality relationships would result in more team risk taking. A translated citation of one team was ‘We are a good team, we can do this’. The quantitative data however did not find a significant pattern which supports this claim.

Hypothesis 2 proposed that work unit team-member exchange quality would have a positive effect on team discussion quantity. This would imply that teams high on TMX quality relationships would feel safer to discuss their opinions in the team. According to the literature

the team-members in these teams are more willing to assist other members, share ideas, and share feedback, however according to the findings in this research this effect was not found. Moreover no significant results were found regarding this relationship. This would mean that teams that collectively perceive that they are willing to assist other members, share ideas and feedback, do not actually discuss more during team discussions than teams that do not perceive high TMX quality relationships. There was no significant effect of work unit TMX quality on either variable that was supposed to measure team discussion quantity. Work unit TMX quality does not have an effect on either team participation, team active participation, or team discussion time. This could be due to the fact that teams low in TMX participate equally, participate equally active, and discuss equally in time in comparison to teams high in TMX, however that these discussions are a lot less structured or effective. This would imply that another mechanism than psychological safety, indicated by high TMX quality relationships, would cause teams low in TMX quality to discuss equally in comparison to team high in TMX quality. This could indicate that work unit TMX quality does not have an effect on team discussion quantity, but does have an effect on team discussion quality. Also, as mentioned before, the variance in the scores on work unit TMX quality was quite low. Most of the teams scored themselves around 4 on a 5-point Likert scale. Low variance in work unit TMX scores would make it difficult to detect differences in team participation, team active participation, and team discussion time.

Hypothesis 3 proposed that team discussion quantity would be positively related to team risk-taking. Such an effect was not supported by the quantitative data. No significant effect was found of team participation, team active participation, or team discussion time on team risk taking. It could be that there is indeed no effect of the quantity of team discussion on a team's risk taking behavior, however another explanation could also be adduced. In the theoretical framework a theory by Stoner (1968) was already introduced and described briefly. This theory proposed that the risk taking behavior of groups depends on the value perspective held by the group. Marquis and Reitz (1968) did a research on this value proposition and researched whether teams take more or less risk depending on the expected value of the cases presented. The results of the experiments conducted by Marquis and Reitz (1968) confirm the hypothesis that group discussion enhances prior expected value. It was found that negative expected values push groups towards being more cautious, while positive expected values push groups towards being more risky. As discussed before, in this research teams tented to take more risk in the project cases in comparison to the expansion cases. The expected value of the project cases was

however positive (+60.000), while the expected value of the expansion cases was negative (-50.000). It could be that the value perspective proposed by Stoner (1968) and demonstrated by Marquis and Reitz (1968) has led to these results. Teams discussing in the expansion cases with negative expected values tended to be more cautious than teams discussing in the project cases with positive expected values. It could be that our hypothesis proposing that team discussion quantity enhances team risk taking is disproved because of these two opposing phenomena. Sometimes team discussion quantity results in teams taking more risk (positive expected values), and sometimes team discussion quantity results in teams taking less risk (negative expected values). A caveat should however be in place here, because it could also very well be the case that teams are more likely to take risk in project cases simply because these cases are considered more safe or easy by the teams.

Hypothesis 4 proposed that team discussion quantity would partially mediate the relationship between work unit TMX quality and team risk-taking. Since no relationships have been identified between either of these variables, a mediating relationship would be highly unlikely. If we were to assume that the value proposition by Stoner (1968) is valid it would still be unclear whether work unit TMX quality has any effect on team discussion quantity or on team risk taking.

Hypothesis 5 proposed that precision of information would have a direct effect team risk taking behavior. Marquis and Reitz (1968) hypothesized that uncertainty reduces the propensity of individuals to take risk. Their findings indicated that uncertainty has a systematic effect on an individual's willingness to take risk. Individuals tented to risk less in uncertain situations. This would imply a positive relationship between precision of information and team risk taking. The results did not support such a positive effect, and even leaned towards an opposite negative effect. Teams on average took less risk under the precise information conditions and more risk under the imprecise conditions. Theoretically this effect can't be explained, however the effect found can be challenged. As discussed before, the deletion of only one case can already severely alter the findings regarding this hypothesis. It is therefore plausible that the results obtained in this research can possibly be attributed to merely coincidence.

The only variable in this research that did show a significant effect was the control variable team size. The size of the team had a significant negative effect on both team participation and team active participation. This implies that when teams are bigger in size their team

participation becomes lower. Each team member has a lower participation rate, which results in a lower average team participation rate. Furthermore, when a team consists of more team members, less team members will be actively participating. In conclusion, larger teams will have less opportunity for every team member to participate, which results in less team participation in total. This implies that smaller teams are more effective in the way that they use all their team members, and participate more as a team. The chance of the formation of sub-groups is probably smaller here, which could result in coherency. Coherency could be the phenomenon resulting in more team participation, and also more active participation. Larger teams face the dangers of creating sub-groups, and subsequently the ignorance of some of their team members. This results in less team participation and less team members that actively participate during the team discussion.

The discussion of the hypotheses above shows that team relationships do not have an effect on either team discussion quantity or team risk taking. Team discussion quantity per se also does not seem to have an effect on team risk taking behavior. The incorporation of incomplete information, or the manipulation of precision of information, does not significantly influence the risk taking behavior of the teams. The next paragraph will elaborate on some limitations regarding this research.

5.1 Limitations

Several limitations in the process of this research could have caused the lack of significant results outlined in the previous sections. The first and foremost limitation is the sample size of this research along with the convenience method of sample selection. Due to the time restraints and resource limitations the realized sample size of this research was not optimal. An experiment was conducted in 51 organizational teams, with some missing data in the first team resulting in a statistical process analysis with an N of 50. If more teams were to participate in this experiment more team data would have been gathered, and subsequently more reliable results could have been realized. The power analysis showed a power under 0.9 for every result obtained, which confirms that the power of this research is not sufficient. Generalizability is a related limitation. The sample size is probably too small to generalize the findings to the population, and moreover convenience sampling makes it almost impossible to assign findings to particular characteristics of teams.

The second limitation in this research is with regard to the dependent variable team risk taking. One of the most important aspects of a well-designed experiment is the fact that it is controlled. Controlled means that the relationships of interest can be researched in a vacuum. Ideally, the variance in team risk taking scores can only be explained by the other variables of interest. However controlling for influences from outside is very difficult in this research since this is, to our knowledge, the first team risk taking experiment conducted in organizational teams in a real life setting. In controlled settings teams are more likely to take rational decisions, however in our experiment the real life cases could have resulted in irrational decisions by the teams. Irrational decisions are very hard to analyze since they do not follow a fixed pattern. Several remarks during the group discussion could have resulted in the teams taking a certain unexpected decision. For instance the first proposal made by a team member will very likely influence the final decision of that team. Decisions can also be made based on some subjective information in the cases, like a bonus or something similar. And moreover, teams can make hasty decisions based on the time pressure exerted on them. Decisions can even be made on the mood of the participants during the experiment. It could be that during the morning the team feels more adventurous than during the afternoon, which results in them taking more risk. Whether it is a low or a high quantity discussion, or whether work unit TMX quality is low or high does not really matter in these situations anymore. In summary, teams make decisions on the smallest of pieces of information that are provided to them. It could be that this research was not controlled enough, and therefore no significant results were found regarding the hypotheses.

Another limitation which is almost always present is the fact that participants are aware of the fact that they are participating in an experiment. This could result in participants acting differently in the experiment than they would in real-life situations. This research was however designed to represent an experiment which comes close to real-life organizational settings, and therefore this limitation is kept to a minimum. This experiment also included a performance reward linked to a charity fund. This should minimize the limitation that teams are not participating seriously enough, however it was observed that still some teams disregarded the donation to the charity fund. A limitation in this research could be that the charity donation was not stressed enough during the actual decision making process, resulting in teams forgetting about the donation and making more hasty and irrational decisions.

A fourth limitation identified is with regard to some of the independent variables. First, the TMX scale was translated from English to Dutch which could have damaged the scale's reliability and validity. This could also very well have resulted in low variance on this variable. The low variance of this independent variable is a problem, since no relationships can be identified without variance. Sample size might also play an important role in this limitation. The question remains whether there weren't enough teams to create variance in the TMX scale, or whether all teams just have about the same work unit TMX quality values. Another rather farfetched explanation could be the self-selection of teams in this experiment. One could imagine that only teams which have quite good relationships within the team, indicated by high work unit TMX quality, enroll themselves for participation in experiments. The second independent variable in this research 'precision of information' could also contain a limitation. Since no significant effect was found between the decisions made by teams in precise and imprecise situations is remains questionable whether teams did indeed experience imprecise or incomplete information. It could be that there is an effect of precision of information on team risk taking, however that teams did not experience the manipulation in the experiment. A solution to this limitation would have been to include a control question with regard to the manipulation of precision of information in the last questionnaire.

One of the biggest limitations of this research is concerning the mediating variable team discussion quantity. The PCA analysis did not show a coherent construct for this variable, and moreover one of the components of team discussion quantity had to be excluded from the analysis entirely. This research did not succeed in creating a reliable measure of team discussion quantity, and therefore it was difficult to draw conclusions with regard to this mediating variable. The mediating variable had to be analyzed as three separate mediating variables, which results in the fact that the variable is less complete. Team participation is something different than team discussion quantity as well as team discussion time is something different than team discussion quantity. A limitation of this research is thus that it did not succeed in creating a reliable and valid measure of team discussion quantity.

5.2 Recommendations

In accordance with the discussion and limitations of this research there are some recommendations for future research. This research was one of the first to research risk taking on the team-level. Research on team risk taking is still in a very explorative stage, and therefore future research should invest in quantitative data on team risk taking behavior and its determinants. Research in this field can help organizations design, and manage their teams effectively in accordance with the organizations' objectives.

Furthermore this research is to our knowledge the first research on team risk taking in real-life organizational settings. A lot can be learned from research in organizational settings, however analysis of the process of team decision-making is very important. Future research should also investigate the determinants of team risk taking behavior in real-life organizational settings, and aim to do this in a controlled manner. External influences should be excluded as much as possible except when they are subject of examination. This also implies that future research should be aware of time pressure in experiments. It is quite likely that time pressure had an effect on the decisions teams made in this research.

Also with regard to team risk taking, future research should reinvestigate the value proposition proposed by Stoner. This research found some results pointing towards the fact that teams take less risk in situations stipulating negative expected values and more risk in situations stipulating positive expected values. Future research should definitely invest in research on choice shifts, since no definitive explanation for this phenomenon is found yet.

Another recommendation for future research is that it should improve the measurement of team discussion quantity. Up to the present day no reliable and valid measure for this variable is developed. Before this measurement tool is developed, no clear relationship can be demonstrated between team discussion quantity and team risk taking or any other relevant variable.

Future research should also try to find quantitative as well as qualitative evidence for the relationship between work unit TMX quality and team risk taking. Even though the quantitative data in this research did not show a relationship, the limited qualitative data in this research did hint towards a relationship between these two variables. Therefore future research should pursue this indication of a relationship and collect additional data to support this thesis.

Lastly, future research should try to incorporate incomplete information in decision-making processes. This research included a manipulation of precision of information in terms of numbers, however future research can also incorporate incomplete information in the form of subjective information. This could make the manipulation more influential in the decision-making process, and this will also result in a more real-life organizational setting.

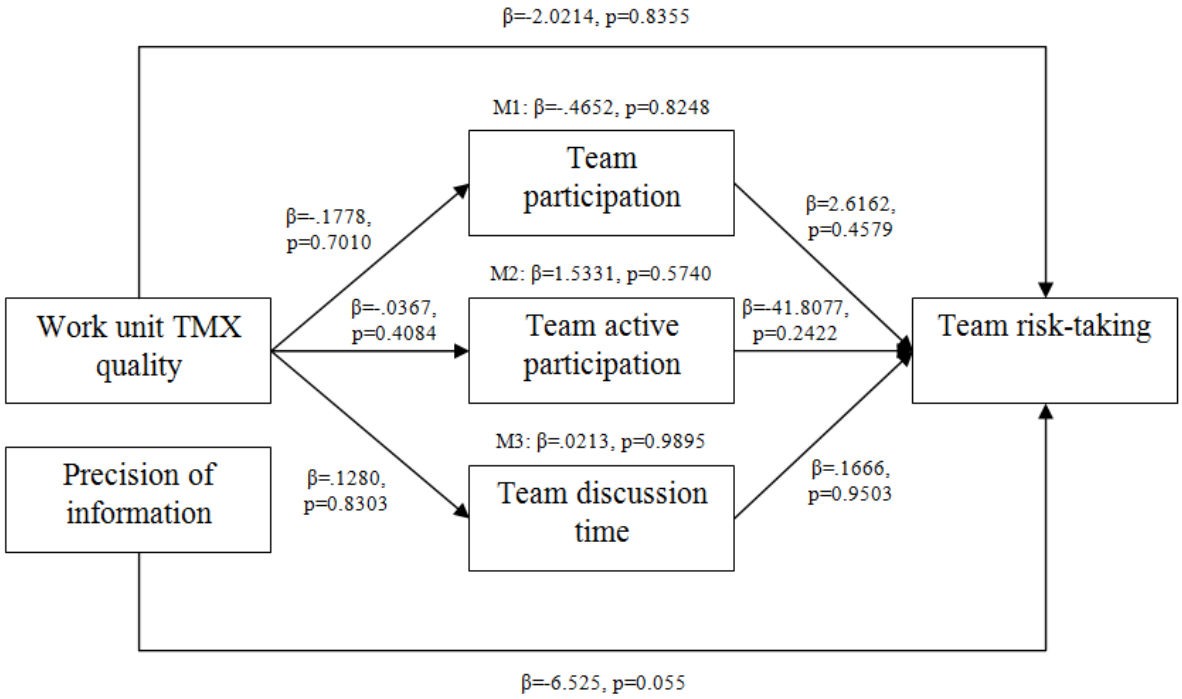
6. Conclusion

This chapter will provide a brief conclusion with regard to the findings discussed before. An answer to the research question posed in the introduction of this thesis will provided. This chapter will close with a new conceptual model displaying the proposed relationships along with their effect size and probability level.

This study aimed to research the effects of team relationships on the risk taking behavior of teams in decision-making processes under a manipulation of precision of information. The process during this decision-making was also analyzed using the variable team discussion quantity as a process variable. The following research question was posed to research the above:

> *To what extent does team discussion quantity mediate the relationship between work unit team-member exchange quality and team risk-taking, and to what extent is there a direct relationship between precision of information and team risk-taking?*

An experiment was conducted in 51 organizational teams consisting of a total of 232 participants. To answer this research question five hypotheses were formulated and tested. Data was gathered through questionnaires, observation sheets, and allocation sheets. The hypotheses were analyzed as one complete model using Hayes (2013) process macro for SPSS. The results showed no significant relationships between the variables in the model, which is why all hypotheses were rejected. Team relationships measured using work unit team-member exchange quality was not found to have an effect on either of the process variables initially proposed to measure team discussion quantity or the dependent variable team risk taking. The three process variables team participation, team active participation, and team discussion time were not found to have an effect on team risk taking. And lastly, precision of information was not found to have an effect on team risk taking. Figure 4 below shows the new conceptual model along with the effect sizes and probability levels found in this research.



** M1, M2, and M3 indicate the three mediating models*

Figure 4 - new conceptual model with effect sizes and probability levels

Given the fact that these hypotheses were rejected we can assume that all aspects of the research question can be refuted on the basis of this research. The aim of this research was to gain further understanding of the risk taking behavior of teams, the influence of team relationships, the decision-making process, and the role of precision of information. Unfortunately this research did not succeed in showing any significant results regarding the hypotheses formulated. However, since this research is young in its field a lot can be learned from its shortcomings and results. Numerous recommendations for future research were proposed and will provide guidance for future research in the field of team relationships and team risk taking.

7. Reflection

This Master Thesis was nothing like I had expected. I remember myself stating in the first circle meeting that this would be an easy circle due to the amount of teamwork involved. However, soon it became apparent that this would become one of the hardest circles in the Master's thesis. The first important decision had to be made within the first few weeks. Are we going to do an experiment in non-existing teams, or in real-life organizational teams. The first choice would ease the process of finding the teams, while the second choice would obviously be more interesting and fun. Eventually we chose to go for the real-life organizational teams because of the challenge and learning opportunities this would bring.

Then the process continued with the identification of a subject of examination for each of us. This immediately revolved into a struggle between convergence and divergence. The research subjects chosen had to have significant overlap to be able to merge them into one single experiment, but also had to have significant differences to make sure that each of us could write their own independent Master's thesis. This struggle resulted in each of us constructing a research proposal doable within the borders of a single experiment, and at the same time distinct enough to result in an individual Master's thesis.

The real work started when the research proposals were handed in. The experiment had to be designed, and the organizational teams had to be gathered. This process consisted of a full time job dividing and discussing all the tasks that had to be done. Some of us were responsible for the collection of the teams, while others were designing the experiment. Several group meetings and meetings with our supervisor eventually resulted in a research design as described in the method section of this thesis. With a research group of 7 students it is extremely hard to design such an experiment. Each member of our group had different insights, and new problems were identified in our design every day. The solution to one problem more than once resulted in another problem. This process of going back and forth between solutions and problems resulted in an experimental design which beforehand seemed waterproof. I can sincerely say that everything was thought of during the development of this experiment. For me, the development of the excel sheet was one of the key tasks. I enjoyed working together with my fellow students on this task, and I must say that I am very proud of the results achieved.

As our supervisor told us before, the actual conducting of the experiments would be the fun part of the Master's Thesis process. And indeed this was the most fun and educational part of the Master's thesis. We went to see so many different organizations, and were welcomed with hospitality every single time. Each organization was characterized by their own culture and habits. In fact we have seen 51 different organizational decision-making processes, and therefore I think we can now all be seen as something like experts on this matter. In sum, this was, as outlined by the supervisor, the most exciting and educational part of the Master's thesis.

When all data was collected the analysis part was also a real struggle. All the data had to be fitted into the analysis program SPSS, and this was sometimes more difficult than suspected. SPSS was not even designed to do analysis as we would like to do them, and therefore a plug-in designed by Hayes (2013) was installed into SPSS. This has also been a real learning process for me, for future analysis I will probably always use this plug-in since it is able to analyze multiple relationships in one model.

The actual writing of this thesis can be regarded as child's play when compared to the rest of the process. When one has deepened his understanding in all relevant theories in the field, the writing of a theoretical framework and the interpretation of the results becomes relatively easy. As well as when one has deepened his understanding in the measurement of the variables and the design of the experiment, the writing of the methods section progresses steadily.

Looking back at the entire research process I can conclude that it was a great learning experience. The foremost thing I learned was constructive discussing with fellow researchers. Without the discussions the other learning experiences like the construction of experiments, and the analysis of raw data would be negated. If this circle would have been an individual process of writing a thesis I can say with certainty that my end product would be of inferior quality. Therefore it seems only fair to end this Master Thesis with a special thanks to my fellow student/research companions.

- A special thanks towards my fellow student/research companions, I couldn't have done it without you guys! -

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Appendix 1 – Experimental protocol

Example protocol A. Other three protocols are the same only the order of the rounds is different for every team.

PREPERATION			
Time	**Who**	**What**	**Check**
30 minutes before start experiment.	Entire team (at least three of us)	Welcome at the organization, wait for all of us to arrive	
20 minutes before team shows up	Entire team (at least three of us)	- Place all the chairs and tables in the right setting (see logistics of experimental setup; appendix 2)	
		- Set up video camera as visualized in logistics	
		- Set up laptop as visualized in logistics	
		- Check if laptop and video camera work (Host)	
	Observers	- Set up observation places as visualized in logistics (chair, observation sheet, pen)	
		Divide who observes who: - Each observer observes a maximum of three participants (*see logistics of experimental setup for a visual representation of where each observer will stand during the experimental rounds*)	
	Host	- Decide where to stand during the introduction, and where to sit during the experimental phase (only if different than layout in logistics) - Have the materials for the experiment (script, questionnaire A, B, & C) ordered	
	Host + Observer 1	- Seat the participants at their appointed spots - Ask if the formal leader of the team is present or not (fill in in 'observation sheet host')	

WELCOME			
Time	**Who**	**What**	**Check**
5 minutes	Entire team	- Take positions in front of the team	
	Host	- Welcome speech	

Goedendag, welkom iedereen.

Allereerst wil ik u allen bedanken dat u vandaag de tijd heeft genomen om hier aanwezig te zijn. Mijn naam is (*naam van de gastheer/dame*), ik ben vandaag uw host. Aan uw linker- en rechterzijde vindt u mijn medestudenten (*naam observer 1*, *naam observer 2*, *naam observer 3*). Zij zullen dit experiment vandaag ondersteunen.
Samen met nog (……) andere studenten studeren wij aan de Universiteit van Tilburg en hopen wij, door middel van dit experiment, dit jaar te slagen voor onze Master Organization Studies. Mocht u als team geïnteresseerd zijn in feedback op uw teamprocessen, dan kunnen wij u deze feedback verschaffen nadat alle experimenten zijn uitgevoerd. U kunt ons dit na afloop van het experiment laten weten.

Het experiment waarin u vandaag gaat deelnemen bestaat uit vier korte rondes. In deze rondes wordt u gevraagd om als team een besluit te nemen. Verder willen wij u ook vragen om een vragenlijst in te vullen. Deze vragenlijst is verdeeld in drie delen. Het is de bedoeling dat deze vragenlijsten individueel ingevuld worden mits dit anders is aangegeven. Wij willen jullie dan ook vriendelijk verzoeken niet te overleggen met uw teamgenoten gedurende het invullen van de vragenlijst.

Als dank voor jullie bijdrage aan dit experiment, zullen wij €500 doneren aan KWF Kankerbestrijding. Echter, afhankelijk van jullie prestatie wordt dit bedrag mogelijk nog groter, of kleiner. We gaan jullie straks vier keer vragen om een bedrag van €1.000.000 te investeren. Nadat alle vier beslissingen zijn genomen zal de computer bepalen hoeveel geld jullie hebben verdiend of hebben verloren. Je hebt winst en verlies dus in eigen hand. Jullie resultaat delen we door twintigduizend, en dat bepaalt wat er naar KWF gaat. Maken jullie bijvoorbeeld €100.000 winst, dan komt er €5 bij het bedrag dat we zullen doneren. Als jullie echter €100.000 verlies maken, dan doneren we €5 minder aan KWF. Kortom, jullie beslissingen bepalen uiteindelijk de omvang van de donatie voor KWF.

Wij vragen u geen gebruik te maken van hulpmiddelen (zoals telefoons, woordenboeken en dergelijke). Wij verzoeken u om uw telefoon uit of op stil te zetten.

Je naam is niet nodig, omdat de vragenlijsten anoniem worden verwerkt. Tijdens het experiment zullen opnames gemaakt worden met een video camera. Deze beelden worden niet gepubliceerd. We zullen ze alleen gebruiken als eventueel bewijsmateriaal dat dit experiment heeft plaatsgevonden.

(SEINTJE GEVEN UITDELEN VRAGENLIJST 1)

QUESTIONNAIRE A			
Time	**Who**	**What**	**Check**
1 minute	Host	- Introduction questionnaire A - Tell the participants they can start	
	Host	- Hand out questionnaire A to the participants	
Wanneer alles duidelijk is en er geen vragen meer zijn, mag u starten met het invullen van de eerste vragenlijst. Doe dit alstublieft individueel. Wanneer u vragen heeft mag u me deze altijd stellen.			
10 minutes	Participants	- Fill in questionnaire A	
	Observers	- Write number and appearance of your participants on your observation sheets (e.g. Participant: 1.3, Appearance: bold and glasses)	
	Host	- When finished, collect questionnaire A	

PART 1.1 EXPERIMENT (expansion – precise information)			
Time	**Who**	**What**	**Check**
2 minutes	Host	- Start introducing the experiment and explain the tasks of the participants. - Tell participants how long they have for each round (7,5 minutes)	
	Host	- Hand out the vignette expansion (X) to each team member	
	Observers	- Take position for the observation of team processes	

Bedankt voor het invullen van de vragenlijst. We gaan nu beginnen aan het eerste deel van het experiment. Voor dit deel van het experiment vragen wij jullie om als team te bepalen hoeveel geld je in twee keuzes wilt investeren. Denk eraan dat jullie beslissingen bepalen of jullie geld verdienen of verspelen voor het KWF.

Jullie hebben de opdracht voor de eerste ronde ontvangen. We zullen starten met een opdracht over een bedrijfsuitbreiding: Stelt u zich voor dat uw team is aangewezen door het bestuur van uw organisatie om advies uit te brengen met betrekking tot een mogelijke bedrijfsuitbreiding naar twee andere landen: Brutopia en Fantasia. Er is een bedrag van €1.000.000 beschikbaar, en de directie vraagt uw team om dit bedrag over twee aangewezen landen te verdelen. Die verdeling is helemaal aan jullie, maar al het beschikbare geld dient

geïnvesteerd te worden. Jullie missie is uiteraard om een zo positief mogelijke uitkomst te verkrijgen. Jullie hebben 7,5 minuut de tijd om deze beslissing te maken en die tijd gaat nu in. We verzoeken jullie om de gemaakte keuze op het formulier in te vullen wat midden op de tafel ligt. Veel succes!			
7.5 minutes	Participants	- Read the scenario - Discuss insights with team members - Make a decision on how to allocate the money - Write down decision on the answer sheet in middle of table.	
	Host	- After 5 minutes, tell the participants that they have 2.5 minutes left for this round. - Remind them again after 6.5 minutes	
	Observers	- Fill in the observation sheets	
30 seconds	Host	- Collect material (answer sheet, observation sheet, vignette)	
PART 1.2 EXPERIMENT (new project – precise information)			
2 minutes	Host	- Introduction new project (precise information) - Tell participants how long they have for each round (7,5 minutes)	
	Host	- Hand out vignette New project (X)	
	Observers	- Take position for the observation of team processes	
Jullie ontvangen op dit moment de tweede opdracht van mijn collega's. Ook in deze ronde zullen jullie geld gaan verdelen over twee keuzealternatieven. Deze ronde zal betrekking hebben op de start van twee nieuwe projecten, project Home en project Swan, die jullie als team moeten gaan uitvoeren. De directie is in gesprek met twee andere organisaties over samenwerking in een project. Deze projecten, project Home en project Swan, worden allebei aan jullie team uitbesteed en aangezien jullie hoog in het vaandel staan bij de directie hebben jullie als team ook inspraak met betrekking tot de			

investering in beide projecten. Jullie kunnen dan ook als team beslissen of het bedrijf het beschikbare geld in één of beide projecten investeert. Wederom kan er een bedrag van 1.000.000 euro worden verdeeld over beide keuzeopties. Hoe het geld wordt verdeeld over de twee projecten is geheel aan jullie, echter al het geld dient wederom geïnvesteerd te worden. Jullie hebben wederom 7,5 minuut de tijd om deze beslissing te maken en die tijd gaat nu in. Veel succes.			
7.5 minutes	Participants	- Read the scenario - Discuss insights with team members - Make a decision on how to allocate the money - Write down decision on the answer sheet.	
	Host	- After 5 minutes, tell the participants that they have 2.5 minutes left for this round. - Remind them again after 6.5 minutes - Fill in the allocation of money from round 1 into excel.	
	Observers	- Fill in the observation sheets	
30 seconds	Host	- When finished, collect material (answer sheet, observation sheet, vignette)	

QUESTIONNAIRE B			
Time	**Who**	**What**	**Check**
1 minute	Observers	- Hand out questionnaire B	
	Host	- Introduction questionnaire B	
Nu jullie klaar zijn met het eerste deel van het experiment, vragen we jullie weer om een korte vragenlijst in te vullen. Daar mag u nu mee beginnen.			
10 minutes	Participants	Fill in questionnaire B	
	Host	- Fill in the allocation of money from round 2 into excel.	
PART 2.1 EXPERIMENT (expansion – imprecise information)			

	Host	- When finished, collect questionnaire B	

Time	Who	What	Check
3 minutes	Host	- Start introducing round 3, and explain the tasks of the participants. - Tell participants how long they have for each round (7.5 minutes) - Hand out the vignette Expansion (Y)	
	Observers	- Take position for the observation of team processes	

Zijn jullie benieuwd naar de antwoorden op de kennis vragen uit deze questionnaire?

(DEZE ANTWOORDEN PAS GEVEN WANNEER ALLE QUESTIONNAIRES ZIJN OPGEHAALD)

Japan heeft een grotere economie dan China	NEE, andersom
Google is de meest bezochte webpagina ter wereld	JA
BNG is de officiële afkorting van Bruto Nationaal Geluk	JA
De EU vlag heeft 24 sterren	NEE, 12
Het rendement is de opbrengst van een investering	JA
Door inflatie ontstaat er koopkrachtdaling van het geld	JA
Groenland gezien vanaf een satelliet is voornamelijk wit	JA
Coca Cola was eind 2013 een meer waardevol merk dan Apple	NEE, andersom
5+3x2 =16 en 3x(2+4)=18	NEE, eerste antwoord is 11
Economische stabiliteit verwijst naar een afwezigheid van buitensporige schommelingen in de macro-economie	JA
Een lamprei is een jong van een konijn	JA
Een muntje van 5 euro cent is in oppervlakte groter dan een muntje van 10 cent	JA

	AEX bestaat uit een fondsenaantal van 20 Een fusie is een samenwerkingsverband tussen organisaties	NEE, 25 NEE, Fusie is samenvoegen, dit is joint venture	

We gaan nu beginnen aan het tweede deel van het experiment. Ook voor dit deel van het experiment vragen wij jullie om als team te bepalen hoeveel geld je in de twee keuzes wilt investeren.

We komen nog even terug op de beslissing om te internationaliseren naar twee nieuwe landen. De directie heeft gezien dat de concurrentie zich internationaal ook uitbreidt, en zich in het bijzonder richt op de landen Ardenia en Malaguay. De directie wil daarom ook in deze landen aanwezig zijn en heeft wederom €1.000.000 hiervoor uitgetrokken. Het is de bedoeling dat jullie als team weer gaan bepalen hoe veel geld er geïnvesteerd zal worden in elk van de twee landen. Echter de informatie omtrent deze landen is beperkt, vandaar dat alle cijfers zijn aangegeven in ranges. Houdt er rekening mee dat een range van 30-60% zowel erg laag (31%) als hoog (59%) uit kan vallen.

Jullie 7,5 minuut om deze ronde te spelen gaat nu in. Succes.

7.5 minutes	Participants	- Read the scenario - Discuss insights with team members - Make a decision on how to allocate the money - Write down decision on the answer sheet	
	Host	- After 5 minutes, tell the participants that they have 2.5 minutes left for this round. - Remind them again after 6.5 minutes	
	Observers	- Fill in the observation sheets	
30 seconds	Host	- Collect material (observation sheet, answer sheet, vignettes)	
PART 2.2 EXPERIMENT (new project – imprecise information)			
3 minutes	Host	- Start introducing round 4, and explain the tasks of the participants. - Tell participants how long they have for each round (7.5 minutes) - Hand out the vignette New project (Y)	

	Observers	- Take position for the observation of team processes	
Twee grote klanten hebben het bestuur benaderd voor de uitvoering van twee verschillende projecten, genaamd Project Hydra en Project Arrow. Het bestuur heeft jullie team aangewezen voor de uitvoering van deze projecten. Een bedrag van €1.000.000 mag weer verdeeld worden over de projecten. Echter de informatie omtrent deze projecten is beperkt, vandaar dat alle cijfers zijn aangegeven in ranges. Houdt er rekening mee dat een range van 50-80% zowel erg laag (51%) als hoog (79%) uit kan vallen. Jullie 7,5 minuut om deze ronde te spelen gaat nu in. Succes.			
7.5 minutes	Participants	- Read the scenario - Discuss insights with team members - Make a decision on how to allocate the money - Write down decision on answer sheet.	
	Host	- After 5 minutes, tell the participants that they have 2.5 minutes left for this round. - Remind them again after 6.5 minutes - Fill in the allocation of money from round 3 into excel.	
	Observers	- Fill in the observation sheets	
	Host	- Collect material	

QUESTIONNAIRE C

Time	**Who**	**What**	**Check**
1 minute	Host	- Introduction questionnaire C	
	Host	- Hand out questionnaire C + all the vignettes	
Nu dat jullie klaar zijn met het tweede deel van het experiment, vragen we jullie om de laatste, korte vragenlijst in te vullen. En daar mogen jullie nu mee beginnen. Succes.			

8 minutes	Participants	- Fill in questionnaire within 8 minutes	
	Host + observers	- Fill in the allocation of money from round 4 into excel. - Calculate final score for the experiment	
	Observer 3	- When finished, collect questionnaire C	

COMPLETION EXPERIMENT

Time	Who	What	Check
5 minutes	Host	- Announce final score (in total you won/lost €…… ; this means a donation of €…… to KWF) - Word of thanks	

Nu alle rondes geweest zijn, is de tijd om de score bekend te gaan maken. Gedurende de verschillende rondes hebben jullie het beschikbare budget verdeeld over verschillende opties. Of jullie beslissingen positief of negatief uitgevallen zijn, zal deels bepaald worden door de computer. Via een randomizer beslist de computer of jullie verlies, lage winst of hoge winst zullen hebben. Kortom, de uitkomst van de computer speelt een rol in jullie eindbedrag. Dit betekend dat wanneer jullie 'verloren' hebben, jullie het niet automatisch slecht hebben gedaan. Ik ga nu 1x op de knop drukken.

De totale winst die jullie met de besluiten hebben gemaakt bedraagt €…… Dit zal resulteren in een donatie ter waarde van €……. aan KWF Kankerfonds.

Het start bedrag wat wij doneren aan het KWF is 500 euro, dit beteken dat jullie bedrag hier vanaf/erbij op wordt geteld.

Wij willen u hartelijk bedanken voor de interesse en deelname aan ons experiment. Hiermee hebt u ons enorm geholpen met onze dataverzameling, wat ons hopelijk weer een stap dichter bij het afstuderen brengt. [Verder willen we u nog vragen om dit experiment vertrouwd te houden indien er nog meer teams van uw organisatie deelnemen.] Indien gewenst sturen wij u feedback nadat alle experimenten zijn uitgevoerd. Mocht u nog vragen over het experiment of het gebruik van de data hebben, stel ze gerust. Wij wensen u verder nog een prettige dag.

5 minutes	Host + observers	- Answer questions	

		- Note if the team wants to receive feedback after all the experiments are conducted - Give everyone a hand and thank them personally	

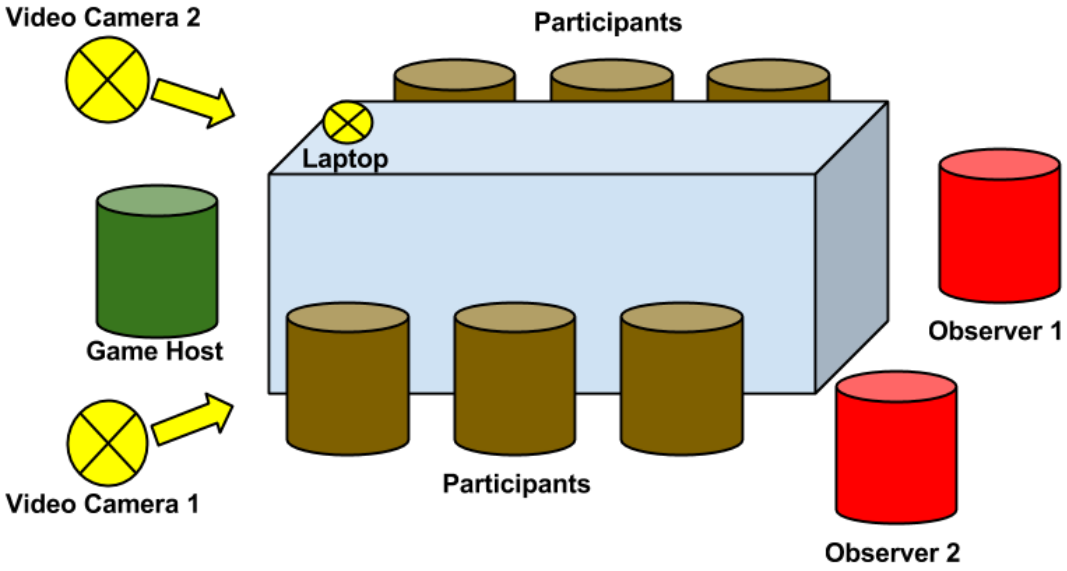
BEFORE LEAVING THE ROOM			
Time	**Who**	**What**	**Check**
10 minutes	Entire team	- Put the room back in its original state	
		- Gather the materials in an envelope (Observation sheets, questionnaires, answer sheets).	
		- Save everything on the laptop (See logistics for details; appendix 2)	

Appendix 2 – Experimental logistics

Materials

Materials	Number	Check
Video Camera and tripod	2	
Pens	1 for each participant	
Marker	1 for each participant	
Laptop	1	
Set of cards with participant numbers	1 (1-15)	
Envelope to collect all the paperwork	1	
Calculator	2	
Blanco paper	4 for each participant	
Printed materials	Number	Check
Vignettes	1 of each round for each team member, 1 for the host	
Forms to write down final decision of the team	1 for each round	
Questionnare set A, B & C	1 for each participant	
Protocol	1 for the host	
Observation sheet	4x number observers (1 for each observer each round)	
Time schedule form	1 for the host	
Contract in case participants refuse to be filmed	1	
Sheet to write down general control variables and special things that happened during the experiment (Like a phone went off or there was some disturbance)	1	

Room set up



Up front, we will tell the organization we will need a room to fit all team members as well as our equipment, and they should preferably be able to sit around a table to discuss. The cameras will be set up so to capture the faces of all the employees, so that it is possible to analyse who said what at a later stage. The host will be seated so he/she is visible for all participants, while the observers will be seated out of the way of discussion, but so that they have a clear overview to do their observational tasks.

Confidentiality

As researchers we will need to separate the different teams from each other, both in order to send them the results and for documentation regarding where the data is from originally. However, the data is only shared among the researchers and the research quality committee. Otherwise, the data will be completely anonymous, so in the final documents, the thesis, and the dataset, nothing private about the teams will be revealed. Thus, one document containing sensitive information and one copy of the videotaped experiment will be stored for the quality committee. It is important to emphasize that the research committee keeps all documents confidential for anyone outside of the committee. The video and data is stored with the team members

Interruptions and extraordinary events

We will ask all non-participating employees to exit the room to minimize distractions and influence. If there is a team leader or supervisor present, they will be asked to either join the

experiment with his/her team or to leave the room, as they might disturb or influence the decisions of the team. We will also ask all participants to not use their cell phones or other apparatuses that may distract them. However, if someone is expecting an important call the employee can leave the room if the call is received, and we will then be careful to notice if their absence has any noticeable effect on the decision-making of the team. If someone arrives late, he/she will be able to join the experiment when the next round/vignette begins and will have to fill in the required questionnaires. Of course, a number of unforeseen distractions could occur, from teams not understanding the experiment to a fire alarm going off. However, we hope the 15-minute buffer we have to conduct the experiment will prepare us for all such unexpected events.

Appendix 3 – Questionnaire A

De vragen uit deze vragenlijst worden anoniem verwerkt!

1. Participant nummer:____ *(In te vullen door host)*

2. Wat is uw geslacht: Man / Vrouw

3. Wat is uw leeftijd: ____

4. Uit hoeveel mensen bestaat uw team origineel? ____

5. Hoe lang bestaat uw team in deze samenstelling? ____

6. Sinds wanneer bent u onderdeel van dit team? __-____ (maand en jaar)

	Volledig oneens	Oneens	Eens noch oneens	Eens	Volledig eens
7. Leden van het team spreken geregeld af om formele en informele gesprekken te houden.	O	O	O	O	O
8. Als team hebben we geregeld contact met elkaar.	O	O	O	O	O

Geef bij onderstaande stellingen aan of u vindt dat deze 'waar' of 'onwaar' zijn. Kruis het juiste antwoordalternatief aan. Er zijn geen goede of foute antwoorden, kies voor het antwoordalternatief dat het dichtste bij uw mening ligt. Als u niet zeker bent of het waar of onwaar is, kruist u 'onzeker' aan.

	Waar	Onwaar	Onzeker
9. Ervaring heeft mij geleerd dat rationeel denken de enige realistische basis is voor het nemen van besluiten	O	O	O
10. Om een probleem op te lossen, moet ik elk onderdeel tot in detail bestuderen	O	O	O
11. Ik ben het meest effectief wanneer mijn werk bestaat uit taken in een duidelijke volgorde	O	O	O
12. Ik heb moeite om samen te werken met mensen die 'in het diepe duiken' zonder de precieze aspecten van het probleem te overwegen	O	O	O
13. Ik ben zorgvuldig in het opvolgen van regels en voorschriften op het werk	O	O	O
14. Ik vermijd het ondernemen van acties waarvan de kansen op succes klein zijn	O	O	O
15. Ik ben geneigd om rapporten globaal door te nemen in plaats van ze gedetailleerd te lezen	O	O	O

	Waar	Onwaar	Onzeker
16. Mijn begrip van een probleem komt meer voort vanuit grondige analyse dan van vlagen van inzicht	O	O	O
17. Ik probeer routine in mijn werk te houden	O	O	O
18. Het soort werk wat mij het meest bevalt, is wanneer het een stap-voor-stap aanpak vereist	O	O	O
19. Ik maak zelden besluiten welke ik niet grondig afgewogen heb	O	O	O
20. Ik prefereer chaotische activiteit boven geordende passiviteit	O	O	O
21. Wanneer er genoeg tijd is, zou ik elke situatie vanuit alle invalshoeken bekijken	O	O	O
22. Om succesvol te zijn in mijn werk, vind ik het belangrijk om te voorkomen dat ik gevoelens van andere mensen kwets	O	O	O
23. De beste manier voor mij om een probleem te begrijpen, is door het op te splitsen in kleinere onderdelen	O	O	O
24. Ik vind dat een zorgvuldige, analytische benadering voor het maken van besluiten te lang duurt	O	O	O
25. Ik boek de meeste vooruitgang wanneer ik gecalculeerde risico's neem	O	O	O
26. Ik vind dat het mogelijk is om te geordend te werk te gaan bij sommige taken	O	O	O
27. Ik heb altijd aandacht voor details, voordat ik tot een conclusie kom	O	O	O
28. Ik maak veel van mijn beslissingen op basis van intuïtie	O	O	O
29. Mijn filosofie is 'het zekere voor het onzekere nemen'	O	O	O
30. Bij het maken van een beslissing, neem ik mijn tijd en overweeg alle relevante factoren	O	O	O
31. Ik kan het beste opschieten met rustige, bedachtzame mensen	O	O	O
32. Ik heb liever dat mijn leven onvoorspelbaar is, dan dat het een regelmatig patroon volgt	O	O	O
33. De meeste mensen beschouwen me als een logisch denker	O	O	O
34. Om feiten te begrijpen heb ik een goede theorie nodig	O	O	O

	Waar	Onwaar	Onzeker
35. Ik kan het beste werken met spontane mensen	O	O	O
36. Ik vind gedetailleerd, methodisch werken voldoening geven	O	O	O
37. Mijn benadering voor het oplossen van een probleem is door te focussen op één onderdeel tegelijk	O	O	O
38. Ik ben voortdurend op zoek naar nieuwe uitdagingen	O	O	O
39. In vergaderingen ben ik meer aan het woord dan de meeste anderen	O	O	O
40. Mijn intuïtie is een even goede basis voor besluitvorming als zorgvuldige analyse	O	O	O
41. Ik ben het soort persoon dat risico's durft te nemen	O	O	O
42. Ik maak snel beslissingen in plaats van elk detail te analyseren	O	O	O
43. Ik ben altijd bereid om een gok te wagen	O	O	O
44. Formele plannen zijn meer belemmerend dan helpend in mijn werk	O	O	O
45. Ik denk meer in ideeën in plaats van feiten en cijfers	O	O	O
46. Ik vind dat uitgebreid analyseren vertragend werkt.	O	O	O

De volgende stellingen hebben betrekking op de samenstelling van het team tijdens dit experiment. Geef aan in hoeverre u het eens bent met de stellingen. Kruis het juiste antwoordalternatief aan. Er zijn geen goede of foute antwoorden, kies voor het antwoordalternatief dat het dichtste bij uw mening ligt.

	Volledig oneens	Oneens	Eens noch oneens	Eens	Volledig eens
47. Andere teamleden bieden mij regelmatig steun en aanmoediging	O	O	O	O	O
48. Ik bied andere teamleden regelmatig steun en aanmoediging	O	O	O	O	O
49. Andere teamleden communiceren openlijk met mij over wat ze van mij verwachten	O	O	O	O	O

	Volledig oneens	Oneens	Eens noch oneens	Eens	Volledig eens
50. Ik communiceer openlijk met andere teamleden over wat ik van hun verwacht	O	O	O	O	O
51. Andere teamleden erkennen regelmatig mijn inspanningen	O	O	O	O	O
52. Ik erken regelmatig de inspanningen van andere teamleden	O	O	O	O	O
53. Andere teamleden doen regelmatig dingen waardoor mijn werk makkelijker wordt	O	O	O	O	O
54. Ik doe regelmatig dingen waardoor het werk van mijn teamleden makkelijker wordt	O	O	O	O	O
55. Als ik het druk heb, bieden andere teamleden vaak hun hulp aan	O	O	O	O	O
56. Als andere teamleden het druk hebben, bied ik vaak mijn hulp aan	O	O	O	O	O
57. Andere teamleden stellen regelmatig ideeën voor die ik kan gebruiken	O	O	O	O	O
58. Ik stel regelmatig ideeën voor die mijn teamleden kunnen gebruiken	O	O	O	O	O

59. Hoe zou u uw werkrelatie met andere teamleden in het algemeen karakteriseren?

Extreem ineffectief	Slechter dan gemiddeld	Gemiddeld	Beter dan gemiddeld	Extreem effectief
O	O	O	O	O

Appendix 4 – Vignettes (in Dutch)

Bedrijfsuitbreiding (precise)

Stelt u zich voor dat uw team is aangewezen door het bestuur van uw organisatie om advies uit te brengen met betrekking tot een mogelijke bedrijfsuitbreiding naar twee andere landen: Brutopia en Fantasia. Er is een bedrag van €1.000.000 beschikbaar voor deze uitbreiding. De directie vraagt jullie team om dit bedrag over de twee aangewezen landen te verdelen. Die verdeling is helemaal aan jullie, maar al het beschikbare geld dient geïnvesteerd te worden. De vraag van de directie is dus om hen te adviseren hoeveel geld er volgens jullie geïnvesteerd dient te worden in beide uitbreidingsinitiatieven, uiteraard met een missie om zoveel mogelijk positieve resultaten te boeken.

Brutopia

Brutopia is geografisch gezien dichtbij en heeft een vergelijkbare cultuur met het land waarin jullie bedrijf gevestigd is. Ook is de economie stabiel en tonen de economische vooruitzichten aan dat dit de komende jaren niet zal veranderen. Wanneer jullie besluiten om geld te investeren in een bedrijfsuitbreiding naar het land Brutopia is er een kans van 25% om voor iedere geïnvesteerde euro een winst van €0,60 te behalen. De winst kan ook relatief klein uitpakken, namelijk €0,10 bovenop iedere geïnvesteerde euro. De kans dat dit gebeurd is 50%. De totale kans is dus 75% dat deze uitbreiding leidt tot positieve resultaten. De financiële afdeling van jullie bedrijf heeft geschat dat er weinig redenen zijn waarom deze uitbreiding zal falen. Verder heeft het bestuur veel vertrouwen in jullie als team op basis van eerder behaalde resultaten. Op basis van bovengenoemde schattingen worden jullie dan ook geacht om goed te presteren en zullen er geen bonussen toegekend worden indien de uitbreiding positieve resultaten heeft voor de organisatie. Mocht de bedrijfsuitbreiding falen (kans is 25%) dan is dit financieel gezien ongunstig, aangezien de gehele investering verloren zal gaan. Echter, een gefaalde uitbreiding heeft geen verdere negatieve gevolgen die noemenswaardig zijn voor het bedrijf.

Fantasia

De markt waarin jullie opereren is in het land Fantasia groeiende en er zijn voldoende kansen om een goed aandeel te verkrijgen. Fantasia ligt wel op een ander continent. Door de relatief grote afstand moeten jullie beseffen dat er sprake is van een verschil in cultuur en werkwijze. De economie is echter groeiende en de vooruitzichten zijn gunstig, wat betekent dat jullie snel uit kunnen breiden als de juiste beslissingen gemaakt worden. Hierdoor kan de winst dus hoog zijn! Indien er namelijk succes bereikt wordt, maakt het bedrijf voor iedere geïnvesteerde euro een winst van €3,40. De verwachtingen op basis van de huidige situatie in het land, voorspellen dat de kans op een succesvolle bedrijfsuitbreiding 20% is. Als de business in Fantasia succesvol is, ontvangt elk teamlid een bonus. Ook is de kans zeer groot dat jullie team in de toekomst vergelijkbare prestigieuze taken opgedragen krijgt door het bestuur.

De kans is echter relatief groot dat de bedrijfsuitbreiding negatieve gevolgen heeft voor het bedrijf. Zo is er een kans van 30% dat het bedrijf voor iedere geïnvesteerde euro slecht €0,90 terugkrijgt. De uitbreiding kan echter ook flink falen – wat een kans van 50% heeft – waarbij het volledige geïnvesteerde bedrag verloren gaat. Dit betekent ook dat de reputatie van de organisatie er flink onder te lijden zal hebben, waardoor er nog eens 40% bovenop het investeringsbedrag verloren gaat door reputatieschade.

Bedrijfsuitbreiding (imprecise)

Stelt u zich voor dat uw team is aangewezen door het bestuur van uw organisatie om advies uit te brengen met betrekking tot een mogelijke bedrijfsuitbreiding naar twee andere landen: Ardenia en Malaguay. Er is een bedrag van €1.000.000 beschikbaar voor deze uitbreiding. De directie vraagt jullie team om dit bedrag over de twee aangewezen landen te verdelen. Echter, de informatie omtrent deze landen is beperkt, vandaar dat alle cijfers zijn aangegeven in ranges. Houd er rekening mee dat een range van 30-60% zowel erg laag (bijv. 31%) als hoog (bijv. 59%) uit kan vallen. De verdeling van het geld is helemaal aan jullie, maar al het beschikbare geld dient geïnvesteerd te worden. De vraag van de directie is dus om hen te adviseren hoeveel geld er volgens jullie geïnvesteerd dient te worden in beide uitbreidingsinitiatieven, uiteraard met een missie om zoveel mogelijk positieve resultaten te boeken.

Ardenia

De economie in het land Ardenia is stabiel en als bedrijf zijn jullie bekend met haar markt. De competitie is laag, waardoor er een goede kans is op succesvol integreren in de markt van Ardenia. Wanneer het bestuur besluit om een bedrijfsuitbreiding te doen naar dit land en deze uitbreiding blijkt succesvol, dan zal het bedrijf voor iedere geïnvesteerde euro een winst van €0,60 verdienen. De kans dat dit gebeurt, is 10-40%. Er is echter ook een kans van 35-65% dat het succes beperkt blijft tot een winst van €0,10 bovenop iedere euro. Een kleine winst is dus zeker niet ondenkbaar in dit scenario. Het bestuur van jullie bedrijf heeft het vertrouwen dat jullie goed advies geven op basis van jullie kennis.

Het land is relatief dichtbij en heeft een vergelijkbare cultuur. Verder is de markt bekend voor jullie bedrijf. De kansen zijn daarom ook relatief klein dat de volledige investering verloren zal gaan. Indien de volledige investering toch verloren gaat zal de organisatie een behoorlijke financiële tegenvaller moeten verwerken. De kans dat dit gebeurt, is 10-40%. Er zullen echter geen verdere negatieve consequenties zijn voor de organisatie die noemenswaardig zijn. Zoals vermeld heeft het bestuur vertrouwen in jullie team en een succesvolle uitbreiding van het bedrijf. Hiervoor zal jullie team geen extra beloningen ontvangen.

Malaguay

De economie in Malaguay maakt momenteel een groeispurt door. De competitie in de markt is matig, waardoor een uitbreiding naar dit land aantrekkelijk kan zijn voor een snelle groei van de business. Als jullie besluiten te investeren in een bedrijfsuitbreiding naar Malaguay en die uitbreiding een groot succes blijkt te zijn, dan zal jullie bedrijf voor iedere geïnvesteerde euro een winst behalen van €3,40. De schattingen van de financiële afdelingen tonen aan dat de kans op groot succes tussen de 5% en 35% ligt. In geval van succes zal elk teamlid een fraaie bonus ontvangen en bovendien kan het team rekenen op positieve feedback en uitdagende opdrachten in de toekomst.

Malaguay ligt op een ander continent waardoor de cultuur behoorlijk anders is dan in het land waar jullie bedrijf momenteel opereert. Hierdoor moet het bedrijf rekening houden met mogelijke problemen tijdens het aanpassen aan deze nieuwe omgeving. De kans dat de uitbreiding negatieve consequenties heeft voor jullie bedrijf is dus relatief groot. Zo is er een kans van 15-45% dat het bedrijf voor iedere geïnvesteerde euro slechts €0,90 terugkrijgt. In dit geval is er dus sprake van een klein verlies voor jullie organisatie. Het is echter ook mogelijk dat de uitbreiding faalt. In dat geval gaat de gehele investering verloren plus nog eens een verlies van 40% van de investering door reputatieschade. De kans op een dergelijk verlies is 35-65%.

Nieuw team project (precise)

Stelt u zich voor dat uw team is aangewezen door het bestuur van uw organisatie om advies uit te brengen met betrekking tot het starten van twee nieuwe projecten. De directie is in gesprek met twee andere organisaties over samenwerking in een project. Deze projecten, project Home en project Swan, worden allebei aan jullie team uitbesteed en aangezien jullie hoog in het vaandel staan bij de directie hebben jullie als team ook inspraak met betrekking tot de investering in beide projecten. Jullie kunnen dan ook als team beslissen of het bedrijf het beschikbare geld in één of beide projecten investeert. Er kan een bedrag van €1.000.000 worden verdeeld over beide keuzeopties. Hoe het geld wordt verdeeld over de twee projecten is geheel aan jullie, echter al het geld dient wederom geïnvesteerd te worden.

Project Home

Jullie organisatie heeft een langdurige en sterke relatie met de partner die dit project aandraagt. Het team is bekend met de verwachtingen van de partner, evenals de werkwijzen van de partner. Bovendien zijn jullie meer dan vertrouwd met de technologieën die worden gebruikt in dit project. Als dit project een succes blijkt te worden, dan verwacht het bedrijf dat iedere geïnvesteerde euro een winst van €0,70 zal opleveren. De kans op succes is 30%. Succes betekent een verhoogd vertrouwen van het management in jullie team en daarnaast een nog sterkere relatie met de partner. Er is echter ook een lagere winst mogelijk - met een kans van 50% - waarbij voor iedere geïnvesteerde euro een winst van €0,10 wordt geboekt. Er is dan ook een kans van 80% dat dit project met deze partner positieve resultaten oplevert. Omdat het management er min of meer vanuit gaat dat dit project positieve resultaten gaat opleveren, zijn er aan dit project geen bonussen of salarisverhogingen verbonden voor het team. Wanneer jullie team er niet in slaagt dit project tot een goed einde te brengen, dan zal de gehele investering verloren gaan. De kans hierop is 20%. Naast het feit dat dit een behoorlijke financiële tegenvaller is, zullen er echter geen verdere negatieve of noemenswaardige consequenties zijn voor jullie team en de organisatie.

Project Swan

Project Swan betreft de samenwerking met een bestaande partner, maar er dient wel gewerkt te worden met een technologie waar beide bedrijven onbekend mee zijn. De partner heeft de expertise om deze nieuwe technologie te implementeren in het project. Als team zullen jullie wel zo snel mogelijk bekend moeten worden met de technologie. De kans dat dit project tot een groot succes zal leiden is 25%. Succes betekent in dit geval wel dat het bedrijf voor iedere geïnvesteerde euro een behoorlijke winst behaald van €2,40. Bij succes kan ieder teamlid een bonus verwachten in de nabije toekomst. Eveneens zal, bij succes, jullie team in de toekomst vaker worden gevraagd om projecten uit te voeren voor het bedrijf.
Het project kan echter ook negatieve gevolgen hebben voor de organisatie. Zo is er een kans van 45% dat er voor iedere geïnvesteerde euro slechts €0,80 zal worden terugverdiend. Indien dit project volledig faalt, zal dit resulteren in het verlies van de totale investering. Hier komt nog bij dat reputatieschade er voor zorgt dat er extra kosten zullen zijn. In dit geval is er een totaal verlies van de investering plus een extra €0,50 per geïnvesteerde euro. De kans op een dergelijk verlies is naar schatting 30%.

Nieuw team project (imprecise)

Stelt u zich voor dat uw team is aangewezen door het bestuur van uw organisatie om advies uit te brengen met betrekking tot het starten van twee nieuwe projecten. De directie is in gesprek met twee andere organisaties over samenwerking in een project. Deze projecten, project Hydra en project Arrow, worden allebei aan jullie team uitbesteed en aangezien jullie hoog in het vaandel staan bij de directie hebben jullie als team ook inspraak met betrekking tot de investering in beide projecten. Echter, de informatie omtrent deze projecten is beperkt, vandaar dat alle cijfers zijn aangegeven in ranges. Houd er rekening mee dat een range van 50-80% zowel erg laag (51%) als hoog (79%) uit kan vallen. Jullie kunnen dan ook als team beslissen of het bedrijf het beschikbare geld in één of beide projecten investeert. Er kan een bedrag van €1.000.000 worden verdeeld over beide keuzeopties. Hoe het geld wordt verdeeld over de twee projecten is geheel aan jullie, echter al het geld dient wederom geïnvesteerd te worden.

Project Hydra

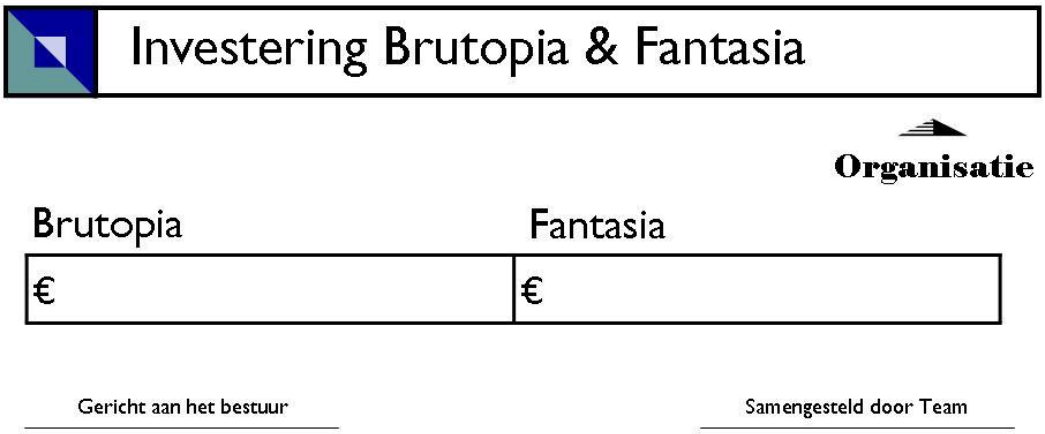
Project Hydra is vergelijkbaar met projecten die jullie team eerder heeft uitgevoerd. Jullie zijn dan ook bekend met de werkwijzen van dit nieuwe project. Het bedrijf is ook al in bezit van de software die nodig is om dit project uit te voeren. Verder is jullie team ook enigszins bekend met de verwachtingen en werkwijzen van jullie partner. Door deze factoren is de kans dat dit project succesvol wordt dan ook relatief hoog, namelijk 15-45%. Indien er sprake is van succes dan wordt er voor iedere geïnvesteerde euro een winst van €0,70 behaald. Het is echter ook mogelijk dat het project een gematigde winst oplevert. Hiervoor is er een kans van 35-65% en wordt er voor iedere geïnvesteerde euro €0,10 extra verdiend. Het management verwacht dat jullie team dit project tot een succes zal maken en daarom dient uw team niet te rekenen op al te veel erkenning wanneer het project daadwerkelijk positieve resultaten oplevert. Positieve resultaten zullen er wel voor zorgen dat het vertrouwen van het management in jullie team stijgt, evenals de relatie met de partner. Mocht het project falen dan zijn de vooruitzichten financieel gezien een stuk minder aantrekkelijk. In dat geval zal namelijk de gehele investering verloren gaan. De kans dat het project faalt, is geschat op 5-35%

Project Arrow

Project Arrow heeft betrekking op een contract met een nieuwe partner. Voor het project is het gebruik van nieuwe software nodig. De organisatie waar jullie mee samenwerken heeft het systeem recentelijk geïmplementeerd om de efficiëntie te verbeteren. Jullie team zal dan ook zo snel mogelijk vertrouwd moeten raken met deze software om het project tot een succes te maken. Als jullie team erin slaagt om dit project tot een succes te maken, wordt er verwacht dat iedere geïnvesteerde euro een winst van €2,40 gaat opleveren. De kans op succes is 10-40%. Het management is bereid een financiële beloning uit te betalen indien het project succesvol afgerond wordt. Omdat jullie team vertrouwd is geraakt met de software van het project zal het team in de toekomst meerdere interessante projecten kunnen verwachten.

Het is echter ook goed mogelijk dat de uitkomsten financieel gezien negatief zullen zijn. Er is bijvoorbeeld een kans van 30-60% dat er voor iedere geïnvesteerde euro slechts €0,80 wordt terugverdiend. Verder vertellen de schattingen van het financiële departement dat als het project faalt - de kans hierop is 15-45% - de gehele investering verloren gaat. Bovendien zal er dan nog eens een extra €0,50 bovenop iedere geïnvesteerde euro verloren gaan als gevolg van reputatieschade voor zowel jullie bedrijf als het team zelf.

Appendix 5 – Example answer sheet



Appendix 6 – Description of experimental design and calculations

Description

The time schedule and set-up for each experiment is shown in chapter 3.3, and will here be more thoroughly explained. Firstly, the researchers arrived at the organization about 30 minutes before the experiment starting time, brining all necessary equipment and setting up the room in the preferred manner (see appendix 2).

When arriving, we met our contact person at the organization who then brought us to the assigned room. Then, the room was organized. This usually included a central table for the team to answer questionnaires and discuss allocations. Furthermore, a host space was created, either on the participants' table or at a separate one. The observers created their own spot in the room with a clear overview for their observational tasks. The cameras were arranged to capture all the employees, making it possible to analyze who said what. A picture of the preferred room set-up is pictured in Appendix 2.

Meanwhile, the host sorted the vignettes, answer sheets, and questionnaires in the right order for this particular experiment (depending on the chosen order of scenarios and protocols). The host and observers placed participant numbers, blank paper, and pens on the table. With the room ready, the team would be welcomed at the pre-agreed starting time, and the host would run the introduction. This included a quick description of who we are and our motivation for running the experiment, while making sure not to disclose any details that could affect the experiment (the fact that risk is the main area of interest was for instance not revealed). The host also engaged in some small talk, asking short questions about the team's particular job is etc., to instil some commitment and affection towards us and create a relaxed atmosphere.

After this introduction, questionnaire A was handed out. Each questionnaire was equipped with a unique participant number correlating with the team number, and the participant number on the table. After finishing and collecting Questionnaire A, the host introduces the first round of our experiment. Here, they would get a scenario representing either a new project case or a business expansion case, with approximately 7.5 minutes for each round to read and discuss the case. The observers handed out the vignettes describing the particular cases to the participants, and provided an answer sheet. The participants were then asked to allocate an amount of 1 million euros between two decision alternatives, and subsequently fill this in on the answer

sheet. After each completed round, the scenarios, answer sheets and all notes were taken away so they do not influence teams at subsequent rounds. Then the host started the second round introduction. This round is similar to the first round, and represents either a new project case or a business expansion case depending on the first round. After this round questionnaire B was handed out, which helps to prevent learning effects of the first two rounds. While the first two rounds included two vignettes with either imprecise or precise information, the subsequent two rounds will then consist of the contrary level of information. After these last two rounds, questionnaire C was handed out. During completion of the last questionnaire, the host or one of the observers filled the answer sheets into an excel program while also stopping the cameras. This excel program takes into account the allocation of the team before randomly deciding the win/loss situations of the different scenarios, and comes out with final winnings or losses of the team. This total win/loss was divided by 20.000 to calculate their contribution to the charity fund. These calculations were then presented and explained to the team. After thanking the team for the cooperation, all data was stored away while the room was cleaned and left in its original setting.

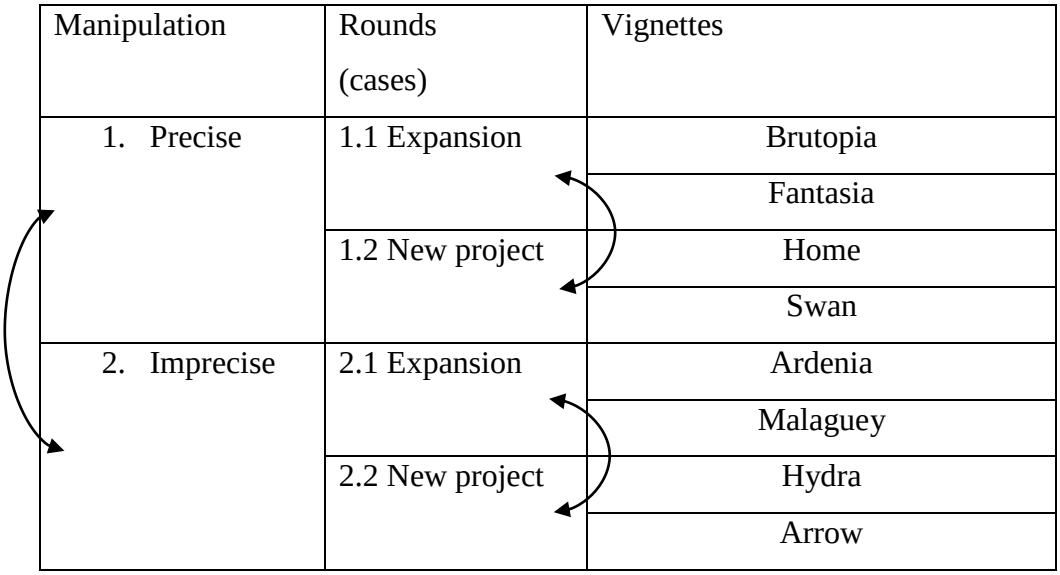


Figure 4 – Visualization experimental design

Calculations

Expected values (EV) of the scenarios are calculated to be exactly the same within one scenario. In this way there is no rational argument for choosing the risky option in favor of the safe option (or vice versa). Since the vignettes were developed to be similar except for their riskiness, choices will be made purely on the differences in risk between the choice alternatives within a scenario. Between the two scenarios (expansion and new project) the expected values were varied, because otherwise the numbers in the vignettes would be too similar to the other scenario. In the excel sheet the following calculation was used for the expected values:

$$EV(X) = (p1*e1*X) + (p2*e2*X) + (p3*e3*X) – X$$

EV(X) : Expected value for investment
X : Investment in €'s
p : Probability of outcome, p1=success, p2=moderate success/failure, p3=failure
e : Amount of win/loss, e1=success, e2=moderate success/failure, e3=failure

Using this calculation in the excel sheet allowed us to adjust the probability of win/loss and the associated payouts in order to reach an optimal distribution that would represent reality, and also clearly differentiate between safe and risky. In the tables below an overview of the definitive probabilities of win/loss and the associated payouts is presented.

In the tables below we can see the probability of winning, the associated payouts, and the expected value for each scenario. The probability of win/loss and associated payouts are incorporated in the vignettes. A screenshot of this excel tab is also shown below.

Expansion safe alternative	***Expansion risky alternative***
75% chance of positive return	20% chance of positive return
Success: investment * 1.6	Success: investment * 4.4
Moderate success: investment * 1.1	Moderate failure: investment * 0.9
Failure: investment *0	Failure: investment * -0.4 (additional loss of 40%)

**In the imprecise information condition a range of 30% is applied to the probability of the outcome; the probability of the precise information condition being the mean of this range*

Expansion scenario

Safe option	*Risky option*	*Risk score*	*Expected value*
1.000.000	0	0	- € 50.000
900.000	100.000	10	- € 50.000
800.000	200.000	20	- € 50.000
700.000	300.000	30	- € 50.000
600.000	400.000	40	- € 50.000
500.000	500.000	50	- € 50.000
400.000	600.000	60	- € 50.000
300.000	700.000	70	- € 50.000
200.000	800.000	80	- € 50.000
100.000	900.000	90	- € 50.000
0	1.000.000	100	- € 50.000

Possible allocations expansion

Project safe alternative	*Project risky alternative*
80% chance of positive return	25% chance of positive return
Success: investment * 1.7	Success: investment * 3.4
Moderate success: investment * 1.1	Moderate failure: investment * 0.8
Failure: investment *0	Failure: investment * -0.5 (additional loss of 50%)

**In the imprecise information condition a range of 30% is applied to the probability of the outcome; the probability of the precise information condition being the mean of this range*

Project scenario

Safe option	*Risky option*	*Risk score*	*Expected value*
1.000.000	0	0	+ € 60.000
900.000	100.000	10	+ € 60.000
800.000	200.000	20	+ € 60.000
700.000	300.000	30	+ € 60.000
600.000	400.000	40	+ € 60.000
500.000	500.000	50	+ € 60.000
400.000	600.000	60	+ € 60.000
300.000	700.000	70	+ € 60.000
200.000	800.000	80	+ € 60.000

100.000	900.000	90	+ € 60.000
0	1.000.000	100	+ € 60.000

Possible allocations new project

	p1 = outcome 1	p2 = outcome 2	p3 = outcome 3	E1	E2	E3	X = investering		Expected value
Vignette #1 - expansion (precise)									
Safe option	0,25	0,5	0,25	1,6	1,1	0	€ 500.000		€ (25.000)
Risky option	0,2	0,3	0,5	4,4	0,9	-0,4	€ 500.000		€ (25.000)
								Total:	€ (50.000)
Vignette #1 - expansion (imprecise)									
Safe option (*gemiddelde van range*)	0,25	0,5	0,25	1,6	1,1	0	€ 500.000		€ (25.000)
Risky option (*gemiddelde van range*)	0,2	0,3	0,5	4,4	0,9	-0,4	€ 500.000		€ (25.000)
								Total:	€ (50.000)
Vignette #2 - new project (precise)									
Safe option	0,3	0,5	0,2	1,7	1,1	0	€ 500.000		€ 30.000
Risky option	0,25	0,45	0,3	3,4	0,8	-0,5	€ 500.000		€ 30.000
								Total:	€ 60.000
Vignette #2 - new project (imprecise)									
Safe option (*gemiddelde van range*)	0,3	0,5	0,2	1,7	1,1	0	€ 500.000		€ 30.000
Risky option (*gemiddelde van range*)	0,25	0,45	0,3	3,4	0,8	-0,5	€ 500.000		€ 30.000
								Total:	€ 60.000
								TOTAL EV	€ 20.000,00
								(EXP. KWF Donation)	€ 1,00

Excel sheet tab; expected value

Play the game

A second tab in the excel sheet is used as a game tool during the experiments. At the end of an experiment the chosen allocations by the team are inserted in this excel tab. This excel tab calculates, using randomizers, the actual winnings/losses of the team. Most importantly, this excel tab calculates the charity donation in either green (win) or red (loss). A screenshot of this excel tab is shown below. If interested, the excel sheet can be provided on request.

	outcome 1	outcome 2	outcome 3	payout outcome 1	payout outcome 2	payout outcome 3	X = investering		payout	randomizer
Vignette #1 - expansion										
Brutopia	0	1	0	0	660000	0	€ 600.000,00		€ 60.000,00	39,6
Fantasia	0	1	0	0	360000	0	€ 400.000,00		€ (40.000,00)	58,7
								Total round 1:	€ 20.000,00	
Vignette #1 - expansion										
Ardenia	0	1	0	0	440000	0	€ 400.000,00		€ 40.000,00	34,6
Malaguay	0	1	0	0	540000	0	€ 600.000,00		€ (60.000,00)	53,0
								Total round 2:	€ (20.000,00)	
Vignette #2 - new project										
Project Home	0	0	1	0	0	0	€ 500.000,00		€ (500.000,00)	19,1
Project Swan	1	0	0	1700000	0	0	€ 500.000,00		€ 1.200.000,00	92,8
								Total round 3:	€ 700.000,00	
Vignette #2 - new project										
Project Hydra	0	0	1	0	0	0	€ 200.000,00		€ (200.000,00)	9,1
Project Arrow	0	1	0	0	640000	0	€ 800.000,00		€ (160.000,00)	42,3
								Total round 4:	€ (360.000,00)	
								TOTAL PAYOUT	€ 340.000,00	
RUN THE GAME! *(fill in number '1')*										
1			*Fill in the yellow boxes with the allocation*					**KWF Donation**	€ 17,00	

	outcome 1	outcome 2	outcome 3
Vignette #1 - expansion (imprecise)			
Safe option (Ardenia)	10-40%	35-65%	10-40%
	18,6	*35,6*	*15,3*
Risky option (Malaguay)	5-35%	15-45%	35-65%
	11,3	*24,9*	*51,9*
Vignette #2 - new project (imprecise)			
Safe option (Project Hydra)	15-45%	35-65%	5-35%
	36,3	*55,3*	*11,1*
Risky option (Project Arrow)	10-40%	30-60%	15-45%
	28,3	*50,3*	*22,7*

Excel sheet tab; play the game

Appendix 7 – Team-member exchange quality (TMX-13)

Original Team-member exchange scale (Ford & Seers, 2006)

1. Other members frequently provide support and encouragement to me.
2. I frequently provide support and encouragement to other members.
3. Other members communicate openly with me about what they expect from me.
4. I communicate openly with other members about what I expect from them.
5. Other members frequently recognize my efforts.
6. I frequently recognize the efforts of other members.
7. Other members frequently take actions that make things easier for me.
8. I frequently take actions that make things easier for other members.
9. When I am busy, other members often volunteer to help me out.
10. When other members are busy, I often volunteer to help them out.
11. Other members frequently suggest ideas that I can use.
12. I frequently suggest ideas that other members can use.
13. How would you characterize your working relationship to other members in general?

Translated Team-member exchange scale

1. Andere teamleden bieden mij regelmatig steun en aanmoediging
2. Ik bied andere teamleden regelmatig steun en aanmoediging
3. Andere teamleden communiceren openlijk met mij over wat ze van mij verwachten
4. Ik communiceer openlijk met andere teamleden over wat ik van hun verwacht
5. Andere teamleden erkennen regelmatig mijn inspanningen
6. Ik erken regelmatig de inspanningen van andere teamleden
7. Andere teamleden doen regelmatig dingen waardoor mijn werk makkelijker wordt
8. Ik doe regelmatig dingen waardoor het werk van mijn teamleden makkelijker wordt
9. Als ik het druk heb, bieden andere teamleden vaak hun hulp aan
10. Als andere teamleden het druk hebben, bied ik vaak mijn hulp aan
11. Andere teamleden stellen regelmatig ideeën voor die ik kan gebruiken
12. Ik stel regelmatig ideeën voor die mijn teamleden kunnen gebruiken
13. Hoe zou u uw werkrelatie met andere teamleden in het algemeen karakteriseren?

Appendix 8 – Observation sheets

Individual observation sheet _____

Team ……

Appearance

Participant …. : _____

Participant …. : _____

Participant …. : _____

Participant	Number of proposals made
…..	
…..	
…..	

A proposal means that a potential decision is suggested by the team member. E.g. when the member proposes a division of €300.000 vs. €700.000 this can be counted as one proposal. If the team member proposes to invest €400.000 in one option this can also be counted as one proposal since this is the same as a division of €400.000 vs. €600.000. So, when the team member explicitly proposes a solution to the vignette this should be counted as one proposal. When a person proposes to put everything on one option this should also be counted as one proposal since this is the same as a division of €0 vs. €1.000.000. We suggest that you tally (turven) the amount of proposal made.

Participant	Percentage of time the person participates									
…..	0-10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90-100%
…..	0-10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90-100%
…..	0-10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90-100%

Here you fill in the percentage of time a person participates during the time of the discussion (until the answer sheet is submitted). Participating means that the team member is talking to the team about the case/task. You should fill this in according to percentage slots of 10. E.g. when a person participates for about 25% of the time you should fill in the box below 20-30% in the table above.

Team observation sheet _____

Team ……

Number of team members ……

Number of participants 'actively' participating	

Here you should indicate how many members of the team are actively participating in the team discussion. Actively participating, in this case, means that the participant is at least talking about the case/task for 20% of the time.

1=Helemaal niet
2=Nauwelijks
3=In redelijke mate
4=In hoge mate
5=In zeer hoge mate

1. Team members suggest safer options (talking about potential loss)	1	2	3	4	5
2. Team members suggest riskier options (talking about chances)	1	2	3	4	5
3. The team considered all the factors which influenced the risk (success percentage/ teams reputation/ economic situation/ team bonus)	1	2	3	4	5
4. The team members agreed with the acceptable level of risk in their final decision	1	2	3	4	5

General remarks:

_____
_____
_____
_____
_____
_____

Appendix 9 – Operationalization table

Construct	***Measurement***
Team risk-taking	The willingness of the team to allocate money to a risky alternative (unlikelier success rates with the possibility of higher gains) instead of a safer alternative. Teams will have to allocate an investment of 1.000.000 Euros between two choice alternatives. The more money they allocate to the risky alternative the more risk the team takes. Team risk-taking will thus be measured as a continuous variable, with scores ranging from 0 to 100 on team risk-taking (average percentage of the investments on risky options).
Team-member exchange quality	Measured with a questionnaire beforehand. The questionnaire consists of 13 items scored on a 5-point Likert scale.
Team discussion	Live measurement using an observation sheet. Four types of measurement; number of proposals made by team, team participation rate, team active participation rate, and team discussion time.
Precision of information	Dichotomous variable measured through the manipulation in the experiment. Imprecise information indicated by a range, and precise information indicated by an exact probability.

Appendix 10 – Preliminary analysis risk preference

Factor analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,578
Bartlett's Test of Sphericity	Approx. Chi-Square	90,704
	df	45
	Sig.	,000

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	1,688	16,875	16,875	1,688	16,875	16,875	1,627
2	1,267	12,666	29,541	1,267	12,666	29,541	1,180
3	1,132	11,319	40,860	1,132	11,319	40,860	1,169
4	1,075	10,753	51,613	1,075	10,753	51,613	1,215
5	1,041	10,410	62,023	1,041	10,410	62,023	1,059
6	,864	8,637	70,659				
7	,806	8,060	78,720				
8	,760	7,604	86,324				
9	,733	7,331	93,655				
10	,634	6,345	100,000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Pattern Matrix[a]

	Component				
	1	2	3	4	5
Je hebt een modaal inkomen en recentelijk geld geerfd	,684				,339
Je bent aanvoerder van een voetbalelftal		-,311	,759		
Je gaat volgend jaar afstuderen op een Universiteit		,785			
Je bent een laag geklasseerde deelnemer in het nationale schaaktoernooi		,402		,618	
Je bent een student met aanzienlijk muzikaal talent				,839	
Je hebt een middelmatig salaris	,668				
Je bent wetenschapper in natuurkunde					,916
Je hebt hartproblemen waardoor je	,456				
Je bent ontvoerd door rebellen tijdens een trip in Peru	,668	,329			
Je bent een succesvole zakenman en hebt sterke affiniteit met politiek			,725		

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 18 iterations.

Reliability analysis

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,344	,337	10

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Je hebt een modaal inkomen en recentelijk geld geerfd	28,9651	18,113	,228	,150	,275
Je bent aanvoerder van een voetbalelftal	27,1703	20,870	-,009	,036	,372
Je gaat volgend jaar afstuderen op een Universiteit	27,3974	20,346	,029	,047	,359
Je bent een laag geklasseerde deelnemer in het nationale schaaktoernooi	27,2926	18,278	,231	,082	,275
Je bent een student met aanzienlijk muzikaal talent	28,1528	18,718	,116	,056	,326
Je hebt een middelmatig salaris	28,4847	17,865	,218	,127	,276
Je bent wetenschapper in natuurkunde	28,2402	19,666	,069	,029	,345
Je hebt hartproblemen waardoor je	29,2838	18,827	,160	,060	,305
Je bent ontvoerd door rebellen tijdens een trip in Peru	28,2576	18,631	,165	,098	,303
Je bent een succesvole zakenman en hebt sterke affiniteit met politiek	28,8210	19,937	,058	,041	,349

Appendix 11 – Preliminary analysis TMX

Factor analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,681
Bartlett's Test of Sphericity	Approx. Chi-Square	867,748
	df	78
	Sig.	,000

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4,087	31,436	31,436	4,087	31,436	31,436	2,843
2	1,454	11,186	42,622	1,454	11,186	42,622	2,388
3	1,215	9,342	51,965	1,215	9,342	51,965	2,249
4	1,042	8,019	59,983	1,042	8,019	59,983	2,179
5	,994	7,646	67,629				
6	,859	6,608	74,237				
7	,826	6,354	80,591				
8	,602	4,627	85,218				
9	,535	4,112	89,330				
10	,504	3,876	93,205				
11	,380	2,926	96,132				
12	,282	2,172	98,304				
13	,220	1,696	100,000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Pattern Matrix[a]

	Component			
	1	2	3	4
Andere teamleden bieden mij regelmatig steun en aanmoediging	,637			
Ik bied andere teamleden regelmatig steun en aanmoediging	,323		,497	
Andere teamleden communiceren openlijk met mij over wat ze van mij verwachten	,783			
Ik communiceer openlijk met andere teamleden over wat ik van hun verwacht	,735			
Andere teamleden erkennen regelmatig mijn inspanningen	,371		,481	
Ik erken regelmatig de inspanningen van andere teamleden			,741	
Andere teamleden doen regelmatig dingen waardoor mijn werk makkelijker wordt		,478		,330
Ik doe regelmatig dingen waardoor het werk van mijn teamleden makkelijker wordt		,343	,690	
Als ik het druk heb, bieden andere teamleden vaak hun hulp aan		,779		
Als andere teamleden het druk hebben, bied ik vaak mijn hulp aan		,823		
Andere teamleden stellen regelmatig ideeen voor die ik kan gebruiken				,860
Ik stel regelmatig ideeen voor die mijn teamleden kunnen gebruiken				,689
Hoe zou u uw werkrelatie met andere teamleden in het algemeen karakteriseren?	,480			

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 10 iterations.

Reliability analysis

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,815	,816	13

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Andere teamleden bieden mij regelmatig steun en aanmoediging	45,7467	17,971	,522	,496	,797
Ik bied andere teamleden regelmatig steun en aanmoediging	45,8166	18,940	,427	,399	,805
Andere teamleden communiceren openlijk met mij over wat ze van mij verwachten	46,0000	17,553	,553	,492	,793
Ik communiceer openlijk met andere teamleden over wat ik van hun verwacht	46,0699	18,530	,399	,393	,807
Andere teamleden erkennen regelmatig mijn inspanningen	46,0349	18,008	,495	,436	,799
Ik erken regelmatig de inspanningen van andere teamleden	45,9956	19,215	,365	,367	,809
Andere teamleden doen regelmatig dingen waardoor mijn werk makkelijker wordt	46,0218	17,679	,463	,395	,802
Ik doe regelmatig dingen waardoor het werk van mijn teamleden makkelijker wordt	46,0830	18,331	,415	,392	,805
Als ik het druk heb, bieden andere teamleden vaak hun hulp aan	46,2489	17,337	,498	,524	,799
Als andere teamleden het druk hebben, bied ik vaak mijn hulp aan	46,1659	17,788	,474	,468	,801
Andere teamleden stellen regelmatig ideeen voor die ik kan gebruiken	45,8646	19,161	,372	,343	,808
Ik stel regelmatig ideeen voor die mijn teamleden kunnen gebruiken	46,0480	18,686	,444	,333	,803
Hoe zou u uw werkrelatie met andere teamleden in het algemeen karakteriseren?	46,0175	19,096	,463	,290	,803

Appendix 12 – Preliminary analysis team discussion

Factor analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,728
Bartlett's Test of Sphericity	Approx. Chi-Square	1076,077
	df	120
	Sig.	,000

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3,643	22,769	22,769	3,643	22,769	22,769	3,285
2	2,268	14,173	36,942	2,268	14,173	36,942	2,161
3	1,863	11,645	48,588	1,863	11,645	48,588	2,497
4	1,484	9,277	57,865	1,484	9,277	57,865	1,676
5	1,161	7,254	65,119	1,161	7,254	65,119	1,452
6	,883	5,519	70,638				
7	,735	4,592	75,230				
8	,728	4,552	79,782				
9	,642	4,010	83,792				
10	,533	3,334	87,126				
11	,470	2,940	90,065				
12	,439	2,743	92,808				
13	,365	2,280	95,088				
14	,331	2,066	97,155				
15	,244	1,528	98,683				
16	,211	1,317	100,000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Pattern Matrix[a]

	Component				
	1	2	3	4	5
Proposals_EX				,659	
Proposals_EY				,339	,635
Proposals_PX					,817
Proposals_PY				,753	
TeamParticipation_EX	,849				
TeamParticipation_EY	,811				
TeamParticipation_PX	,866				
TeamParticipation_PY	,890				
TeamActive_EX		,421	,699		
TeamActive_EY			,749		
TeamActive_PX			,670	-,334	
TeamActive_PY			,788		
DiscussionTime_EX		,792			
DiscussionTime_EY		,697			
DiscussionTime_PX		,400		-,511	
DiscussionTime_PY		,720	-,339		

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 7 iterations.

One-way ANOVA team participation

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
TeamParticipation_EX	Between Groups	215,864	49	4,405	1,262	,139
	Within Groups	621,202	178	3,490		
	Total	837,066	227			
TeamParticipation_EY	Between Groups	146,393	49	2,988	,905	,652
	Within Groups	591,030	179	3,302		
	Total	737,424	228			
TeamParticipation_PX	Between Groups	219,414	49	4,478	1,470	,037
	Within Groups	539,158	177	3,046		
	Total	758,573	226			
TeamParticipation_PY	Between Groups	152,109	49	3,104	,832	,772
	Within Groups	645,729	173	3,733		
	Total	797,839	222			

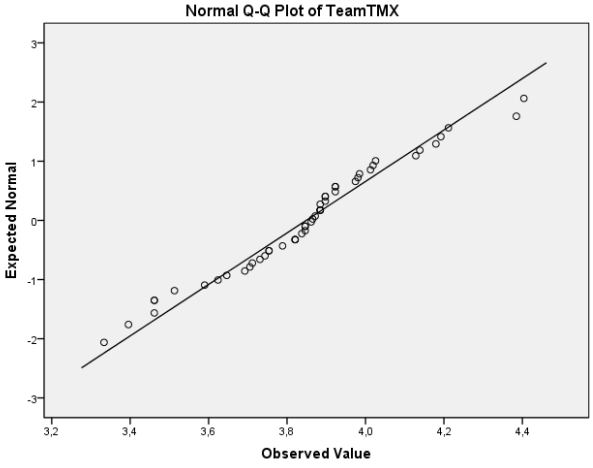
Appendix 13 – Normality tests

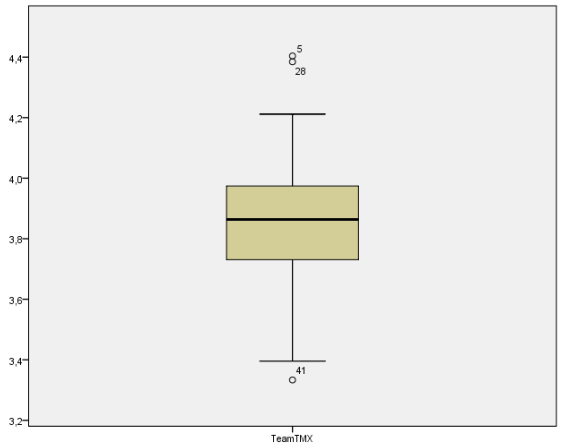
Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
TeamTMX	,113	50	,136	,971	50	,247
TeamParticipation	,082	50	,200*	,985	50	,752
TeamActivePart	,225	50	,000	,854	50	,000
TeamDiscussionTime	,136	50	,022	,950	50	,035
TeamRiskScore	,080	50	,200*	,978	50	,461
Standardized Residual	,071	50	,200*	,990	50	,952
Studentized Residual	,070	50	,200*	,994	50	,996

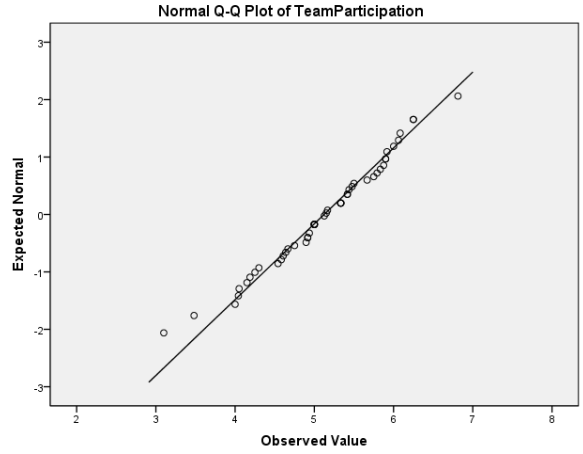
a. Lilliefors Significance Correction
*. This is a lower bound of the true significance.

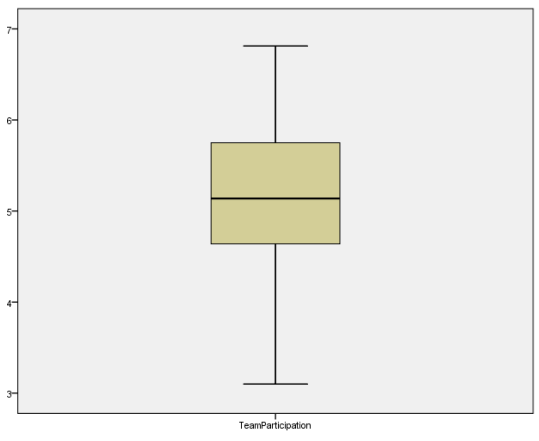
TeamTMX:



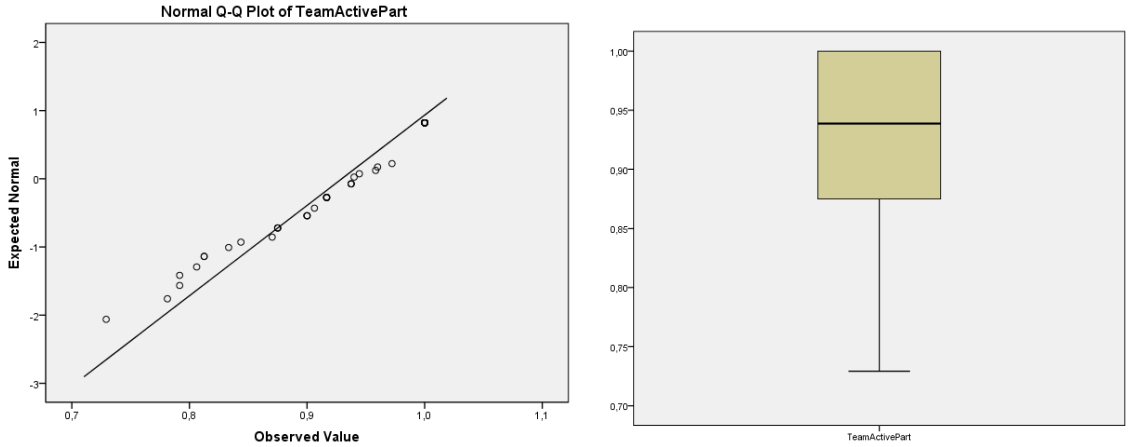


TeamParticipation:

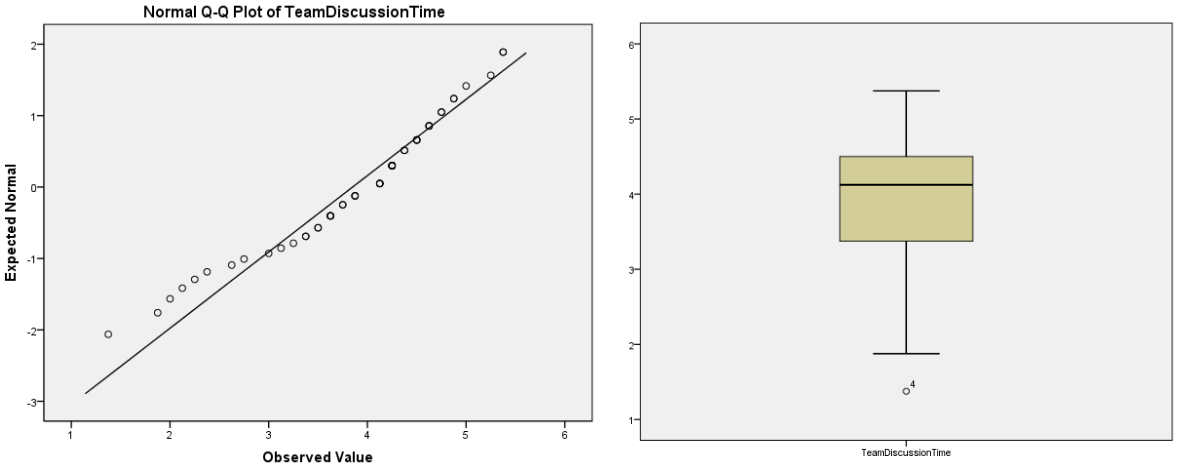




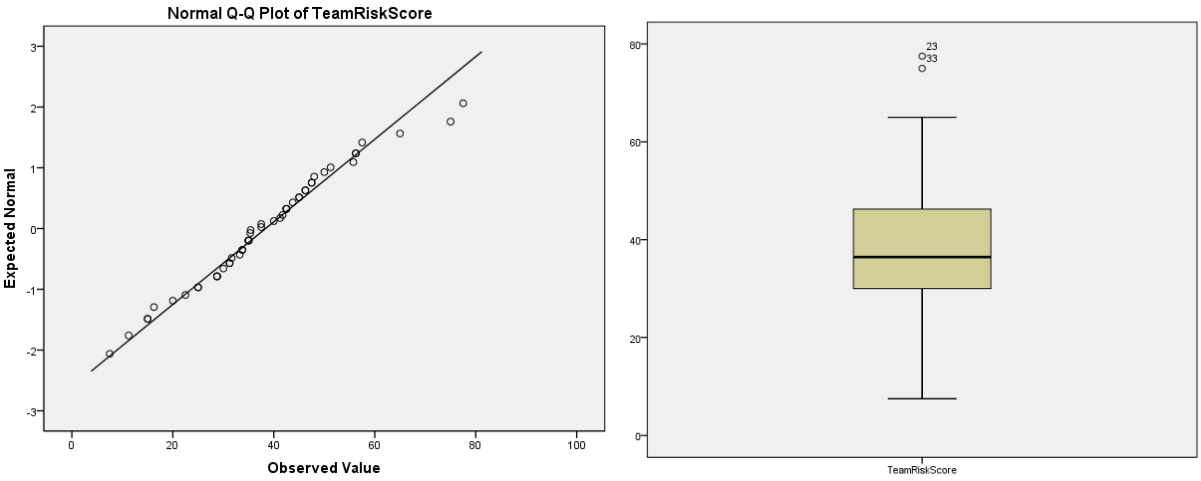
TeamActivePart:



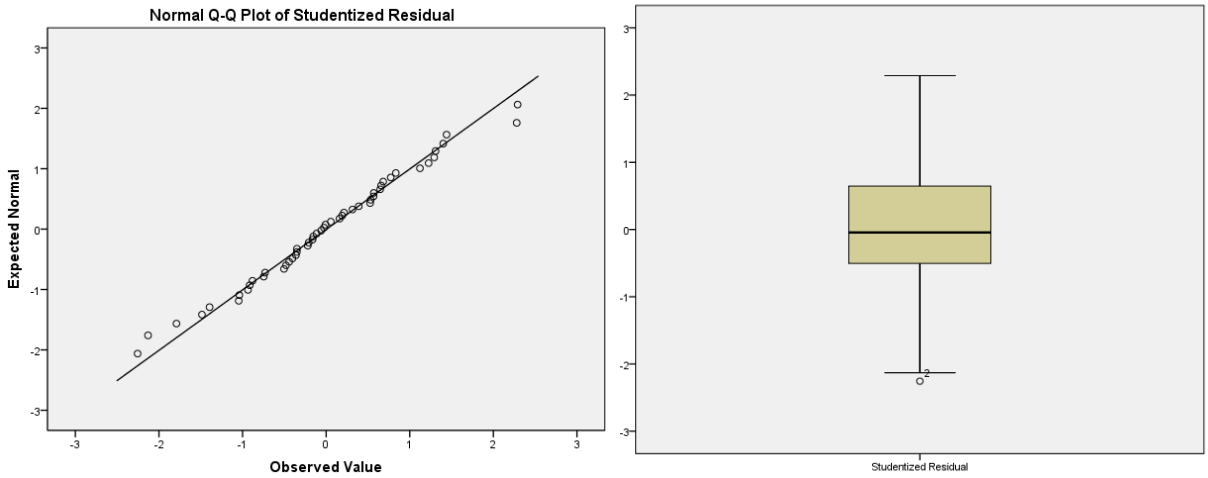
TeamDiscussionTime:



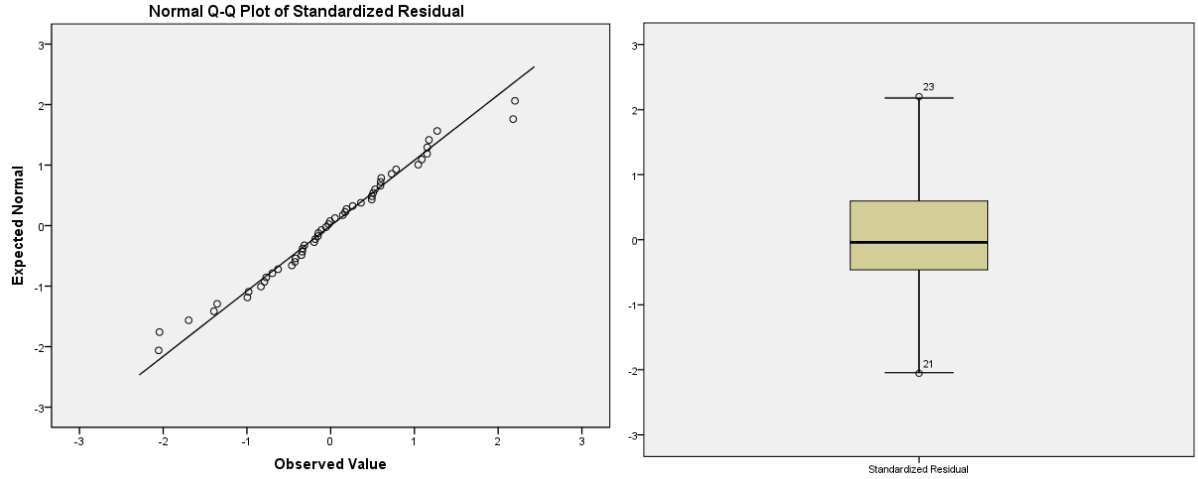
TeamRiskScore:



StudentizedResidual:



StandardizedResidual:



Appendix 14 – Process analysis (Hayes, 2013)

```
Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Release 2.12.1 **************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2013). www.guilford.com/p/hayes3

**************************************************************************
Model = 4
    Y = TeamRisk
    X = TeamTMX
   M1 = TeamPart
   M2 = TeamActi
   M3 = TeamDisc

Statistical Controls:
CONTROL= TeamSize TeamAge  TeamTenu TeamRi_1

Sample size
         50

**************************************************************************
Outcome: TeamPart

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,4226      ,1786      ,5243     1,9132     5,0000    44,0000      ,1114

Model
             coeff         se          t          p       LLCI       ULCI
constant     6,0316     2,3324     2,5860      ,0131     1,3308    10,7323
TeamTMX      -,1778      ,4602     -,3865      ,7010    -1,1052      ,7496
TeamSize     -,1951      ,0664    -2,9401      ,0052     -,3288     -,0614
TeamAge       ,0099      ,0112      ,8844      ,3813     -,0127      ,0326
TeamTenu     -,0005      ,0032     -,1652      ,8696     -,0069      ,0059
TeamRi_1      ,0955      ,3775      ,2530      ,8015     -,6653      ,8563

**************************************************************************
Outcome: TeamActi

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,4970      ,2470      ,0048     2,8863     5,0000    44,0000      ,0244

Model
             coeff         se          t          p       LLCI       ULCI
constant     1,2337      ,2227     5,5408      ,0000      ,7850     1,6825
TeamTMX      -,0367      ,0439     -,8347      ,4084     -,1252      ,0519
TeamSize     -,0198      ,0063    -3,1245      ,0031     -,0326     -,0070
TeamAge      -,0008      ,0011     -,7330      ,4674     -,0029      ,0014
TeamTenu      ,0002      ,0003      ,6476      ,5206     -,0004      ,0008
TeamRi_1     -,0151      ,0360     -,4184      ,6777     -,0877      ,0576
```

```
**************************************************************************
Outcome: TeamDisc

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,3264      ,1065      ,8719     1,0493     5,0000    44,0000      ,4012

Model
             coeff         se          t          p       LLCI       ULCI
constant     1,8352     3,0078      ,6101      ,5449    -4,2267     7,8970
TeamTMX       ,1280      ,5934      ,2156      ,8303    -1,0680     1,3239
TeamSize      ,1266      ,0856     1,4798      ,1461     -,0458      ,2991
TeamAge      -,0011      ,0145     -,0744      ,9410     -,0303      ,0281
TeamTenu     -,0043      ,0041    -1,0440      ,3022     -,0125      ,0040
TeamRi_1      ,3433      ,4868      ,7053      ,4844     -,6378     1,3244

**************************************************************************
Outcome: TeamRisk

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,3532      ,1247   226,4996      ,7302     8,0000    41,0000      ,6641

Model
             coeff         se          t          p       LLCI       ULCI
constant    28,9574    64,0822      ,4519      ,6537  -100,4607   158,3756
TeamPart     2,6162     3,4914      ,7493      ,4579    -4,4350     9,6673
TeamActi   -41,8077    35,2338    -1,1866      ,2422  -112,9647    29,3492
TeamDisc      ,1666     2,6561      ,0627      ,9503    -5,1975     5,5307
TeamTMX     -2,0214     9,6704     -,2090      ,8355   -21,5514    17,5086
TeamSize      ,8578     1,7164      ,4998      ,6199    -2,6085     4,3241
TeamAge       ,2410      ,2389     1,0089      ,3189     -,2415      ,7235
TeamTenu      -,0085      ,0673     -,1260      ,9003     -,1443      ,1274
TeamRi_1     9,2724     7,9277     1,1696      ,2489    -6,7380    25,2829

************************* TOTAL EFFECT MODEL ***************************
Outcome: TeamRisk

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,3001      ,0901   219,4148      ,8709     5,0000    44,0000      ,5083

Model
             coeff         se          t          p       LLCI       ULCI
constant    -6,5373    47,7145     -,1370      ,8916  -102,7005    89,6259
TeamTMX      -,9323     9,4135     -,0990      ,9216   -19,9041    18,0396
TeamSize     1,1960     1,3574      ,8811      ,3831    -1,5397     3,9317
TeamAge       ,2998      ,2299     1,3037      ,1991     -,1636      ,7632
TeamTenu     -,0187      ,0647     -,2894      ,7736     -,1492      ,1117
TeamRi_1    10,2099     7,7224     1,3221      ,1930    -5,3538    25,7735
```

```
***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
     -,9323     9,4135     -,0990      ,9216   -19,9041    18,0396

Direct effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
    -2,0214     9,6704     -,2090      ,8355   -21,5514    17,5086

Indirect effect of X on Y
             Effect    Boot SE   BootLLCI   BootULCI
TOTAL        1,0891     3,7101    -4,9962    10,8058
TeamPart     -,4652     1,7494    -5,5382     1,8367
TeamActi     1,5331     2,8362    -2,3522     9,7627
TeamDisc      ,0213     1,8880    -2,9530     5,1626
(C1)        -1,9983     3,3726   -10,9415     3,4860
(C2)         -,4866     2,6804    -8,0750     3,5821
(C3)         1,5118     3,4179    -5,1484     8,7330

Normal theory tests for specific indirect effects
             Effect         se          Z          p
TeamPart     -,4652     2,1014     -,2214      ,8248
TeamActi     1,5331     2,7273      ,5621      ,5740
TeamDisc      ,0213     1,6154      ,0132      ,9895

Specific indirect effect contrast definitions
(C1)   TeamPart   minus      TeamActi
(C2)   TeamPart   minus      TeamDisc
(C3)   TeamActi   minus      TeamDisc

****************** ANALYSIS NOTES AND WARNINGS ************************

Number of bootstrap samples for bias corrected bootstrap confidence intervals:
     1000

Level of confidence for all confidence intervals in output:
    95,00

NOTE: Some cases were deleted due to missing data.  The number of such cases was:
  1

NOTE: Effect size measures for indirect effects not available for models with
covariates

------ END MATRIX -----
```

Appendix 15 – Paired samples t-test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	TeamRiskScore_Y	41,3484	51	19,90733	2,78758
	TeamRiskScore_X	34,8235	51	17,82272	2,49568

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	TeamRiskScore_Y & TeamRiskScore_X	51	,214	,132

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	TeamRiskScore_Y - TeamRiskScore_X	6,52484	23,71406	3,32063	-,14485	13,19452	1,965	50	,055

Appendix 16 – Syntax presented in steps

** The relevant individual scores of the shared file 'Master thesis spss-final' were merged into a new file, which is called 'Vincent_IndividualScores'*
** The file 'Vincent_IndividualScores' is checked for odd or missing values*

```
MATCH FILES /FILE=*
  /FILE='DataSet1'
  /RENAME (B5_TE5 B4_TE4 B14_confi9 B3_TE3 B2_TE2 B1_TE1 BConfi_ConfiLevel
B18_confi13
    C36_Triskav16 AllocArd AllocBrut AllocFan AllocMala AllocArrow AllocHome AllocHydr
AllocSwan
    A56_TMX10 C21_Triskav1 A55_TMX9 A8_Frequency2 A47_TMX1 A49_TMX3
A53_TMX7 A51_TMX5 A57_TMX11
    IO2EX_Appearance A30_Cogdiv22 B8_confi3 B13_confi8 HO2_Date A23_Cogdiv15
B9_confi4 C5_Regfoc5
    C23_Triskav3 C25_Triskav5 A33_Cogdiv25 C14_Regfoc14 B11_confi6 B15_confi10
B19_confi14 B16_confi11
    B17_confi12 C37_Triskav17 C39_Triskav19 C1_Regfoc1 A9_Cogdiv1 HO4_FormLead
A44_Cogdiv36
    TO7EX_GenRemark TO7EY_GenRemark TO7PX_GenRemark TO7PY_GenRemark
B7_confi2 B12_confi7 C22_Triskav2
    C10_Regfoc10 B10_confi5 A18_Cogdiv10 A5_TeamTenure1 A59_TMX13 C35_Triskav15
A43_Cogdiv35
    A15_Cogdiv7 A11_Cogdiv3 A41_Cogdiv33 A38_Cogdiv30 A13_Cogdiv5 A48_TMX2
A25_Cogdiv17 A50_TMX4
    B20_confi15 A45_Cogdiv37 A54_TMX8 A52_TMX6 A27_Cogdiv19 A32_Cogdiv24
A12_Cogdiv4 A31_Cogdiv23
    A35_Cogdiv27 A42_Cogdiv34 A28_Cogdiv20 A19_Cogdiv11 A20_Cogdiv12 A17_Cogdiv9
A58_TMX12 A14_Cogdiv6
    A24_Cogdiv16 A26_Cogdiv18 A46_Cogdiv38 A36_Cogdiv28 A39_Cogdiv31
HO3_Industry B6_confi1
    B22_riskpref2 B24_riskpref4 B25_riskpref5 B30_riskpref10 B29_riskpref9 B27_riskpref7
B23_riskpref3
    B26_riskpref6 B21_riskpref1 B28_riskpref8 C13_Regfoc13 A7_Frequency1 C9_Regfoc9
A16_Cogdiv8
    A37_Cogdiv29 A29_Cogdiv21 A40_Cogdiv32 C17_Partlea3 C18_Partlea4 C16_Partlea2
C20_Partlea6
    C15_Partlea1 C19_Partlea5 IO1EX_ObsName C2_Regfoc2 TO2EX_TeamDisc3
TO2EY_TeamDisc3 TO2PX_TeamDisc3
    TO2PY_TeamDisc3 IO3EX_TeamDisc1 IO3EY_TeamDisc1 IO3PX_TeamDisc1
IO3PY_TeamDisc1 TO1EX_NrTeamMembs
    A10_Cogdiv2 A34_Cogdiv26 A22_Cogdiv14 C12_Regfoc12 C27_Triskav7 C38_Triskav18
C29_Triskav9
    C26_Triskav6 C34_Triskav14 C7_Regfoc7 A1_ParticipantNr IO4EX_TeamDisc2
IO4EY_TeamDisc2
```

IO4PX_TeamDisc2 IO4PY_TeamDisc2 C24_Triskav4 RiskScore_EY RiskScore_EX RiskScore_PY RiskScore_PX
RiskScore_Difference RiskScore_Imprecise_Y RiskScore_Precise_X RiskScore_Total C6_Regfoc6
A6_TeamTenure2 TO4EX_RiskAsses2 TO4EY_RiskAsses2 TO4PX_RiskAsses2 TO4PY_RiskAsses2 TO3EX_RiskAsses1
TO3EY_RiskAsses1 TO3PX_RiskAsses1 TO3PY_RiskAsses1 TeamNr HO1_TeamNr C33_Triskav13 C28_Triskav8
TO5EX_RiskAsses3 TO5EY_RiskAsses3 TO5PX_RiskAsses3 TO5PY_RiskAsses3 TO6EX_RiskAsses4
TO6EY_RiskAsses4 TO6PX_RiskAsses4 TO6PY_RiskAsses4 HO5_TimeQA HO10_TimeQB HO15_TimeQC
HO7_TimeR1Discuss HO6_TimeR1Read HO9_TimeR2Discuss HO8_TimeR2Read HO12_TimeR3Discuss
HO11_TimeR3Read HO14_TimeR4Discuss HO13_TimeR4Read HO16_TotalWin HO17_TotalDon A4_TeamSize
C11_Regfoc11 C3_Regfoc3 C4_Regfoc4 A21_Cogdiv13 A2_Gender A3_Age C32_Triskav12 C30_Triskav10
C31_Triskav11 C8_Regfoc8 = d0 d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14 d15 d16 d17 d18 d19
d20 d21 d22 d23 d24 d25 d26 d27 d28 d29 d30 d31 d32 d33 d34 d35 d36 d37 d38 d39 d40 d41 d42 d43 d44
d45 d46 d47 d48 d49 d50 d51 d52 d53 d54 d55 d56 d57 d58 d59 d60 d61 d62 d63 d64 d65 d66 d67 d68 d69
d70 d71 d72 d73 d74 d75 d76 d77 d78 d79 d80 d81 d82 d83 d84 d85 d86 d87 d88 d89 d90 d91 d92 d93 d94
d95 d96 d97 d98 d99 d100 d101 d102 d103 d104 d105 d106 d107 d108 d109 d110 d111 d112 d113 d114 d115
d116 d117 d118 d119 d120 d121 d122 d123 d124 d125 d126 d127 d128 d129 d130 d131 d132 d133 d134 d135
d136 d137 d138 d139 d140 d141 d142 d143 d144 d145 d146 d147 d148 d149 d150 d151 d152 d153 d154 d155
d156 d157 d158 d159 d160 d161 d162 d163 d164 d165 d166 d167 d168 d169 d170 d171 d172 d173 d174 d175
d176 d177 d178 d179 d180 d181 d182 d183 d184 d185 d186 d187 d188 d189 d190 d191 d192 d193 d194 d195
d196 d197)
/DROP= d0 d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14 d15 d16 d17 d18 d19 d20 d21 d22 d23 d24
d25 d26 d27 d28 d29 d30 d31 d32 d33 d34 d35 d36 d37 d38 d39 d40 d41 d42 d43 d44 d45 d46 d47 d48 d49
d50 d51 d52 d53 d54 d55 d56 d57 d58 d59 d60 d61 d62 d63 d64 d65 d66 d67 d68 d69 d70 d71 d72 d73 d74
d75 d76 d77 d78 d79 d80 d81 d82 d83 d84 d85 d86 d87 d88 d89 d90 d91 d92 d93 d94 d95 d96 d97 d98 d99
d100 d101 d102 d103 d104 d105 d106 d107 d108 d109 d110 d111 d112 d113 d114 d115 d116 d117 d118 d119

d120 d121 d122 d123 d124 d125 d126 d127 d128 d129 d130 d131 d132 d133 d134 d135 d136 d137 d138 d139
d140 d141 d142 d143 d144 d145 d146 d147 d148 d149 d150 d151 d152 d153 d154 d155 d156 d157 d158 d159
d160 d161 d162 d163 d164 d165 d166 d167 d168 d169 d170 d171 d172 d173 d174 d175 d176 d177 d178 d179
d180 d181 d182 d183 d184 d185 d186 d187 d188 d189 d190 d191 d192 d193 d194 d195 d196 d197.
EXECUTE.

STEP 1

**The missing scores for team 1 were added in 'SPSS-file_Vincent' to make the data complete*
**4 items in the risk preference scale are reversed; items 22,23,24 and 29*
**RiskPreference and TeamMemberExchange are computed; but first the scales are tested on reliability (Cronbach's Alpha), Intraclass Correlation (see Appendices)*
and also a Principal Component Analysis is conducted on the Team-member exchange scale and on the Risk preference scale.
**Control variables were computed and renamed into TeamSize, TeamAge, TeamTenure, and TeamRiskPreference*
**Lastly these individual scores were aggregated*

**RiskPreference:*

RECODE B22_riskpref2 B23_riskpref3 B24_riskpref4 B29_riskpref9 (1=5) (2=4) (3=3) (4=2) (5=1).
EXECUTE.

FACTOR
/VARIABLES B21_riskpref1 B22_riskpref2 B23_riskpref3 B24_riskpref4 B25_riskpref5 B26_riskpref6
B27_riskpref7 B28_riskpref8 B29_riskpref9 B30_riskpref10
/MISSING PAIRWISE
/ANALYSIS B21_riskpref1 B22_riskpref2 B23_riskpref3 B24_riskpref4 B25_riskpref5 B26_riskpref6
B27_riskpref7 B28_riskpref8 B29_riskpref9 B30_riskpref10
/PRINT INITIAL CORRELATION KMO EXTRACTION ROTATION
/FORMAT BLANK(.30)
/PLOT EIGEN
/CRITERIA MINEIGEN(1) ITERATE(25)
/EXTRACTION PC

```
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.


RELIABILITY
  /VARIABLES=B21_riskpref1 B22_riskpref2 B23_riskpref3 B24_riskpref4 B25_riskpref5
B26_riskpref6
    B27_riskpref7 B28_riskpref8 B29_riskpref9 B30_riskpref10
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.


COMPUTE RiskPreference=(B21_riskpref1 + B22_riskpref2 + B23_riskpref3 +
B24_riskpref4 +
    B25_riskpref5 + B26_riskpref6 + B27_riskpref7 + B28_riskpref8 + B29_riskpref9 +
B30_riskpref10)/10.
EXECUTE.

*TeamMemberExchange:

FACTOR
  /VARIABLES A47_TMX1 A48_TMX2 A49_TMX3 A50_TMX4 A51_TMX5 A52_TMX6
A53_TMX7 A54_TMX8 A55_TMX9
    A56_TMX10 A57_TMX11 A58_TMX12 A59_TMX13
  /MISSING PAIRWISE
  /ANALYSIS A47_TMX1 A48_TMX2 A49_TMX3 A50_TMX4 A51_TMX5 A52_TMX6
A53_TMX7 A54_TMX8 A55_TMX9
    A56_TMX10 A57_TMX11 A58_TMX12 A59_TMX13
  /PRINT INITIAL CORRELATION KMO EXTRACTION ROTATION
  /FORMAT BLANK(.30)
  /PLOT EIGEN
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.

RELIABILITY
  /VARIABLES=A47_TMX1 A48_TMX2 A49_TMX3 A50_TMX4 A51_TMX5 A52_TMX6
A53_TMX7 A54_TMX8 A55_TMX9
    A56_TMX10 A57_TMX11 A58_TMX12 A59_TMX13
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
```

```
  /SUMMARY=TOTAL.

COMPUTE TeamMemberExchange=(A47_TMX1 + A48_TMX2 + A49_TMX3 + A50_TMX4
+ A51_TMX5 + A52_TMX6 +
    A53_TMX7 + A54_TMX8 + A55_TMX9 + A56_TMX10 + A57_TMX11 + A58_TMX12 +
A59_TMX13) / 13.
EXECUTE.


AGGREGATE
  /OUTFILE=* MODE=ADDVARIABLES
  /BREAK=TeamNr
  /A3_Age_mean=MEAN(A3_Age)
  /A5_TeamTenure1_mean=MEAN(A5_TeamTenure1)
  /TO1EX_NrTeamMembs_mean=MEAN(TO1EX_NrTeamMembs)
  /RiskPreference_mean=MEAN(RiskPreference)
  /TeamMemberExchange_mean=MEAN(TeamMemberExchange).




*STEP 2

*Now that the control variables and the first independant variable are computed we can
proceed with the mediating variable team discussion quantity
*A Principal Component Analysis is conducted on the items measuring team discussion
quantity in 'Vincent_IndividualScores'.

DATASET ACTIVATE DataSet2.
FACTOR
  /VARIABLES Proposals_EX Proposals_EY Proposals_PX Proposals_PY
TeamParticipation_EX
    TeamParticipation_EY TeamParticipation_PX TeamParticipation_PY TeamActive_EX
TeamActive_EY
    TeamActive_PX TeamActive_PY DiscussionTime_EX DiscussionTime_EY
DiscussionTime_PX DiscussionTime_PY
  /MISSING PAIRWISE
  /ANALYSIS Proposals_EX Proposals_EY Proposals_PX Proposals_PY
TeamParticipation_EX
    TeamParticipation_EY TeamParticipation_PX TeamParticipation_PY TeamActive_EX
TeamActive_EY
    TeamActive_PX TeamActive_PY DiscussionTime_EX DiscussionTime_EY
DiscussionTime_PX DiscussionTime_PY
  /PRINT INITIAL CORRELATION KMO EXTRACTION ROTATION
  /FORMAT BLANK(.30)
  /PLOT EIGEN
```

/CRITERIA MINEIGEN(1) ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25) DELTA(0)
/ROTATION OBLIMIN
/METHOD=CORRELATION.

** After checking the output, it was concluded that 'amount of proposals made' falls into two components, and is thus not suitable for analysis*
** The other three items do measure one component, but each a different one*
** Analysis will thus be run on each of the three components separetly, because they do not measure the concept 'team discussion quantity' together*
** A one-way ANOVA will be conducted on the team participation variable to check its reliability*

DATASET ACTIVATE DataSet2.
ONEWAY TeamParticipation_EX TeamParticipation_EY TeamParticipation_PX TeamParticipation_PY BY TeamNr
/STATISTICS DESCRIPTIVES HOMOGENEITY
/MISSING ANALYSIS.

****STEP 3***

** Sum of proposals and mean of individual participation are computed for both precise (X) and imprecise (Y);*
this results into four variables: ProposalsX_Individual, ProposalsY_Individual, TeamPartX_Individual, and TeamPartY_Individual.
** Then, the individual scores on these four variables are aggragated to team-level (proposals=sum; team participation=mean);*
Names of variables: TeamProposals_X, TeamProposals_Y, TeamParticipation_X, and TeamParticipation_Y.

COMPUTE ProposalsX_Individual=IO3EX_TeamDisc1 + IO3PX_TeamDisc1.
EXECUTE.

COMPUTE ProposalsY_Individual=IO3EY_TeamDisc1 + IO3PY_TeamDisc1.
EXECUTE.

COMPUTE TeamPartX_Individual=(IO4EX_TeamDisc2 + IO4PX_TeamDisc2)/2.
EXECUTE.

COMPUTE TeamPartY_Individual=(IO4EY_TeamDisc2 + IO4PY_TeamDisc2)/2.
EXECUTE.

AGGREGATE
/OUTFILE= MODE=ADDVARIABLES*
/BREAK=TeamNr
/ProposalsX_Individual_sum=SUM(ProposalsX_Individual)
/ProposalsY_Individual_sum=SUM(ProposalsY_Individual)
/TeamPartX_Individual_mean=MEAN(TeamPartX_Individual)
/TeamPartY_Individual_mean=MEAN(TeamPartY_Individual).

** TeamActiveParticipation_X and TeamActiveParticipation_Y, were also computed.*
** The percentage of team members actively participating during discussion was calculated and computed into new variables, TeamActive_X and TeamActive_Y.*
** The missing values for both TeamActive variables are added, making the total N 50 instead of 47.*

COMPUTE TeamActiveParticipation_X=(TO2EX_TeamDisc3 + TO2PX_TeamDisc3)/2.
EXECUTE.

COMPUTE TeamActiveParticipation_Y=(TO2EY_TeamDisc3 + TO2PY_TeamDisc3)/2.
EXECUTE.

COMPUTE TeamActive_X=TeamActiveParticipation_X / TeamSize.
EXECUTE.

COMPUTE TeamActive_Y=TeamActiveParticipation_Y / TeamSize.
EXECUTE.

**TeamDiscussionTime_X and TeamDiscussionTime_Y, were also computed. This was done after the discussion times*
were entered correctely in the 'Vincent_IndividualScores' file. Initially this was done wrong in the 'Master thesis spss-final' file.

DATASET ACTIVATE DataSet4.
COMPUTE TeamDiscussionTime_X=(DiscussionTime_EX + DiscussionTime_PX)/2.
EXECUTE.

DATASET ACTIVATE DataSet4.
COMPUTE TeamDiscussionTime_Y=(DiscussionTime_EY + DiscussionTime_PY)/2.
EXECUTE.

****STEP 4***

** Total risk-scores (=mean) on both precise (all X's) and imprecise (all Y's) are computed; Allocations on the risky option are divided by 10,000.*

COMPUTE RiskScore_X=((AllocFan + AllocSwan)/2)/10000.
EXECUTE.

COMPUTE RiskScore_Y=((AllocMala + AllocArrow)/2)/10000.
EXECUTE.

STEP 5

** The descriptives of all the relevant variables were checked in 'Vincent_IndividualScores'.*

DATASET ACTIVATE DataSet4.
DESCRIPTIVES VARIABLES=TeamSize TeamAge TeamTenure RiskPreference TeamMemberExchange TeamProposals_X
TeamProposals_Y TeamParticipation_X TeamParticipation_Y TeamActive_X TeamActive_Y TeamDiscussionTime_X TeamDiscussionTime_Y Riskscore_X Riskscore_Y
/STATISTICS=MEAN STDDEV VARIANCE RANGE MIN MAX SEMEAN KURTOSIS SKEWNESS.

STEP 6

** The relevant new variables needed for the regression analyses are aggregated into a new file, 'Vincent_TeamScores'*
** The new file is checked for errors*

AGGREGATE
/OUTFILE="\\studfiles.campus.uvt.nl\files\home\home02\u1241616\Master Organization "+
"Studies\Master's Thesis\SPSS + Excel\Vincent\Vincent_TeamScores.sav"
/BREAK=TeamNr
/TeamAge_mean=MEAN(TeamAge)
/TeamTenure_mean=MEAN(TeamTenure)
/TeamSize_mean=MEAN(TeamSize)
/TeamRiskPreference_mean=MEAN(TeamRiskPreference)
/TeamTMX_mean=MEAN(TeamTMX)
/TeamProposals_X_mean=MEAN(TeamProposals_X)
/TeamProposals_Y_mean=MEAN(TeamProposals_Y)
/TeamParticipation_X_mean=MEAN(TeamParticipation_X)

/TeamParticipation_Y_mean=MEAN(TeamParticipation_Y)
/TeamActive_X_mean=MEAN(TeamActive_X)
/TeamActive_Y_mean=MEAN(TeamActive_Y)
/TeamDiscussionTime_X_mean=MEAN(TeamDiscussionTime_X)
/TeamDiscussionTime_Y_mean=MEAN(TeamDiscussionTime_Y)
/Riskscore_X_mean=MEAN(Riskscore_X)
/Riskscore_Y_mean=MEAN(Riskscore_Y).

STEP 7

** Within the team-file (Vincent_TeamScores), three variables are created; TeamParticipation, TeamActivePart, and TeamDiscussionTime*
** Both variables 'TeamDiscussion_X' and 'TeamDiscussion_Y' are computed, do not need them but just for certainty*

DATASET ACTIVATE DataSet2.
COMPUTE TeamParticipation=(TeamParticipation_X + TeamParticipation_Y) / 2.
EXECUTE.

COMPUTE TeamActivePart=(TeamActive_X + TeamActive_Y) / 2.
EXECUTE.

COMPUTE TeamDiscussionTime=(TeamDiscussionTime_X + TeamDiscussionTime_Y) / 2.
EXECUTE.

DATASET ACTIVATE DataSet2.
COMPUTE TeamDiscussion_X=(TeamParticipation_X + TeamActive_X + TeamDiscussionTime_X)/3.
EXECUTE.

COMPUTE TeamDiscussion_Y=(TeamParticipation_Y + TeamActive_Y + TeamDiscussionTime_Y)/3.
EXECUTE.

**The variables TeamDiscussion and TeamRiskScore are computed*
**The variable TeamDiscussion is not necessary any more*

DATASET ACTIVATE DataSet1.
COMPUTE TeamDiscussion=(TeamDiscussion_X + TeamDiscussion_Y) / 2.
EXECUTE.

COMPUTE TeamRiskScore=(TeamRiskScore_X + TeamRiskScore_Y) / 2.
EXECUTE.

STEP8

** The descriptives of all team-level variables are checked.*

```
DESCRIPTIVES VARIABLES=TeamSize TeamAge TeamTenure TeamRiskPreference
TeamTMX TeamParticipation TeamActivePart TeamDiscussionTime TeamRiskScore
  /STATISTICS=MEAN STDDEV VARIANCE RANGE MIN MAX SEMEAN KURTOSIS
SKEWNESS.
```

STEP 9

** A Paired Samples T-test is conducted to test hypothesis 5.*

```
DATASET ACTIVATE DataSet1.
T-TEST PAIRS=TeamRiskScore_X WITH TeamRiskScore_Y (PAIRED)
  /CRITERIA=CI(.9500)
  /MISSING=ANALYSIS.
```

STEP 10

**Explore the variables to check their normality and their outliers*

```
EXAMINE VARIABLES=TeamTMX TeamParticipation TeamActivePart
TeamDiscussionTime TeamRiskScore
  /ID=TeamNr
  /PLOT BOXPLOT STEMLEAF HISTOGRAM NPPLOT
  /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES EXTREME
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.
```

STEP 11

**Doing a regression analysis purely for checking the VIF values of the variables*

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA COLLIN TOL
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT TeamRiskScore
  /METHOD=ENTER TeamNr TeamSize TeamAge TeamTenure TeamRiskPreference
TeamTMX TeamParticipation TeamActivePart TeamDiscussionTime.
```

STEP 12

**Checking whether the explanatory variables don't correlate to much*

```
CORRELATIONS
  /VARIABLES=TeamSize TeamAge TeamTenure TeamRiskPreference TeamTMX
TeamParticipation TeamActivePart TeamDiscussionTime TeamRiskScore
  /PRINT=TWOTAIL NOSIG
  /STATISTICS DESCRIPTIVES
  /MISSING=PAIRWISE.
```

STEP 13

**Making to residual scores; standardized and studentized risiduals*
**And testing the normality of these residuals*

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA COLLIN TOL ZPP
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT TeamRiskScore
```

```
  /METHOD=ENTER TeamNr TeamSize TeamAge TeamTenure TeamRiskPreference
TeamTMX TeamParticipation TeamActivePart TeamDiscussionTime
  /SAVE ZRESID SRESID.

EXAMINE VARIABLES=StandardizedResidual
  /ID=TeamNr
  /PLOT BOXPLOT STEMLEAF HISTOGRAM NPPLOT
  /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES EXTREME
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.

EXAMINE VARIABLES=StudentizedResidual
  /ID=TeamNr
  /PLOT BOXPLOT STEMLEAF HISTOGRAM NPPLOT
  /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES EXTREME
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.
```