

# The Impact of Personality Traits and Problem Structures on Management Decision-Making Outcomes

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Since decision-making behavior has been in the focus both from a scientific and a professional position, there seems to be a dispute whether rational or intuitive decision making leads to better outcomes. By now, scholars have agreed that effective organizations do not have the luxury to choose between the “applications” of intuitive or rational decision making. Instead, they try to understand how different factors like personality traits and problem characteristics influence the decision-making process. Reviewing the literature reveals that personality pre-determination and the structure of problems (e.g., well-structured problems (WSPs) versus ill-structured problems (ISPs)) seem to have a significant impact on the decision-making efficiency. Further, the review also shows that there is a lack of application-oriented empirical studies in this area of research. Therefore, the aim of this research paper is to propose a framework for an empirical study on how personality traits and problem structure influence the decision-making process. First, hypotheses are derived from the literature on how personality pre-determination and behavioral patterns in the decision-making process lead to higher socioeconomic efficiency within certain problem categories. Second, a causal model and a setup for a laboratory experiment are proposed to allow testing the hypotheses. Finally, the conclusions provide an outlook on how this research could support organizations in their decision-making processes.

*Keywords:* decision making, intuition, rational, personality traits, problem structure, efficiency

## Introduction

By now, scholars have agreed that effective organizations do not have the luxury to choose between intuitive and rational decision making, when it comes to the real-world problem solving (Mintzberg, 1994; Simon, 1997). Instead, it is essential to understand how different factors like personality (Allinson & Hayes, 1996; Neuert, 1987; Pretz & Totz, 2007), task characteristics (Dane & Pratt, 2007; Witte, 1988), the decision-making context (Bourgeois, McAllister, & Mitchell, 1978; Sutcliffe & McNamara, 2001), and decision characteristics (Ariely & Zakay, 2001; Sinclair & Ashkanasy, 2002) influence the decision-making process. Sinclair and Ashkanasy (2002) created a model which assumed that the behavior-oriented

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decision-making process was affected by four broad categories: (1) problem characteristics; (2) decision characteristics; (3) personal disposition; and (4) decision-making context. These four categories again include sets of factors which characterize more closely the content of these categories. Sinclair and Ashkanasy's (2002) model seems to provide a vital and basic foundation of the different issues that need to be addressed to give a more complete picture, when trying to explore the behavioral patterns in decision-making process in more details. Out of the sets of factors which Sinclair and Ashkanasy (2002) have listed in their model, the personality pre-determination/cognitive style (Allinson & Hayes, 1996; Kirsch, 1971a, 1971b; Neuert, 1987, 2010; Pretz & Totz, 2007) and the ambiguity of the problem structure (Jonassen, 1997; Lee & Cho, 2007; van Riel, Ouwersloot, & Lemmink, 2006; Shapiro & Spence, 1997; Simon, 1973) seem to be two of the "contributors" which have a significant impact on the decision-making efficiency.

Like a lot of theories in this field, the model of Sinclair and Ashkanasy (2002) proposes valuable theoretical advice, but it fails to provide an application-oriented approach which supports organizations to build a framework to advice, when it is more favorable to use a rational<sup>1</sup> or intuitive approach in management decision making.

Therefore, the aim of this paper based on the relevant literature is to determine how personality, behavioral approaches (intuitive versus rational conduct), and the ambiguity of different problem structures influence the socioeconomic outcomes and efficiencies in business management decision making. In compliance with Popper's (2005) notion of "the logic of scientific discovery", scientific research is not just composed of the formulation of cause-effect hypotheses, but also of the attempt to empirically substantiate and/or falsify the respective conjectures. Therefore, a research design for an empirical study is also introduced, which is supposed either to falsify or support the hypotheses under "real conditions".

### **Intuitive Versus Rational Decision Making**

The works of Jung ([1921] 1971) and Westcott (1968) indicate that intuitive or rational types share distinct personality characteristics. Jung ([1921] 1971) differentiated human behavior into four mental functions and two attitudes, allowing him to describe different types of people. The four mental functions are sensing and intuitive types related to their preferences on how they perceive information and thinking and feeling types related to their preferences on how they make judgments. The more "romantic" view (Allinson & Hayes, 1996; Mintzberg, 1994; Sauter, 1999; Sarmany-Schuller, 2010) that formal business planning relies on the left-brain hemisphere's sequential-logical processes, whereas the less formal intuitive and creative aspects of management are accomplished by the right hemisphere, cannot be derived from psychological research (Simon, 1997). This view is also supported by neuroscience research (Liebermann, Jarcho, & Satpute, 2004; Volz & von Cramon, 2006), as the activation of certain areas of the brain can be measured by using functional and magnetic resonance imaging while working on intuitive tasks. But those areas are not necessarily located in the right hemisphere of the brain. Westcott (1968) found in his study that extreme groups to his measure had "distinguishing and coherent patterns of personality" (p. 148). Woolhouse and Bayne (2000) saw the difference in the level of the use of intuition in the nature of people's exiting associations between words and concepts. The main findings in the study of Shiloh, Salton, and Sharabi (2002) support the evidence that an intuitive or rational approach in decision making can be related to personality traits or cognitive styles. Within their study,

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<sup>1</sup> Neuert (1987) referred to the term "discursive" instead of "rational" decision making to "intuitive" behavior in context.

they showed that participants with a rational thinking style were more related to normative judgments and participants with intuitive thinking style were more related to heuristic judgments. According to the cognitive-experiential self-theory (CEST) (Epstein, 2003), human beings operate on two fundamental information-processing systems. The experiential system which operates mainly at an unconscious level relates to experiences which have been built up in the past. The experiential system can be characterized as automatic, rapid, effortless, associative, and holistic. Although the experiential system is a cognitive system, it derives beliefs from emotional experiences (Epstein, 1991). In contrast, the rational system operates predominantly at the conscious level in an analytical, effortful, affect-free, and relatively slow manner while demanding high cognitive resources (Epstein, 2003). The rational system is more process-orientated and logical reasoning-orientated and requires justification via logic and evidence. The rational system seems to be more suitable, when analytical approaches are needed or considerations for long-time consequences are at stake (Epstein, 1991). Alter, Oppenheimer, Epley, and Eyre (2007) supported the view that people made different decisions based on their personalities whether they adopted a rational systematic processing or if they relied on intuitive and heuristic processing. From their empirical study, they provided evidence that when people experienced difficulty or disfluency, they would adopt a more rational approach in information processing.

Dijksterhuis, Bos, Nordgren, and van Baaren (2006) found in their study that participants facing simple decision-making situations performed well when taking a conscious and deliberate thought, whereas participants facing a complex decision-making situation performed better when taking unconscious and intuitive thoughts. The study also showed that post-choice satisfaction was greater in simple decision-making situations, when decision makers had taken a deliberate and rational approach. While for complex decisions, the decision makers experienced greater post-choice satisfaction when they had taken unconscious approaches. For Shapiro and Spence (1997), the approach of the decision-making process (intuitive versus rational) depends on the nature of the task (e.g., structured or unstructured). For them, tasks having a more structured nature like accounts receivable, order entering, and inventory control are conducive to analytical reasoning, because they have typically well-accepted decision rules. Other tasks with less structured problems like mergers and acquisitions, new product planning, and corporate strategy formulation are typical for the "use" of intuition. Van Riel et al. (2006) supported the view that the decision tasks varied with the structure of the decision. They also concluded that well-structured problems (WSPs) called for a rather rational approach, as decision makers could make rational calculations. In turn, for them, ill-structured problems (ISPs) are not for rational decision making, as they are characterized by a high degree of uncertainty about the actual and the desired situation and therefore do not have a base for rational calculations. A further major condition for the nature of the task can be seen in the complexity of the decision-making context. Problem complexity can overstrain the physical constitution of our brain, and therefore, rational decision making can experience great difficulties when dealing with complex problems. Conscious thoughts in this case suffer from low capacity, making it less suitable for very complex problems (Dijksterhuis et al., 2006; van Riel et al., 2006; Witte, 1988). Dane and Pratt (2007) saw the problem characteristics as one of the two factors which influenced the intuitive effectiveness. They postulated that the more increasingly unstructured the problems got, the more effective and intuitive the judgment became in comparison with rational analysis. For Dane and Pratt (2007), ISPs are conducive to the intuitive decision-making process because of the absence of well-accepted decision-making rules. In a more general sense, there are various existing conceptualizations of problem structures. At first, there is the clarity of the goal state of a problem. If the goal is not adequately specified, this can produce a weakness in the structure

and therefore can result in an ISP. Further, the problem structure can be conceptualized by how well it can be formulated explicitly and quantitatively and how it then can be solved with well-known techniques. In this sense, the structure of the problem can be determined by the degree of clarity which the decision maker gets from his/her task. Next, the problem structure can also be conceptualized by the process. In this case, a problem is ill-structured when there is no effective solution procedure to solve the problem. In the case of a WSP, the problem may still be difficult, but there is a clear procedure on how to solve it. Finally, the structure of the problem is linked to the knowledge of the problem solver. A problem can be well-structured, if the problem solver is familiar with the knowledge needed to solve the problem or, in contrast, the problem can be ill-structured, if the problem solver does not have adequate knowledge of the problem. In this case, regardless of the initial description of the structure, it is the behavior of the problem solver that makes the ascriptions to the structure of the problem (Smith, 1988). Therefore, Joanssen (1997) clustered problems into three kinds: puzzle problems, WSPs, and ISPs. For Joanssen (1997), puzzle problems are well-structured and have a single correct answer, and all elements which are required for the solution are known. WSPs for him require the use of a limited number of concepts, rules, principles, a well-defined initial state, a known goal state, and a constrained set of logical operators. In contrast, ISPs are typically in a specific context where one or more aspects are not well specified.

Outcomes or results of decision making in business management can be characterized by different dimensions of efficiency. For Gzuk (1975), to achieve efficiency in the decision-making process, two conditions need to be fulfilled: (1) A decision must materialize the most efficient ratio between output and input; and (2) A decision must create results which ensure that the intended objectives will be achieved. For Gzuk (1975), to determine and measure efficiency in the decision-making process, it is therefore necessary to split the total construct of efficiency into single dimensions. He advocated for three components which allowed describing the dimensions of efficiency best: (1) The first component is described by the target of the process; (2) The second component is described by the input which means what resources are allocated to the process; and (3) The third component is described by the output which stands for the result of a process. This brings Gzuk (1975) to a multi-dimensional model. Using this multi-dimensional model allows measuring various single-efficiency dimensions and then, by combining them, to determine the total efficiency. Neuert (1987) supported this view by describing the material efficiency as one dimension where the measurement is a realistic input and output comparison in commercial activities which can be measured with objective criteria like earnings, profitability, growth, and financial independence. Bronner (1973) referred to this part of efficiency as the economic efficiency. In contrast, for Neuert (1987), in addition to the substantial efficiency, the personal satisfaction of the decision maker reflects a rather "subjective" outcome of the decision-making processes. He understood expected outcomes like identification with the team work, self-reflection of the group behavior, and the individual role within the group as "subjective results". In summary, he characterized the personnel efficiency as the individual evaluation of the decision maker, concerning their "felt results" of the decision-making processes as to their self-reflections on their behaviors during the decision-making processes. For Bronner (1973), it is not possible to measure the personnel efficiency on an objective base. He advocated measuring it via the personal activity of the decision maker within a decision-making process. As a third dimension, Neuert (1987) saw the formal efficiency which characterized the comparison of the aimed target or the desired situation with the actual current situation. In this sense, a higher coincidence between the targeted

and the current state/situation indicates higher efficiency, and in turn, a lower coincidence between the targeted and the current situation indicates lower efficiency.

Personality pre-determination/cognitive styles are mostly measured by psychological self-report instruments. Some of the most well-known and most used measures for the cognitive style or intuitive/rational behavior (Harper, 1988; Henden, 2004; Hodgkinson, Langan-Fox, & Sadler-Smith, 2008; Langan-Fox & Shirley, 2003; Pretz & Totz, 2007; Ritchie, Kolodinsky, & Eastwood, 2007; Woolhouse & Bayne, 2000) include the cognitive style index (CSI) (Allinson & Hayes, 1996), Agor (1986) intuitive management (AIM) test, the rational-experiential inventory (REI) (Pacini & Epstein, 1999), and the Myers-Briggs type indicator (MBTI<sup>®</sup>) (Myers, McCaulley, Qenk, & Hammer, 2003). The CSI was designed by Allinson and Hayes (1996) to assess individual preferences on information processing. It distinguishes between two different cognitive styles: an intuitive style which emphasizes feelings, openness, and global perspective and an analytical style which emphasizes reasoning, detail, and structure. With a relatively small number of items (38 items with 3-point ratings), the CSI is convenient for administrating within large-scale organizations. To test the use of intuition in management decision making, Agor (1986) started testing executives from a wide range of organizations with the AIM test in 1981. The AIM is a self-report questionnaire including two parts. The first part reflects the ability to use intuition and consists of 12 questions which were taken from the MBTI<sup>®</sup>. Depending on the answer of the experimentee, the first part gives an indication on the preferred cognitive style (intuitive or rational). The second part of the AIM test consists of 10 questions and measures the actual use of intuition. Epstein introduced with the REI a measurement to assess the preference for rational versus intuitive thinking on the basis of the CEST (Pacini & Epstein, 1999). The REI distinguishes between two cognitive styles: a rational style which is measured by items being adapted from need for cognition scale (Cacioppo & Petty, 1982) and an experiential style which is measured by the faith in intuition scale. The two scales are again divided into sub-scales of ability and favorability. The ability sub-scale reflects the individuals' beliefs in their abilities to use rational or experiential thinking, and the favorability sub-scale reflects the preference to engage in this kind of information processing (Pretz & Totz, 2007). The MBTI<sup>®</sup> is one of the widely-used measures of intuitive traits (Langan-Fox & Shirley, 2003). The MBTI<sup>®</sup> is a self-reported personality construct which is based on the Jungian theory (Jung, [1921] 1971). The MBTI<sup>®</sup> identifies basic preferences on four dichotomies. Those basic preferences describe different ways of how people perceive information (sensing-intuition dichotomy) and different ways of making judgments (thinking-feeling dichotomy) in combination with different attitudes (extraversion-introversion and judging-perceiving dichotomy). From a theoretical point of view, there are two mental functions: the sensing-intuition scale which measures the holistic nature of intuition and the thinking-feeling scale which measures the affective nature of intuition (Pretz & Totz, 2007). The MBTI<sup>®</sup> identifies 16 different personality types which result from the interactions between the four dichotomies (Myers et al., 2003).

### **Hypotheses**

When taking the theoretical background into account, it seems that individuals facing simple decision-making situations perform well when taking rather conscious and deliberate thoughts, whereas participants facing complex decision-making situations perform better when taking unconscious and intuitive thoughts. There seems to be a clear link between the cognitive style and the structure of the problem. The more increasingly unstructured the problems get, the more effective and intuitive the judgment becomes in comparison to rational analysis. Therefore, ISPs are conducive to the intuition-based decision-making process

because of the absence of well-accepted decision-making rules and the vice versa (Dane & Pratt, 2007; Dijksterhuis et al., 2006). Intuitive behavior can be characterized as automatic, rapid, effortless, associative, and holistic by using heuristics to solve problems, which leads to the conclusion that intuitive behavior seems to be more appropriate and therefore more efficient whenever ISPs have to be solved. In contrast, rational behavior can be characterized as process-orientated and logical reasoning-orientated and requires justification via logic by using analytic approaches to solve problems, which leads to the conclusion that rational behavior seems to be more appropriate and therefore more efficient whenever WSPs have to be solved.

Based on these theoretical outlines, the following hypotheses can be formulated.

Basic hypotheses:

H<sub>B</sub> (Sub-hypothesis): Intuitive and rational (discursive) behavioral approaches respectively make a difference in decision-making outcomes in connection with different decision-making problem structures.

H<sub>01</sub>: Intuitive behavior in the decision-making process leads to higher decision-making efficiency within ISPs than rational behavior.

H<sub>02</sub>: Complimentary intuitive and rational behavior in the decision-making process leads to higher decision-making efficiency in mid-structured problems (MSPs) than sole intuitive or rational behavior.

H<sub>03</sub>: Rational behavior in decision-making processes leads to higher decision-making efficiency in WSPs than intuitive behavior.

H<sub>04</sub>: Rational behavior in decision-making processes leads to lower decision-making efficiency within ISPs than intuitive behavior.

H<sub>05</sub>: Intuitive behavior in decision-making processes leads to lower decision-making efficiency in WSPs than rational behavior.

### Causal Model

Based on the theoretical background and the set of hypotheses outlined above, a path analysis is used to select the relevant causal factors and to establish the proposed relationships among the independent and dependent variables, allowing the setting up of a causal model (see Figure 1). The latent exogenous measurement variables  $x_1$ ,  $x_2$ ,  $x_3$ , and  $x_4$  provide information about the nature of the latent exogenous independent variable  $X$  (personality pre-determination). The independent structural variable  $X$  influences the intervening variables  $Z_w \dots Z_i$  and the dependent variables  $Y_w \dots Y_i$ . These dependent variables ( $Y_w \dots Y_i$ ) again are operationalized and measured by the latent endogenous variables  $y_{w1} \dots y_{i3}$ .

In the casual model,  $X$  is the independent structural variable (personality pre-determination),  $Y$  is the dependent structural variable (socioeconomic efficiency of the decision-making process),  $Y_w \dots Y_i$  indicate the socioeconomic efficiency of the decision-making process depending on the problem structure (well-structured, mid-structured, and ill-structured),  $Z_w \dots Z_i$  are the intervening structural variables (structure of the problem),  $x_1 \dots x_4$  are the latent exogenous measurement variables (personality pre-determination),  $y_{w1} \dots y_{i3}$  are the latent endogenous measurement variables (socioeconomic efficiency),  $\gamma_1$  indicates the correlation degree between the latent exogenous and latent endogenous variables, and  $\lambda_1 \dots \lambda_{i3}$  indicate the correlation degree between the structural and measure variables.

The cause-effect model (outlined in form of a structural equation concept) depicts the multiple frameworks of determinants and variables, dealing with the impact of personality traits, behavioral patterns, and decision-task structure on decision-making outcomes and decision-making efficiency.

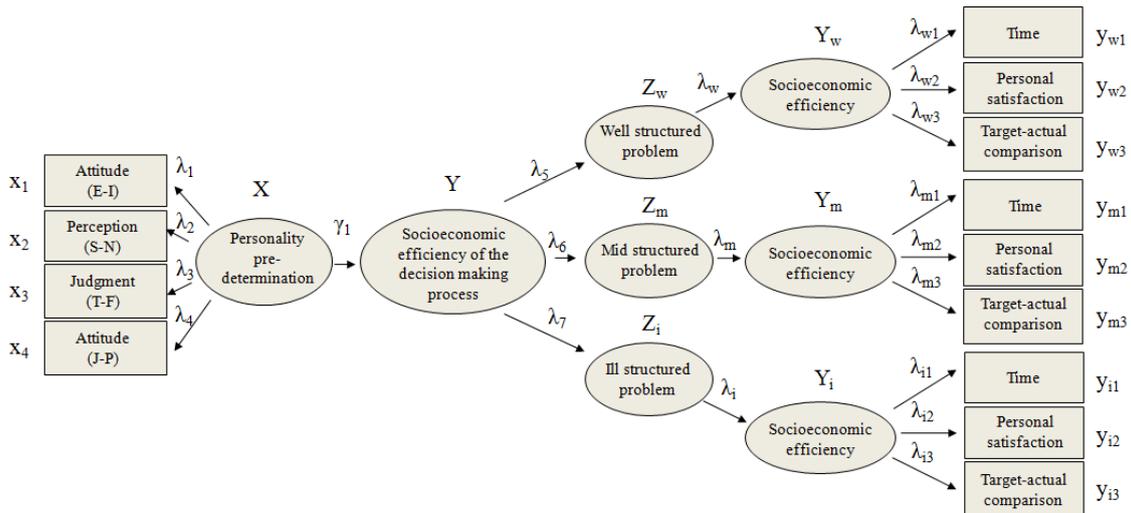


Figure 1. Causal analytical model for the relationship between personality traits and socioeconomic efficiency in decision making.

The various elements of personality pre-determination are influenced by the “independent variables” attitude, perception, judgment, and respective attitude as outlined above. Those independent variables determine the “independent personality set” on a range between intuition and rationality, mirroring the variety of personality traits. In the next stage, the “former” dependent variable personality pre-determination becomes the independent variable in the cause-effect relations chain, constructing the socioeconomic efficiency and the outcomes of decision-making processes as the dependent variable, influenced by the varying (individual) personality traits.

According to the above set of hypotheses, the socioeconomic efficiency of decision-making processes itself again depends on the problem structure of the decision-making task, meaning that specific personality traits cause different effects on decision-making outcomes, dependent on whether the decision-making task is well-structured, mid-structured, or ill-structured. This leads to the explanation that the socioeconomic efficiency of decision-making processes not only varies with the different degrees of personality pre-determination, but also with the respective problem structure.

Finally, the socioeconomic efficiency is measured by the three different dimensions time, personal satisfaction, and comparison of the actual substantial results and the intended (target) outcomes of the decision-making process.

The MBTI® is chosen for the determination of the personality/cognitive style, as the MBTI® has proven to be a valid and reliable instrument as many published studies have shown. And especially because the MBTI® shows a strong relationship with four out of five scales of the big-five model of personality, measured by the NEO-PI (McCrae & Costa, 1989). According to Jung’s ([1921] 1971) and Myers et al.’s (2003) theories, the four dichotomies will be used to assess the personality pre-determination. The intervening variable (Z), the problem structure, is operationalized by devoting three different kinds of structures with the WSP, the MSP, and the ISP. Based on the theoretical background, the three different structures (WSP, MSP, and ISP) are characterized by the following definitions. ISP can be specified by the following elements: (1) Goals are defined vaguely or not at all; (2) The problem description is not clear or well enough defined; (3) has no single objectively correct solution; (4) Information to solve the problem is not within the problem statement; (5) The problems are in a special context where one or more aspects are not specified; (6) In between-domain transfer,

capabilities are needed; (7) There is no execution program or algorithm available to solve the problem in a routine; and (8) Solutions may not be final, a plan is rather put in place to find out if the solution works in reality, based on the implementation and evaluation. Problem solving in this case becomes an iterative process. In contrast, WSP can be specified by the following elements: (1) have well-defined initial state and goals; (2) have a single correct answer; (3) All elements which are required for the solution are known; (4) Problem solving requires using rules and strategies like logical and algorithmic processes which ensure a correct answer; and (5) The current state of the problem can be consistently compared with the goal state. For MSP, the following definitions are adopted: (1) have a defined initial state; (2) Goals are known, but only when information, findings, and data might be implicitly embedded in the problem and must be formulated and found by the individual; (3) require the use of a limited number of concepts, rules, and principles; and (4) Knowledge of skills of how to solve WSPs is needed (as a sort of “meta-cognition”).

The operationalization of the socioeconomic efficiency can be accomplished by various constructs. Especially the choice of the efficiency dimensions is always related to the judgment of the observer. To measure the dependent latent endogenous variables, the socioeconomic efficiency will be split into three dimensions: the formal efficiency, the material efficiency, and the individual efficiency (Neuert, 1987). By definition, the decision-making process can be understood as a target-orientated process (target-output relationship) where the authors aim to reach a future/target state from a current/actual state. In this sense, the decision making with its various sub-processes can be seen as a formal instrument for solving problems by taking choices when selecting alternatives (Gzuk, 1975). The comparison among those alternatives can be described as formal efficiency. The level of formal efficiency can be determined by comparing the aimed target or the desired situation with the current situation. The material efficiency in decision making relates to the economic results and can be understood as an input-output relationship of corporations which is measured by criteria like profit, growth, rate of return, etc.. Management science has created a series of key indicators to display the material efficiency in decision making. Mostly, these are measures which indicate economic activities as input-output relationships with performance indicators like profitability, cost and returns, or cost and benefits. The formal and the material efficiency rather deal with the “hard facts” and reflect more the economic and therefore the objective by detectable and reproducible side of decision making. The individual (personal) efficiency reflects more socio, psychological, and subjective parts in decision making and therefore deals with results which can be considered as “soft facts” and are related to the emotions, feelings, acceptance, and satisfaction of the individuals having made a decision.

### **Research Method**

In order to test the theoretical outline and the abovementioned set of hypotheses, the authors suggest to design and apply the research method of a laboratory experiment. Laboratory experiments have been widely used for business, management, and economic research dealing with research questions referring to behavioral patterns and their respective explicable outcomes in decision-making processes (Sadrieh & Weimann, 2008).

Laboratory experiments provide the advantage that the empirical setting allows for the precise control of the formulated cause-effect variables by eliminating potential “interrupting” variables which may appear in field studies or field experiments. On the other hand, the “external validity” of lab experimental findings is still an issue for major scientific disputes (Hussy, Schreier, & Echterhoff, 2010).

As the sample experimentees, the authors suggest graduate students in master’s and doctoral programs with a significant professional background. Thus, one can make sure that the experimental sample is easily accessible on the one hand, and on the other hand, includes pro-bands with an academic and a professional background as well, which will undoubtedly increase the abovementioned “external validity” of the experimental findings (Bardsley, Cubitt, Loomes, Moffatt, Starmer, & Sugden, 2009).

The assessment of the personality pre-determination via the MBTI® which will also reflect the behavioral aspects of the hypotheses will be done before the laboratory experiment. This will allow the pre-selection of the participants in accordance with their personalities/cognitive styles (rational versus intuitive decision-making styles). Within the laboratory experiment, the participant will receive one out of three tasks with a dedicated structure (WSP, MSP, and ISP) and will be asked to solve the problem according to the description of the problem statement. This will allow testing each of the three problem structures with participants showing rational and/or intuitive decision-making styles (see Figure 2).

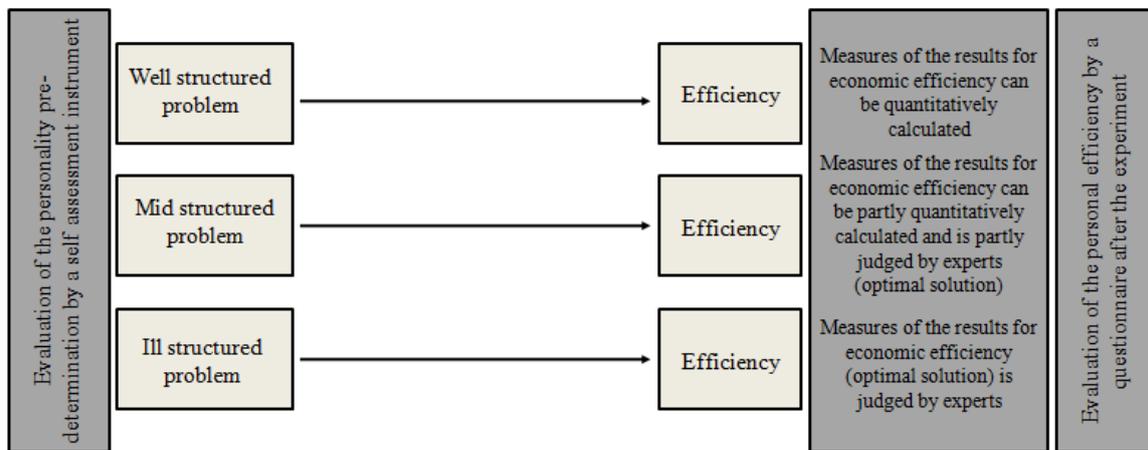


Figure 2. Structure of the empirical experiment.

According to the causal model (see Figure 1), the time (also as an indirect indicator for costs) will be the measurement of the variable to track the material efficiency dimension. Thus, the time consumption to fulfill a certain task will provide information about the material efficiency. The formal efficiency will be tracked by comparing the results of the various problem solutions of the participants to the “optimal results”. As the well-structured tasks, by definition, are tasks which can be solved quantitatively by a mathematical algorithm, the indicator for an optimal result for a WSP task will be a correct figure done by a calculation. For the ill-structured tasks where by definition the problem constellation cannot be calculated by a mathematical algorithm and may not provide an “objective” result, the optimal result will be determined by the judgment of academic experts. For the MSP tasks which are characterized by having a part within the problem structure which can be determined by a calculation and another part which may have no objective solution, the optimal result will be a combination of both: a calculation of a figure and a judgment of experts (see Figure 2). The individual (personal) efficiency will be tracked with a questionnaire after the participants have finished their problem-solving tasks. The questionnaire was chosen as data which gather methods for individual (personal) efficiency measurements, as personal impressions (like satisfaction, self reflection, etc.) in this case are hard or almost impossible to track by observing participants in an experimental environment.

### Summary and Conclusions

Theoretical implications from the literature review provide clear evidence that individuals facing simple decision-making situations perform well when making conscious and deliberate thoughts, whereas participants facing complex and so far unknown decision-making situations perform better when making unconscious and intuitive thoughts. Theory establishes here a clear link between the cognitive style and the structure of the decision-making problem. The more increasingly unstructured the problems get, the more “successful” and intuitive the judgment seems to become in comparison to rational analysis. Therefore, ISPs are conducive to more intuitive decision-making processes due to the absence of well-accepted decision-making rules and the vice versa (Dane & Pratt, 2007; Dijksterhuis et al., 2006).

To prove these theoretical implications in the next step, an empirical study according to the proposed experimental design (see Figure 2) should be conducted to test the causal model (see Figure 1). This allows falsifying or supporting the abovementioned set of hypotheses and provides a deeper insight, if these theoretical implications can be transferred into practical and orientated approaches.

If the abovementioned set of hypotheses are supported by the empirical experiment, this could, in a further step, allow building an application-oriented approach for organizations on how to use problem-type categories as guidelines for advice when relying more on intuitive, rational, or complementary approaches in the decision-making process. This could support organizations having clearer specifications and more security when it comes to the delegation of decision-making tasks. Organizations could also introduce intuitive judgments as a part of their decision-making culture without running the risk of having decisions made by a random selection of choices.

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