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The Effect of Expertise in Decision-Making”

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Constantly changing markets full of uncertainties need managers who know how to make decisions fast and effectively. We certainly rely mostly on analyzed and verifiable outcomes and are driven by the fact that decisions are only possible and ‘good’ by thinking about them consciously and analyze the best possible way of outcome step-by-step. However, a new “way of decision-making” is said to be always present in judgements, or even more dominant and therefore very crucial, but we are not really aware of it as it happens in the unconscious. Researchers therefore highly recommend starting to go deeply into the topic of intuitive decision-making to learn more about it and moreover to be able to control it, which then is meant to lead to ‘better’ managerial outcomes. In fact, this declaration needs to be analyzed by searching for answers, how the impact of specific domain expertise is on the two different decision-making processes, namely intuition driven and analysis driven judgements. Moreover, this will be shown by conducting a small experimental design in the specific area of Recruiting and Employee Hiring.

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1 Introduction

In psychological research intuition is a well-known phenomenon for several decades. According to various researchers and psychologists, intuition states a very important matter in the field of decision-making. Nevertheless, in some areas such as (day-to-day) decision-making in management, there is a lack of understanding in how intuition itself, and its interplay with the more common and executed analytical judgments, play a role in business decisions. It is not yet understood how this knowledge could help managers and executives to not only decide, but in fact to be able to make better and more efficient decisions. This aspect was the main motivation to corroborate the decision, to begin this thesis and research to provide initial answers to this important subject.

Beginning the research for suitable literature regarding this topic, which should in the end summarized state a connection between intuition, decision-making and management processes and decisions, gave the impression that most of the papers mainly focused on decision-makings with a background in the clinical and medical area. Nonetheless, there is a growing body of interest concerning intuition and rational thinking processes, especially in the context of organizational processes and decision-making. This is, among other reasons, in consequence of a fast changing and continuously more demanding environment, where one is forced to act quicker and at the same time more effective not only in business environments but also in an individuals' day-to-day decisions. Reading through the papers it was also found, that there was a high number of definitions for intuition available. In the end the one which was the most suitable for this master thesis' purposes was picked. Intuition is

"A cognitive conclusion based on a decision maker's previous experiences and emotional inputs."

(Burke & Miller, 1999, p. 92)

Having read this definition, it is obvious that this is only one possible approach to intuitive decision-making out of a hundred more definitions out there in other literatures. Nonetheless, one can certainly say that experiences and emotions are one of the main characteristics defining intuition and the intuitive decision-making and judgmental processes involved. After the following first parts of this thesis, one will get an even better idea of what intuition defines and what its characteristics are.

First, starting with a general definition about the notion of intuition and analysis, I will go into further detail to this topic explaining intuition with reference to business and management processes. After that, this thesis will be continued with the important aspect of effectiveness in this specific context, to be able to describe henceforth the disadvantages and advantages of both approaches to judgment and decision-making processes.

Second, I will dive into the differences between analytical and intuitive decision-making, where explaining when both in fact are or can be effective. Finally, conducting an experimental study with randomly assigned participants is supposed to display the standpoint of intuitive and analytical decision-making in the management area with focus on the interplay between Expertise and Recruiting. Hogarth (2010) for example gave a significant statement, meaningful for this thesis: “I believe that the greatest challenge facing intuition researchers is to determine more precise ways of classifying different types of intuitive phenomena that can lead to more specific and illuminating questions.” (p. 350) An analogous interpretation of the results and additionally important recommendations for future researches following this statement and experimental design, will be available in the final section of this thesis.

2 Defining Intuition

Starting this thesis with some general definitions, beginning with Malewska (2015) who described intuition as “...a non-sequential process of obtaining and processing information, which takes into account both rational and emotional elements...” (p. 98) This definition, which is one of the latest to find, matches mostly the used definition of the term “intuition” mentioned in the first chapter and is a further evidence for that intuition is not only a nonconscious thought, but also could include “rational” characteristics. Likewise, it is important to mention that Malewska (2015) described the beforementioned term as a “process”. This is what Hogarth (2010) addressed to focus future research on in his paper, yet this is still very difficult to employ. The latter mentioned author then further stated, that intuitive decisions can be usually seen as a relationship of speed and confidence, which could be understood as the personal characteristics of an individual. (p. 339) Malewska (2015) explains further on that “Intuition is used in every decision-making process, but with varying intensity ...” and that the

dimension of the usage of intuition is subject to various internal and external factors, such as one's experience, one's characteristics and qualities, circumstances under which one must decide, type of decision problem, and so on (Malewska, 2015, p. 98). These mentioned components of intuition will be continuously described in the thematic areas in the following. Moreover, it leads to the determination of the first hypotheses to be tested in the following study:

Other authors like Sinclair & Ashkanasy (2005) define intuition, using the following arguments: "...a non-sequential information processing mode, which comprises both cognitive and affective elements and results in direct knowing without any use of conscious reasoning." (p. 357). Dane & Pratt (2007) on the other hand, used the following definition in their paper that "...intuitions are affectively charged judgments that arise through rapid, nonconscious, and holistic associations." (p. 40). These four elements presented, will be explained in detail in the following subchapter. To sum up, most of the authors mention emotions and affective behavior as key characteristics and additionally describe intuition as parts which are not batched but creates a process of thinking in the end. After summing up some definitions of intuition, Williams (2012) in addition, remarks that "...intuition is the self-awareness of direct knowledge." (p. 51) Meaning that intuition is always a personal thought which happens inside one's head and one can reflect that it is something that is been said to oneself. That is why the author mentions, that "In order to master intuition, one must first master direct knowing." (p. 51)

Furthermore, Dane & Pratt (2007) and other meaningful authors, as one will be able to read about in the following, described two information processing systems in the domain of psychology and associated them with intuition respectively analytical thinking in decision-making (p. 35f).

The first system is defined as a self-acting mechanism which is characterized by information processing without any effort. This system goes hand in hand with intuitive thinking and decision making. In this scheme, implementation of the learned and access method to tacit knowledge are the most important keywords. The second type of information processing system is briefly worded the counterpart of the before described. It contains more of an analytical way of thinking which is additionally defined as conscious, rational and intended thinking (Dane & Pratt, 2007, p. 35f)

These two systems are counted among the Dual-Process Approach in Decision-Making Theory, of which more later.

Williams (2012) encourages the fact, that intuition makes people able to see “...the big picture, and looking at the whole problem rather than its discrete parts...”. (p. 48f) This fact is important as, commonly, business cases do not always provide all the information needed, which could be analyzed, to make the right decisions.

2.1 Faces of Intuition

To be able to differentiate intuition from rationality, this segment will focus specifically on the characteristics of intuition. Starting off, the following table shows a compilation of different characteristics relating to intuition and serves as a first impression of what intuition could be compounded of.

Characteristics of intuition
• It is a cyclical process of thinking associated with the overall cognition of reality
• It is not the opposite of logic
• It is not an irrational action
• It refers to the use of “deeper” knowledge resources collected over a lifetime
• Every person has intuitive potential (but at different levels)
• It is a capability that can be trained and developed
• It participates in any decision-making process
• It uses induction (the conclusion precedes the premises, the whole picture precedes getting to know its parts)
• It is a fast, sometimes even automatic process

Figure 2-1: Characteristics of Intuition. (Malewska K., 2015, p. 99)

The core statement one can screen in this table is rather simple to extract but depends relatively on one’s point of view. Summarizing all the sentences in the context of this thesis, intuition is characterized by a rational, deeper lying knowledge that can be exercised (over time) and takes part in any decision-making process – often together with other rational decision-making approaches – as it is a kind of automatic behavior executed by individuals.

Hogarth (2010) described further that intuition has its own assets, whereas the first one would be that it consists of “...a basic cognitive mechanism...”, meaning that one can, over time, identify different types of situations and assign them to a matching outcome or reaction.

Second, he described an individual's "...capacity for recognition..." as an intuitive asset, which means that the human brain is able "...to recognize previously encountered stimuli."

The third asset of intuition was described by that there is a growing body of "...automatic processing..." in intuitive thinking involved, which was already mentioned before. (p. 341) Complementary to that, other authors such as Dane & Pratt (2007) described correspondingly four main characteristics of intuition. In fact, they stated that this kind of decision-making consists of a "... (1) nonconscious process (2) involving holistic associations (3) that are produced rapidly, which (4) result in affectively charged judgments." (p. 36) Besides that, the authors termed the process of intuitive decision-making itself as "intuiting" and the outcome of this kind of decision-making as "intuitive judgements" in their paper. These expressions will be used in-between the following sectors.

The authors, Dane & Pratt (2007) wrote in their paper, and this is to be held in mind, that there is a clear distinction between intuition and "insight". (p. 36f) Hogarth (2010) took up this differentiation between these so called "In"-Words and clearly described, aside from intuition, the words "insight" and "instinct". The former, he wrote, "...means "seeing into" the structure of a problem or issue..." and emphasized herewith that it, besides that it can be achieved with intuition, it "...can also be achieved through deliberate processes." Having said that, it is important to mention that intuition and insight are not replaceable. Instinct, on the other hand, is a type of behavior that cannot be learned, contrary to intuition, and is inborn, e.g. yawning. (p. 339) Building on this, non-consciousness is the first and the most descriptive features of intuition. One is, to date, not able to describe how the final result of intuitive thinking developed in the brain, but everyone involved is aware of the outcome of this kind of thought and is therefore able to rationally interpret this result. As mentioned before already, it is still crucial to find out how this thinking emerges to be able to understand it better.

The second attribute of intuiting is the fact that it contains a procedure where incentives from the environment are linked to deep lying and non-conscious linkages to patterns and characteristics in one's brain. This means that intuiting is absolutely not matched to the type of thinking that is associated with results of rational judgement. Many authors (as cited in Dane & Pratt, 2007) named this kind of brainwork also "recognition", as Hogarth (2010) also mentioned in his differentiation of assets of

intuition, “apprehension”, “awareness” or “seeing” (p. 37) In this connection, the process of intuition is often described as an association of different information.

Having said that, some other literature synthesizes intuitive thinking as a “holistic view”, because there is no logical way of proceeding attached to this kind of thinking. (Dane & Pratt, 2007, p. 37)

Meaning, that in possessing a holistic approach of thought, “...individuals nonconsciously map stimuli onto cognitive structures or frameworks.” (Dane & Pratt, 2007, p. 37).

These structures are most commonly taking shape in terms of intuitive discretion, but there is an additional, more sophisticated type of cognitive structure as well. The latter mentioned, more sophisticated type of cognitive structure, is described as a framework of intuiting and is defined by a procedure of using a big amount of information out of one’s long-time memory without even being aware of it. In this case, this is representing intuitive judgements. According to the authors, this academic flow is said to be mainly concentrated on subconscious thought of highly skilled individuals, namely experts with special field knowledge. They are considered, according to the authors, to be the main target group when unconscious thought is employed. Their profession requires them to act right and fast in demanding situations, e.g. doctors in emergency rooms, whereas “right” in that case is often associated with intuition, experience and know-how.

The third, and maybe the most central, characteristic described by Dane & Pratt (2007) is that the process of intuition, is acting as a fast method in finding a decision compared to the conscious way of deciding. This feature of intuition, the non-conscious way of decision making, shows therefore that it is the most responsive to today’s environmental changes and standards. If the results in fact are “right” or even appropriate, is a subject for debate.

Nowadays it is not inevitable that every decision, no matter in what position in a company an individual for example is, must be done quickly, not to mention that these decisions need to be effective at the same time (Dane et al., 2012, p. 187). Effectiveness, with connection to intuiting, will be discussed in a following specific part of this thesis.

Last but certainly not least, comes the fourth characteristic which was designated by the authors, namely that the process of non-conscious thinking is resulting in decisions which are directed by “...affect and emotions...”. (Dane & Pratt, 2007, p. 39)

In this context, they also associate the fact that intuition is often used when the individual has a positive disposition at that time and therefore, the frame of mind could be a determinant of how an outcome of a decision is biased, which in fact is a huge pitfall.

Regarding the mentioned characteristic described before, one can say that intuition, including both the process itself and the outcome of it, is often characterized by personal emotional conditions.

In 2010, Hogarth explained that there is an important differentiation to make regarding the “...*content* of intuitions.” Continuing with the division of intuition into “...*forward* or *backward* in time”, meaning that there is a distinction between intuition which regards future assumptions, or as he named it “...*predictions*...”, or intuition where “...Something has happened and the outcome of intuition is a hypothesis that could explain “why.”” (p. 341) In connection to this, Dane & Pratt (2009) gave an insight into different “Intuition types”, where they divide three different kinds of intuition, namely “problem-solving”, “moral”, and “creative”. Describing these ways of intuitive thinking, the first, “problem-solving” is an “Automatic act of recognition due to pattern matching...”. The second, “moral”, represents “Affective, automatic reactions to issues that are viewed as having moral/ethical content...” and the last one, “creative” which is viewed as “Feelings that arise when knowledge is combined in novel ways...”. (p. 5)

Furthermore, the writers mentioned the necessary differentiation of intuitive and analytical judgment, whereas “...analytical approaches involve the use of systematic procedures designed to thoroughly assess all pertinent information, evaluate costs and benefits, and invoke conscious deliberation.” (Dane & Pratt, 2009, p. 4)

Authors like Kahneman & Klein (2009) focused their assumptions according to intuitive judgements on the facts that both of their approaches, Naturalistic Decision-Making (NDM) and Heuristics and Biases (HB) Approach, have the same understanding of intuition, which is for both regenerated of “System 1” out of the Dual-Process Theory in Decision-Making. This approaches and theories are to be described in latter parts of this thesis. Nevertheless, they differentiate intuition into “classes”, meaning that NDM manages intuitive judgments emerging from “...experience and manifest skill...”. On the other hand, the HB approach triggers “...intuitive judgements that arise from simplifying heuristics, not

from specific experience.” This kind of approach, in fact, “...are less likely to be accurate and are prone to systematic biases.” (p. 519)

Ensued by this introduction, with some general explanations regarding intuition, the following sections of this thesis will now mainly focus on intuitive decision-making and how and when it could be effective in management and business decisions.

2.1.1 Factors for using Intuition

Following the introduction and the characteristics of intuition, it is now safe to say which factors the usage of intuition guides and strengthens. Talking about intuition leads to the conclusion that it certainly holds factors like trust. We as individuals and organizations, rely apparently more on trustable information and decisions. Consequently, this leads us to an important question namely: When does one trust their intuition and is in fact using this approach as a decision-making tool?

Is there moreover a chance that individuals use intuition in all their judgements, as already quoted before, without even being aware of it?

According to a bunch of authors individuals tend to use their intuition when they are in a positive mood. (Dane & Pratt, 2007, p. 47) This statement will be shown exemplarily according to effective intuitive decision-making throughout of a paper from Sinclair et al. (2010) later on in this thesis.

Further on, “...the role of stable individual differences in thinking style...” is another proposition made by many authors. (Dane & Pratt, 2007, p. 47) However, after the authors, body language is another powerful but not yet commonly explored sign for the practice of intuition. As a fact, intuition is very frequently associated with changes in emotions and therefore to changes of the body. An additional factor described by the authors are cultural backgrounds. Whereas cultures with a low priority in preventing uncertainty are enthusiastic to take risks they do not know and additionally are convenient with uncertainty and disorder, other cultures may handle this case contrary. The first mentioned cultures tend to have bias towards the usage of intuitive decisions. Furthermore, gender also shows differences in preferences of using intuition. Generally, females tend to use intuition more than males. Meaning that “...feminine cultures, which emphasize the importance of feelings over logic, may be inclined to accept forms of judgement that are tied to affect and emotion.” (Dane & Pratt, 2007, p. 48)

These and the following factors in order to ensure intuition effectiveness, should be researched in more detail according to the authors, as these aspects are important influencers of the usage and moreover for the effectiveness of intuitive decision-making.

2.2 The Dual-Process Approach in Decision-Making Theory

One special topic, characterizing intuition from the very beginning in decision-making theory, is the existence of the so called Dual-Process Approach in Psychology. This model differentiates generally analytical or “... deliberate (conscious, controlled)” thinking from “... intuitive (automatic, unconscious) ...” thought. (Glöckner & Witteman, 2010, p. 4) The first models were introduced in the field of “...cognitive psychology...” in the late 1970s and are since then expanded in stages regularly. (Glöckner & Witteman, 2010, p. 4)

Much later, Evans (2008) proposed a subsumption of dual-process models into three types, namely

“... (a) models that assume a clear distinction between the two kinds of processes and an initial selection between them... (b) models that assume a parallel activation of both kinds of processes... and (c) default-interventionist models which assume that automatic processes are always activated first and that additional deliberate processes are activated only if it is necessary to intervene, correct, or support reasoning of automatic-intuitive processes...”. (as cited in Glöckner & Witteman, 2010, p. 4)

Following this, one can say that it is possible that individuals are capable of using both processes in a single decision-making process. According to the authors, in dual-process theory, “...Deliberate processes are supposed to consist of conscious, controlled application of rules and computations.” Whereas non-conscious thought is said to function “... automatically and without conscious control.” (p. 4)

Other authors like Dane & Pratt (2007) mentioned this psychological theory and divided them, among other terminologies from other authors, into “system 1” and “system 2” and are herewith following the path of Kahneman (2003) and Stanovich & West (2000). (p. 35f) It is said that the first mentioned “system”, which is very often connected to the unconscious way of thinking or intuition, is heavily linked to everyday-life situations where individuals not even are aware of that they are acting and deciding by using “system 1”. (Bargh & Chartrand, 1999, p. 462)

According to the authors Dane & Pratt (2007), the second “system” is described with a declaration that it “... enables individuals to learn information deliberately, to develop ideas, and to engage in analyses...” (p. 36) Research on the topic of the rational or deliberate process of decision-making in terms of managerial decisions, which is centralized in this thesis, is mainly done with “system 2”. (Dane & Pratt, 2007, p. 36)

Furthermore, Hogarth (2002) mentions that before-cited Epstein (1973) originated one of the main psychological research methods, which is a so-called multiple processing theory named “Cognitive-Experiential Self-Theory”. (p. 5) This approach is the definition of a process where Epstein (1994) concludes that “...people automatically construct...[a] “theory of reality”, that has two major divisions – a world theory and a self-theory...”. Having said that, the construct of building a “theory of reality” means necessarily, referring to the definition by the author, “...that the experiential system is emotionally driven...”. (p. 715)

Supposing a classification of two different systems which are in control, the author leads us to the “...rational system [which] are referred to as *beliefs* and...the experiential system as *implicit* or, alternatively, as *schemata*.” (Epstein, 1994, p. 715) With reference to the last-mentioned, one will be able to learn more about it in detail in the following chapters as other authors subsequently addressed this subject matter. It is said that schemata “...consist primarily of generalizations derived from emotionally significant past experience.” This system forms a very intuitive-like decision-making approach in individuals. Another key thing to mention here is that both systems play an important role in the heuristics and biases approach and the naturalistic decision-making approach, which are described in further chapters of this thesis. Not to forget about the RPD model, whereby “...the performance of experts involves both an automatic process...and a deliberate activity...”. (Kahneman & Klein, 2009, p. 519) It is important to bear in mind that the dual-process model is based on assumptions lying back about more than forty years ago. As time and environment changes quickly, opinions on this theory once change too. Several authors, e.g. Hammond et al. (1987), claim hence that the distinction into two separate processes is not “up-to-date” anymore and it is therefore recommended to focus on a new perspective. Hogarth (2010) states in this matter very clearly: “It is time to move beyond simple dual-process concepts of thinking.” (p. 350)

2.3 Characteristics of Analytical Decision-Making

“Being rational entails the acquisition of knowledge through the power of conscious reasoning and deliberative analytical thought.” as Sadler-Smith & Shefy (2004) described it. The authors specially raised the main problem of analytical judgments in the management area. They described that “...business environments are considered objective entities and successful strategies are the product of deliberative thinking.”

Practically, they defined excessively that no emotions are associated to managerial business environments and that only the good organization and the arrangement in their processes by the managers will guide them to the right and reasonable decisions. This, in fact, is and cannot be possible in our environment and attracts many different challenges. (p. 77)

To be able to capture the main differences between the, to this day, more common analytical (rational) decision-making tool and deciding through “gut feelings”, known as intuitive decision-making, this part will describe the core elements of the first mentioned. After Alter, Oppenheimer, Epley and Eyre (2007), “...analytical decision making involves basing decisions on a process in which individuals consciously attend to and manipulate symbolically encoded rules systematically and sequentially.” (as cited in Dane et al., 2012, p. 188)

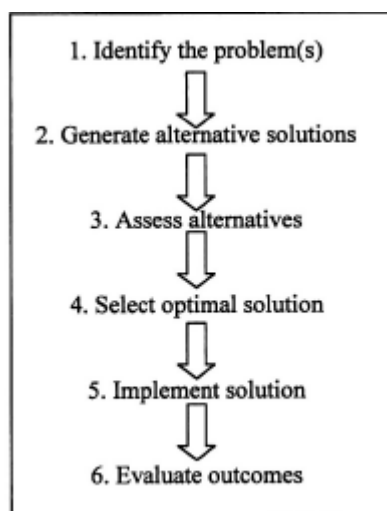


Figure 2-2: Process of analytical judgment
(Kutschera & Ryan, 2009, p. 14)

Meaning that in contrast to intuitive decision-making, analytics tends to be slower in processing and is characterized by a thorough consideration of the existent information. (Dane et al., 2012, p. 188) The graph on the left, shows a general approach in analytical decision-making, whereas one can see that it is divided into certain steps which are: identify the problem(s), generate alternative solutions, assess alternatives, select optimal solution, implement solution and evaluate outcomes. This breakdown leads to one’s ability to identify and

review them the decision process afterwards. Whereas with intuitive judgments it is hard to explain in the end how one received a certain result and decided regarding that result.

This process flow illustrates the main difference between the rational approach to judgments and unconscious decisions, as there is no given procedure available in intuitive thought.

Authors like Gozzi (2011) mention primarily, that “...analytic thinking is more demanding [than intuitive thinking] and rapidly degrades with dwindling memory and attentional resources.” (as cited in Williams, 2012, p. 49) In some cases, it can additionally be possible that analytical decision-making is “too narrow” and therefore does not allow individuals to see the “big picture” when deciding, which is contrary to intuitive decision-making. (Dane & Pratt, 2007, p. 37) As a matter of fact, Williams (2012) mentioned “...that good management practice by business executives should rely more on intuition and less on systematic analysis.” (p. 49)

Going more into detail on analytical decision-making, the following research, conducted by Hammond et al. (1987), shows, among others, characteristics of analytical cognition efficiency in expert judgments. Having said that, the authors explain their findings, stating that in three different tasks analytical judgments were not only on the same level but certainly was overruled by intuitive and quasi-rational judgments – which means a mixture cognition, where “...Some applications of quasi-rationality will lie closer to intuition, some closer to analysis.” (p. 755) – in terms of efficiency.

Furthermore, they found that analytical judgments are more susceptible to biases and mistakes than the other two types of cognitions are. According to this research, regarding task characteristics, which will be subject on the following pages, one can say, that the efficacy of a certain type of cognitive judgment is dependent on “...the correspondence between task properties and cognitive properties...”. (p. 766) So regardless of which type of decision-process is used, it is important to know when to use which of them on what kind of task.

3 Influencers of Intuitive Decision-Making Effectiveness

Whether intuition is effective or not was discussed in the majority of papers which were studied for this particular thesis. This chapter will therefore especially focus on the outcomes of intuiting, namely intuitive judgments, to be able to differ ‘good’ and ‘bad’ judgments afterwards and to be able to begin to understand which aspects the effectiveness of this topic drive.

Generally, according to Malewska (2015) “...decision-makers are often not aware that they use intuition, [but] it can significantly increase the accuracy and effectiveness of the decision-making process.” if they were conscious about it. (p. 98) Many other authors, as cited in Dane & Pratt (2007), are convinced that intuition is not on the same street as other more rational decision-making models available nowadays. However, another group of authors mentioned in their paper, claimed that intuition, under suitable conditions, is indeed equally good as other decision-making strategies. (p. 41) Thus as one can recognize, the opinions are predominantly divided. This disagreement is tried to be resolved in the following paragraphs by illustrating how intuitive effectiveness can be enhanced. In short, it is important that future researchers in the field of intuition “...identify useful ways of classifying different mechanisms...and, by specifying their functions, to illuminate the conditions under which they are functional and dysfunctional...” (Hogarth, 2010, p. 343) This highlights again, that intuition also could have its drawbacks in decision-making.

According to the authors Dane & Pratt (2007), the rational approach ruled research in decision-making for several years. But nowadays researchers and business experts turn their attention more and more to the (effectiveness of) the intuitive decision-making approach. Henceforth, to show how an effective intuitive decision-making could be influenced positively, the authors tried to describe the characterizing factors for effective intuitive judgements in a more detailed manner with the following graph.

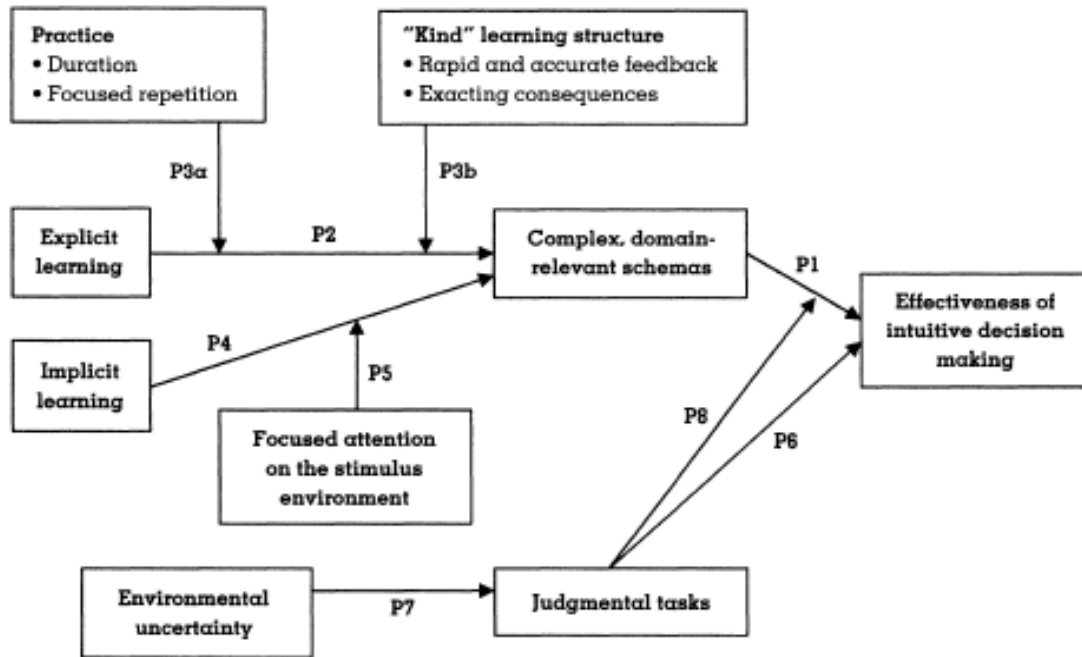


Figure 3-1: Factors influencing the Effectiveness of Intuitive Decision Making (Dane & Pratt, 2007, p. 41)

As a reminder the authors suggest that there are two main factors which influence the effectiveness of intuition. These are “... (1) domain knowledge factors and (2) task characteristics.” (Dane & Pratt, 2007, p. 41) This combination of factors has been tested by the authors and the results are described in a latter part of this thesis. Dane & Pratt (2007) primarily focus their theoretical analyses of effectivity in the case of intuition, by referring to the different levels of domain expertise. Binding to that, it is henceforth described “...how expert schemas may form [among others] via implicit and explicit learning.” (Dane & Pratt, 2007, p. 41)

3.1 Schemata

Starting with a closer look on Figure 4-1, domain knowledge is undermined by the schemas individuals are holding in their specific field. With schemas the authors mean the various types of patterns in terms of “cognitive structures”, which are attributes that can lead to intuition effectiveness. The scientists divided the theory of schemas into heuristic schemas und expert schemas representing two high points, respectively, meaning little and high domain expertise.

Beginning with the first one described, heuristics represent “...mental shortcuts that reduce the complex task of assessing probabilities and predicting values to simpler judgmental operations...”. (Tversky & Kahneman, 1974 as cited in Dane & Pratt, 2007, p. 42)

With an aggregation of “mental shortcuts” in mind, one can connect these to an occurring ‘new’ problem and associate it automatically with problems solved or seen from the past to find an assumption of the right solution path. This phenomenon was also described earlier in Hogarth (2010). However, this fast and informal approach has also drawbacks, of course. For instance, it can easily lead to reoccurring wrong conclusions and therefore result in inappropriate intuitive decisions. Additionally, the usage of heuristics is said to be “...inadequate to process complex environmental stimuli.” (Dane & Pratt, 2007, p. 42) With that being said, one should have an essential diversity regarding his or her methods to be able to match complex environmental incentives to the variety of schemas to ensure effectiveness in their decision-making at the same time. On the other hand, what makes it easier to use heuristics is that they are a more general approach and can be applied to several distinct tasks in various domains. According to this fact, that is why the authors argue that “...the relative lack of domain sensitivity diminishes the effectiveness of intuitive decision making...”. (Dane & Pratt, 2007, p. 42) Concerning the quantity of utilization, heuristics are often used by individuals which have less to no domain expertise because they “...may have inflated self-assessments of their own ability to make accurate judgments...thus, [they] may have a higher propensity to apply simple schemas across a wide variety of situations.” (Dane & Pratt, 2007, p. 42)

Whereas the before mentioned concept of heuristic schemas is the leading theory in common literature till the present time, expert schemas come more and more to the fore. After Dane & Pratt (2007) the major differences between the two theories are first, that expert schemas are vastly sophisticated, as mentioned already, and second, that the two approaches are dependent on the specific domain in which it is used. (p. 47) A good example for expert schemas is a study conducted by Simon & Chase (1973) where they observed the mastery of playing chess, by means of the usage of long-time memory patterns. They state that professionals in the domain of chess can see coherences of structures on the chess board incredibly fast and therefore are able to identify the next accurate move they should do only within seconds. (as cited in Dane & Pratt, 2007, p. 42)

According to this, the authors interpret then that “...” expert” intuition may be aptly described as a “pattern matching” process, whereby information is encoded and chunked into patterns, stored in schemas and then equated with environmental stimuli.” (Simon, 1996 as cited in Dane & Pratt, 2007, p. 42)

With that being said, the scientists also make mention of the difference between “beginners” and experts in a certain subject area. To be more accurate on this statement, they stated that there is actually no difference between those two types of individuals. The only gap novices, as they were called in the decision-making environment, have is that the merge of information, described shortly before, is not that highly developed. On the contrary, whereas the specialists link the acquired information quickly and only must or are able to respond to the certain case. (Prietula & Simon, 1989 as cited in Dane & Pratt, 2007, p. 43) Consequently, that is why expert schemas are declared to be able to undermine intuitive decisions with the factor of effectiveness. With that being said, it is important to use one’s domain expertise only in one’s special field of expertise and in the usual, meaning known, situations. Otherwise the made decisions cannot be effective apparently. For this reason, the authors claim that if intuitive decision-making shall be useful and competent for experienced managers, “[the] schema [of a certain business case] must be both complex and domain relevant.” (Dane & Pratt, 2007, p. 43)

Binding to schemas, there are other components associated with the effectiveness of intuitive decision-making as one can read about in the following. However, let us first dive into the topic of learning, as it is an indirectly but important determining factor concerning the study conducted alongside with this thesis.

3.2 Learning

Hogarth (2010), as an introductory example, focused the topic of learning by mentioning in his paper that “...it is important that people learn to control their intuitive reactions through deliberate analytic thoughts or actions.” Meaning, that intuitive thinking and decision-making is also based and done “better” when a form of analytical thought is involved. Based on the findings in the context of schemas, which were partly mentioned before, other scientific surveys have investigated the meaning of learning in regard of domain knowledge factors.

Reviewing this in mind, this bears that learning is in fact a crucial aspect which leads us to expertise in a certain field, which eventually is connected to intuitive judgments.

Hogarth (2001) describes two different types of learning, which were specially developed by himself. (as cited in Hogarth, 2010) He calls them "...kind and wicked learning environments." The former is described by him as these kinds of learning surroundings are "...those [environments] where the information tacitly processed leads to valid inferences." On the other hand, the other type of learning mentioned is where, "... samples of experience are not representative and feedback might be missing or distorted." (p. 343) The last-mentioned fact is not existent in "kind" learning environments, as it is also not necessary in the case of tacit learning. Other than that, individuals can be confident of false thoughts in wicked surroundings and therefore "... lead to dysfunctional actions in the form of self-fulfilling prophecies." (Einhorn & Hogarth, 1978 as cited in Hogarth, 2010, p. 343) This led to the ability of researchers to explain numerous types of biases in intuitive decision-making with reference to wicked learning environments. As the topic of disruptions in the decision-making process is not the main subject, it will not be included in this thesis. The author hereby concludes, that learning is not only appropriate for "... specific cognitive acts ..." but also "... relevant to considerations of affect and complex stimuli like patterns." (Hogarth, 2010, p. 344)

Following this introductory description of the topic of learning, other authors like Dane & Pratt (2007) focused on "...the general relationship between learning and the formation of complex, domain-relevant schemas." (p. 43) They mention herewith two types of learning, namely explicit and implicit learning. The first mentioned is said to be mostly linked to the circumstance "...on how experts...come to attain mastery over a particular domain." (p. 43) Meaning that in this case individuals grow a huge amount of memory, filled with the before mentioned patterns they use in their decision-making process. (Simon, 1996; Simon & Chase, 1973 as cited in Dane & Pratt, 2007, p. 43) Thus, the authors interpret that this type of learning is leading to an effective intuitive decision-making. Consequently, this statement is leaned on the fact that the saved information in expert schemas are as a rule accessed automatically. Additionally, these data have a habit of being automatically filtered to qualitative high inputs for decisions.

Hogarth (2010) described similarly that “...the reactions acquired are likely to be automated such that one is no longer aware of the fact that they are being reinforced and adapted by experience.” (p. 343)

Additionally, Dane & Pratt (2007) mention that the factor learning is dependent on three main characteristics of training to make it effective in decision-making. Mentioning the first one of them, leads us to the factor of length of the learning process to become an expert in a special topic, as this is already associated with years of experience in a certain field. Furthermore, it is explained by some other authors “...that a ten-year period of intense preparation appears necessary for achieving expertise in a domain...”. (Ericsson & Charness, 1994; Ericsson, Krampe & Tesch-Römer, 1983; Simon & Chase 1973 as cited in Dane & Pratt, 2007, p. 43) Other characteristics of the connection of explicit learning and domain schemas are replicates and constant feedback. Meaning more precisely, that regular repetition of the learned content combined with a consistent amount of qualitative high and further quick feedback result in individuals which become experts in their domains over some time. (Dane & Pratt, 2007, p. 43f)

With that being said, now turning to the second type of learning, namely implicit learning. The authors Dane & Pratt (2007) mention that implicit learning has an impact in the formation of expert schemas, whereas explicit learning is more or less important in having an impact in doing effective intuitive decisions. By implicit learning, the authors mean the process of acquiring the knowledge about a certain pattern, occurring in specific situations, non-consciously. Furthermore, implicit learning is memorized and gained differently than explicit learning and is kept in mind, whereas one is not able to recover their knowledge gained explicitly. The factor of non-consciousness is a sign that implicit learning and intuition are closely connected because intuition is handled in the same way. The author Reber (1989) links intuition and implicit learning in the way that he claimed that “...it is through implicit learning that individuals come to form the complex cognitive structures necessary for intuitive judgments and decisions.” (as cited in Dane & Pratt, 2007, p. 44) Hence, the authors think that “...implicit learning may result in the complex, domain-relevant schemas necessary to engender the effective use of intuitive judgments in managerial decision making.” (p. 44) These findings strengthen the theory that intuitive decision-making tends to be more effective when schemas, instead of the aforementioned heuristics, are used.

With that being said, as a result of both types of learning combined and giving attention to incentive situations, one is able to do the right decision in the right situation effectively by use of intuition. (Dane & Pratt, 2007, p. 45)

3.3 Expertise

As an introduction to the topic of expertise, the authors Phillips et al. (2004) concentrated this subject on two research beliefs, namely "...a laboratory-based examination and a naturalistic investigation of expertise." Underlining the differences between them, the goal in a study of expertise in the laboratory environment "...is to approximate the natural performance of experts under controlled conditions." Whereas the second approach is mainly focused on the examination of "...people performing tasks under conditions that are typical for their workplace." (p. 299) Meaning, that the natural environment that they are in anyway, is maintained in the case of naturalistic examinations of expertise.

For the study conducted together with this thesis, a laboratory environment is applied to be able to control for certain parameters, which are specified in a latter part. According to the authors, expertise is devoted to "...individuals who have achieved exceptional skill in one particular domain." Referring to this definition, in this case a differentiation of experts and non-experts is necessary. The main differences between these two kinds of individuals is largely their "...breadth and depth of their domain-specific knowledge." (p. 299) With that being said, Phillips et al. (2004) summarize a number of characteristics experts are distinguished with. Hereafter, there are only named a few of them: "Sense of typicality and associations", which means the recognition of the before described patterns; "Routines"; "Declarative knowledge", meaning that experts "...have command of more explicit knowledge...to go along with their tacit knowledge." (p. 300f) With this pool of knowledge, specialists are able to "Run mental simulations", "Spot anomalies and detect problems", "Find leverage points", "Manage uncertainty", and "Take one's own strengths and limitations into account (i.e., metacognition)". (p. 301ff) Experienced individuals are more likely to rely on intuitively made decisions rather than using a rational decision-making approach for their judgments. (Klein, 1998 as cited in Phillips, Klein & Sieck, 2004, p. 309)

In comparison, Salas et al. (2010) visualized the interplay between intuition and expertise and mentioned the following characteristics. He states that “Expert-Based Intuition” is characterized by fast creations of one-time possible judgments which are influenced by factors such as a high level of field knowledge, the perception of certain structures, and the incorporation of a decision-making approach which happens automatically. (p. 945) Many authors mentioned in different papers, that to establish a knowledge base in order to count as an expert, you need to have a domain experience of around ten years, meaning a noteworthy state of expertise in a certain field. (p. 306) According to Klein (1998), there are four significant paths which contribute to enhance one’s expertise level. These are: “engaging in deliberate practice, and setting specific goals and evaluation criteria”; “compiling extensive experience banks”; “obtaining feedback that is accurate, diagnostic, and reasonably timely; and”; “enriching their experiences by reviewing prior experiences to derive new insights and lessons from mistakes”. (as cited in Phillips, Klein & Sieck, 2004, p. 306)

In this manner it is important to look at other not irrelevant and prominent main approaches yielding the relation between intuition and expertise. These approaches are exemplified and studied intensively by authors Kahneman & Klein (2009) and are named the naturalistic decision-making approach and the heuristics and biases approach, henceforth termed NDM and HB. Generally, the NDM approach was tried to be encouraged as “...reliance on expert intuition in executive decision making...” which is particularly important in the context of this thesis. The HB approach on the other hand, was mostly the approach “...in which intuitive judgment was commonly found to be flawed...”. (p. 515) The mentioned two, first completely dissimilar approaches, are described briefly in the following. Beginning with NDM, this is the strategy, “... which focuses on the successes of expert intuition...” as mentioned already. Meaning that in certain decision-making conditions, judgments are to be made in less defined environments and in certain amount of time, whereas the ability to decide in this state is related to the ability of recognizing certain schemes (see chapter 3.1. for more detail). This ability of recognition was compounded with a certain amount of time spent with ‘learning’ these structures and problems, whereas the authors declared that with “a decade”. (p. 515f) Moreover, an effective way of decision-making in this case was the RPD (=recognition-primed decision).

Its main characteristic was, that this strategy “...took advantage of ... tacit knowledge...” which again goes hand in hand with the topic of Learning. Nevertheless, the NDM approach should not only be seen as an “...encouraging picture of expert performance.”, as it has also its negative sides to it. (see example in Kahneman & Klein, 2009) Aside from that, the main goal of the NDM approach was it to make intuition easy to understand by “...identifying the cues that experts use to make their judgments...”. (p. 516) Continuing with the contradistinctive further mentioned approach, the Heuristics and Biases Approach, which is the more suspicious approach to expertise and expert decisions. The main weakness of this strategy is its discrepancy, meaning that some kind of “...illusion of validity...” in certain judgments is part of the individuals “...sense of confidence...” which then totally ends up in failure. This approach mainly focuses on the downsides of studies made in this specific area of judgment and expert intuition and states that not all expert judgments, mainly in the clinical environment, are or can be valid. (p. 517f) With these facts in mind, an important question arises: How can expertise significantly be developed? Is it only the time spent in a certain field that is enough for good intuitive expertise? The authors state, binding to this question, that experts do have “...knowledge that is not acquired by a rational process.” which is obvious in this informational state of this thesis. Henceforth the authors cited that Simon (1992) described that pattern recognition “...is nothing different in principle from the process... [to] notice that a friend looks tired or angry...”. (as cited in Kahneman & Klein, 2009, p. 520) For the recognition model described earlier, two main factors are important in case of having intuitive judgment to be “skilled”. Provided these definitions, expert intuitions which are ‘good’, according to the authors, “...will only develop in an environment of sufficient regularity, which provides valid cues to the situation.” (p. 520) Other authors like Dreyfus & Dreyfus (2005) provided in their scientific paper a so called “A Five-Stage Model of the Acquisition of Expertise” for a detailed understanding of the development of specific knowledge.

3.3.1 Expertise in real world contexts

In order to provide some general practical advice, the following chapter will state these summarized. Firstly, a high state of expertise in a certain field is not the conclusion of “...interiorizing the rules that make up the theory of a domain...” (Dreyfus & Dreyfus, 2005, p. 790) Meaning that only theoretically

learning but experiencing and witnessing real business situations will help to emphasize expertise. Additionally, "...expert systems should not be introduced in the hope of reducing human error...". It is therefore important that rules have yet to be followed, where necessary, but they should be "...overridable if it flies in the face of the intuitions of those with long experience in the domain." (p. 791) Secondly, reality is that failures happen, but when they arise it is important to "...take responsibility for them...", this is "...the best way to avoid mistakes...".

According to the authors this is a main part in the subject of learning, as one learns best out of their failures. Thirdly, feedback and self-reflection are of a high importance in expertise in a real-world context. Environments and businesses not supporting that, mainly struggle to develop highly sophisticated experts. This is encouraged in the paper of Hogarth (2010) where he mentions that obtaining feedback is an "...important guideline..." to facilitate intuition, which therefore combines both the usage of expertise and intuition in merging one common and crucial factor of influence. He furthermore remarks that in numerous knowledge environments, "... feedback is either missing or misleading and ... judgments are often implicitly evaluated by assuming that "no news is good news." (p. 348) Lastly, the authors mention, that if one motions back "...to detached calculative deliberation...one becomes detached, [and] expert intuitive judgement is lost." (Dreyfus & Dreyfus, 2005, p. 791)

3.4 Problem structures

Supplementary to schemas and learning, according to Dane & Pratt (2007) there is another factor such as the arrangement of a business case, which could additionally influence the effectiveness of intuitive decision-making. In daily business environments, often new and unfamiliar decision in managerial environments. This particular case led the authors to the conclusion that these problems "...are conducive to intuition because of the absence of well-accepted decision rules for dealing with such situations." (p. 45)

On the other hand, another group of authors have claimed "...that analytical strategies that work well for problems that are well-defined are much less effective for ill-defined problems...". (Claxton, 1998; Hayashi, 2001 as cited in Dane & Pratt, 2007, p. 45)

That is why, to summarize, “...intuitive judgements are said to become more effective relative to rational analysis as a problem becomes increasingly unstructured.” (Dane & Pratt, 2007, p. 45) Furthermore, the authors explain the discrepancy between intellectual and judgmental tasks. They say that some researches showed that intuitive decision-making may be more effective regarding decisions in the context of ethicality.

Meaning correspondingly that intuition is not that effective on intellectual tasks, such as tasks which contain distinctive definitions and instructions. Regarding factors such as speed versus accuracy retrospectively, “...intuition is most likely to effectively manage this trade-off when it is brought to bear on judgmental tasks.” (Dane & Pratt, 2007, p. 46) As a last factor, and looking at Figure 1 once more, one can spot the aspect of environmental uncertainty. It is said to be influencing the before mentioned task characteristics and therefore can influence intuition effectiveness. As we already know from the chapters before, in uncertain times where little to no analytical information is available or where quick decisions have to be made, managers tend to use intuitive decision-making more often. Khatri and Ng (2000) underline that the fact that the usage of intuition in these times leads to a better performance in the organization. (as cited in Dane & Pratt, 2007, p. 46).

The authors conclude that environmental uncertainties are rather dependent on the above described factor of task characteristics, to build a positive outcome with intuitive decision-making. If the two main characteristics have a relationship and more important, if they even are able to underline effective intuitive decision-making, is still an open question. As one perfect example for interlinking these factors, the next chapter will cover an example study of a certain kind of task with domain expertise. As we will be able to see in the following examples, according to certain researchers, “... intuition tends to be effective on certain types of tasks...”. (Dane et al., 2012, p. 187)

3.5 Example 1: non-decomposable tasks and domain expertise (Dane et al. 2012)

Dane et al. (2012) mention in their work, that it is possible that intuition is only valuable to a certain extent in the context of logical tasks or how they call it “... tasks that can be decomposed and solved sequentially...” and therefore one is able to show in which and how many phases the decision was made (p. 188).

At first, the authors suggested that the contrary of the before described intuition, is “... relatively less likely to pinpoint the correct or optimal decision [...] on decomposable tasks and [...] may produce gross misjudgments.” (p. 188). This leads us to the circumstance that some other authors (as cited in Dane et al., 2012) say that intuitive decision-making “... may prove effective [...] on tasks that are relatively non-decomposable.” (p. 188). These undividable tasks are mainly these ones that cannot be analyzed systematically, e.g. classification of behavior, evaluation of art, ratings of food and so on. After Hammond et al. (as cited in Dane et al., 2012) intuition can capture many indications simultaneously, which is in that case an important aspect to be effective when judging on non-decomposable tasks (p. 188). The implementation of two studies brought the authors to the conclusion that their hypothesis is validated.

Generally, it is mentioned and proved also by other authors (as cited in Dane et al., 2012) that the effectiveness of intuition highly relies on expertise in the special field (p. 192). In this context it is important to say as well that this is only valid in the case of non-decomposable tasks. In fact, the higher the “... level of domain expertise, the effectiveness of intuitive decision making on non-decomposable tasks increases.” (p. 192). That is why it is certainly possible, that individuals use intuition on non-decomposable tasks in their daily lives more than one would believe.

The authors conclude their findings, with the proposition that analytical decision-making on the other hand could lead to bad decision in the case of solely moderate expertise in a field (p. 192). The meaning of expertise should be viewed in this thesis relatively for all kinds of tasks, apart from if they are non-decomposable or decomposable.

3.6 Example 2: emotions and particular moods

Emotions and moods are mentioned a lot in the topic of intuition, therefore it was found important to address this case with a particular observation. Sinclair, Ashkanasy and Chattopadhyay conducted a study in 2010, which was dedicated to show if individuals, making judgments and decisions, are affected by their own emotions and moods in intuitive decision-making. If so, the other undermining question was what kind of parameters determine the usage of emotions in non-conscious decision-making. Furthermore, they specified themselves in searching for answers regarding gender characteristics in the topic of intuitive judgments.

First of all, it is important to mention particularly that, different than expected, according to the researchers, emotions do not give the impression that they have any effect on rational decision-making approaches. On the other hand, individuals with an active and conscious knowledge of their emotions and moods made intuitive decisions resulting in constructive outcomes. Meaning that these individuals do indeed integrate conscious thought when deciding unconsciously. The authors' questionnaire led to the fact that positive humor yields mostly intuitive decisions which actually means that these individuals also "...rely on the default option of intuition..." (p. 393) Transmitting this onto cases in the management area means a high importance for executives to increase their "...emotional awareness and mood regulation..." to develop better approaches to unconscious decision-making. (p. 393)

Contrary to other conducted studies, Sinclair et al. (2010) found that negative emotions also have an impact on the usage of intuitive decisions. The only thing that is mattering regarding the relationship between emotions and intuitive decisions is the fortitude of the certain emotion, be it positive or negative afflicted. The authors mention that "...higher levels of intensity can cause a general sense of restlessness, leading to disruption of cognitive processing...", meaning that individuals lose their ability to combine certain known patterns to certain outcomes.

Therefore, they tend to decide with a pass over to a naïve mind and use "...less resource-intensive strategies." Sinclair et al. (2010) recommended to conduct a research in a more organizational context, to test if managers could be trained to do better decisions intuitively in the demanding surroundings of organizations.

Concluding this example, it is important to mention that "...female decision makers appear to rely more heavily on intuition..." because of "...their heightened awareness of emotions." (p. 393)

Epstein (1994) stated, that emotions and affect are main characteristics of the "experiential system". He argues that individuals who are extremely emotional think "...categorical, personal, concrete, unreflective, and action oriented...". Additionally, he states that "...the stronger the emotion, the more they think that way and the more their thinking appears to them to be self-evidently valid." (p. 710) This thinking strategy is consequently highly prone to failure.

4 Intuitive vs. Analytical Decision-Making – When should Managers use their Intuitive Judgments?

Generally speaking, the usage and also the trust in one's intuition is an important factor regarding executives and their business decisions. This is laid on the fact that "...businesses increasingly become continuously learning organizations (CLOs), [therefore,] successful intuition will grow in importance and be consciously developed within the organization." (Williams, 2012, p. 58) In this context, Lank & Lank (1995) advocate this statement by undermining the fact that it is highly recommended for firms "...to tap the full range of human capability...to have a sustainable competitive advantage." (as cited in Williams 2012, p. 59) Also, empirical research and theoretical frameworks indicate that intuition is an important contributory factor, under certain circumstances, regarding effectiveness in decision-making.

Having the content of the last four chapters surveying in mind, it is obvious that intuitive decision-making differs vastly from analytical decision-making. Nonetheless, an effective usage of both approaches to thought, doesn't mean automatically a strict separation of them. Moreover, a couple of papers and authors pay attention to a utilization of both strategies for decision-making processes. Simply said, it is possible that the two types of approaches to decision-making "...might complement each other." (Dane & Pratt, 2007, p. 48) Nevertheless, both tools "...differ substantially..." from each other. (Dane et al., 2012, p. 188) Hodgkinson and Sadler-Smith mentioned in their paper (as cited in Dane & Pratt, 2007) relating to the usage of both decision-making tools, that the skill to rotate between the two approaches is a highly wanted capability from executives and managers in today's economic and business environments. (p. 48) Furthermore, Simon (as cited in Dane & Pratt, 2007) said that "...effective managers do not have the luxury of choosing between analysis and intuition...real expertise involves the use of both types of decision making." That is why the authors in the following mention that "...[a] 50/50 weighted combination of model forecast and manager intuition leads to more accurate predictions than either decision making method in isolation." (p. 48)

Other authors like Shapiro and Spence (as cited in Dane & Pratt, 2007) reaffirm this statement and additionally underline the importance of the chronology of both types of decision-making strategies.

Meaning that it is better to first capture the results from the intuitively made decision following a more analytical approach and then summarize both conclusions as one core decision outcome in the end. (p. 48) Besides of that, Dane et al. (2012) argue that when distinctive settings are not present, it could be risky to use only one's intuition instead of deciding analytically first and then try to combine both tools. Reflecting upon this statement, the necessary conditions were already mentioned upon the chapters before, where there is an example given of deciding intuitively under the combination of non-decomposable tasks and domain expertise.

According to Agor (1985) and Jennings (1999) intuitive decision-making is generally more often used in "...non-routine decision or when faced with conflicting facts or inadequate information..." such as in critical situations where one is under high pressure. (as cited in Williams, 2012, p. 51) Not only time pressure or strain from the "top" are central factors, but also the importance and potential impact of the decision is leading to the usage of decisions with influence of unconscious thought. (Williams, 2012, p. 52) Referring to the author, managers find intuition most supportive in situations where there is a lack of information to be able to decide analytically and when there is no accurate outcome after the completion of rational thinking. (Agor, 1990 as cited in Williams, 2012, p. 52) The first-mentioned fact is a perpetual circumstance, as competitive markets are characterized by typical features such as lack of perfect information flow between the participants. Having said that, regardless of the prior statements, "...executives often try to keep it [the usage of intuition in business decisions] a secret and hide it, afraid that their colleagues would not understand...". (Agor, 1990 as cited in Williams, 2012, p. 52) This is one typical indication that the environment supposes that there is a certain level of expertise present, either because of years of experience or because of education.

Having said that, Kerfoot (2003) argues that executives should possess both good analytical and intuitive skills, whereas the intuitive part of decision-making additionally separates star performers from the good managers. (as cited in Williams, 2012, p. 59) Summarized by Williams (2012) managers should use their intuition mainly in situations where they are confronted with "...emergency decision making situations, when dealing with new trends, and when data is inadequate, unavailable, or inappropriate...". (p. 59)

This statement is underlined additionally by McGinnis (1984), who takes the two decision-making types to the next level and states that “Successful strategic planning requires the effective integration of analysis and intuition”. (as cited in Williams, 2012, p. 59)

The authors Hammond et al. (1987) introduce some suggestions for practice in the fields of expertise in order to make efficient judgments more common. First, experts should always be aware of the composition and task characteristics. It is mainly important to know, if the task “...is primarily intuition inducing or analysis inducing.” which then should lead the individual to the usage of the accurate type of decision. Second, “...the expert should try to use that mode of cognition likely to be induced by the task condition.” Third, “...maximizing accuracy in any judgment task will require that expert carefully attend to both task conditions and the cognitive activity to be applied to them.” Meaning, experts should be aware of both decision-making alternatives, resulting in assuring the most efficient judgment on certain tasks.

Nevertheless, significant scientific findings for practice in this area of research are rare. That is why this thesis will continue with an experimental study in the field of management, namely Human Resources Management, to further be a precursor for future research in the field of intuitive decision making and what intuitive decision-making drives, with specifications in regard of expertise.

4.1 The Aspect of Intuition in Employee Selection and Hiring

Miles & Sadler-Smith (2014) provided an important insight into the topic of employee selection and hiring with conducting a small-scale qualitative study. Notably they stated that there is “...the need for more empirical research on why and how managers used intuitions in their employee hiring decisions...”, referring also to authors Slaughter & Kausel (2014). The authors found several interesting outcomes regarding employee selection. Firstly, they stated some limitations regarding this topic, namely “...the “unpredictability” of human behavior and the “inadequacies” in the process...”. In fact, the usage of rational methods in employee selection, such as presentations or other assignments, would help recruiter “...to overcome the limitations of a specific method...” (p. 613) Nevertheless, a lot of criticism was detected in using rational selection methods, as they are “...too restrictive, too complicated, too limited, or beyond the resources of the...organisation.”

The use of intuition in employee selection became obvious and necessary at the end of the majority of cases examined in this study. Hereby it was described, that the more experienced you are as a Recruiter the more you are able and willing to use intuition in your daily hiring processes, which does not mean that it is always efficient. Nonetheless, participants saw the importance of intuition in their jobs “...as a “predictor of personality” ...” meaning that with this approach they were able to detect an employee’s performance because of the characteristics of that individual. In other words, “...they valued intuition as an informal assessment of job-related personality traits...”. (Miles & Sadler-Smith, 2014, p. 615) Likewise, Lodato et al. (2011) mentioned in their results section of their study that an “...experiential thinking style was strongly related to preference for intuition-based hiring.” (p. 359) As these statements are all mostly related to candidate interview processes where one is able to observe the candidate in person, one is still missing experimental background on decision-making processes with solely a Curriculum Vitae. Nonetheless, in the context of employee selection and hiring the most common motivations for Recruiters to use their intuition were “...personal preferences, resource constraints and recognition of the limitations of more structured approaches.” This means that they mostly rely on strategies where combining both analytical and intuitive decision-making approaches in their choices of applicants. Moreover, they stated that unconscious thinking was linked to “...performance, personality and person-environment fit...”, so its usage was spontaneous and situation-dependent. (Miles & Sadler-Smith, 2012, p. 624) Concluding, the authors mentioned that there are very few investigations about intuition-based hiring, also stating that “...there are relatively few qualitative studies of intuition in management *per se*.” (p. 624)

Combining the literature review of intuition, expertise and employee selection and hiring, brought up the research question for this thesis. Having said that, the described combination of topics is studied in a small experimental design with thirty participants, whereas the results may be found in the following sections.

5 Experimental Study

In order to show how expertise is contributing to the different decision-making processes in Recruiting, this study aims to demonstrate the impact of expertise in analytical and intuitive judgments in managerial decision-making problems. The decision to dive deeper into this topic is resulting out of the fact that expertise is not well proved as an impact for the usage of unconscious decision-making and judgments. In that regard, the following hypotheses are to be tested in this study:

H1: The introduction of analysis (after deciding intuitively) has an impact on the choice of candidates when the participant is an expert/non-expert.

H0: The introduction of analysis (after deciding intuitively) has no impact on the choice of candidates when the participant is an expert/non-expert.

Looking back at chapter 3.2. Learning (see p. 22), according to some authors it was mentioned that a time range of 10 years in a certain field is necessary to gain a level of knowledge, in that someone can be called an expert. In relation to that, CEO's are known to have or should have a high level of domain knowledge because of their time spent in a special field or branch. Authors like Salas et al. (2010) emphasized that it is important to learn "...how to improve intuitive expert decision making... [and that] there is much work to be done [in this area]." (p. 966) Additionally, the authors stated: "It is important to organizational effectiveness and the management sciences to contribute to the practice through more and rigorous research into the nature and development of intuitive decision-making skills." (p. 966) These statements are still to be proven.

5.1 Method

Generally, none of the forms or participants were excluded from the results of the experiment, as they all fitted into the experiments' scheme and no biases were existent. After conducting a completely randomized design, the collected data was transferred from the forms into a raw data table in MS Excel, whereas nearly all of the data were codified and stored. The parameter 'Position' as professional experience, was not codified as it was not of importance for this specific study and therefore was not needed for any of the statistics.

Considering the given theoretical background and all the facts stated in the chapters before, the following experiment was underpinned by personnel decisions in terms of hiring experienced staff as an example for management decision-making processes. As this kind of managerial hiring process includes lot of intuitional characteristics, it was not unessential to consider this topic for the purpose and context of this thesis.

The introductory topics stated earlier current understandings and background information in the special field of intuitive and analytical decision-making and determining variables for using them, completing this part with a focus on expertise. Additionally, some employee hiring, and selection determinants were briefly highlighted. The research problem in this case is somewhat simple and leaned on the experimental design conducted by Dane et al. in 2012.

Although in this case, the study will not be focused on special types of tasks, but rather on an important, influencing and often mentioned variable, which is expertise. Specifically, the goal hereby is to determine which of the given CV's (higher education/less experience vs. less education/higher experience) are chosen by experts (more professional experience in years than the average has) and non-experts (less professional experience in years than the average has) in intuitive judgments or in analytical judgments.

5.1.1 Participants

Participating individuals were employed in a random manner for this experiment. In summary, a total of 30 participants, whereas 70% of them had at least an undergraduate degree or above, contributed voluntarily to this experiment. The gender of the participants was not of matter, that is why in summary 20 females and 10 males participated in this experiment. Additionally, the participants were not divided into groups, because only one person per experimental session was allowed at a time, mainly to prevent any possible beforehand speculations. Graduates are said to be equal to "...line managers no lower than second level..." (Remus, 1986). This leads us to the fact that the majority of the participants had a certain level of knowledge in this particular field and are able to decide on simple management decisions, such as personnel decisions.

5.1.2 Materials

The set of materials mentioned as follows, were used in each of the experiments conducted with the 30 persons individually. Each participant received one sheet with the task descriptions and some classical questions about the individual itself at the end. In total, the contributors had to complete two tasks. To be able to complete these tasks, they additionally were given four Curriculum Vitae's¹ presenting the four possible CEO candidates from which they would choose one per task. These were divided into two main groups of candidates. One of them had a higher educational level, thus a bachelor's degree, a master's degree and additionally an MBA (=Master of Business Administration) degree, all of them completed successfully at prestigious universities. The other group of applicants consisted of candidates with solely a bachelor's degree, but not trivial amounts of professional experience compared to the first group of candidates. To control for gender, each of the 'CV groups' consisted of a male and a female candidate each. To measure time, which was especially in the first task of high importance, a stopwatch was used.

5.1.3 Procedure

All of the thirty individuals had contributed to this experiment by participating in one-on-one sessions. If either intuitive or analytical decision took place, was manipulated by a given time constraint in that the participants had to fulfill the tasks. For intuitive decisions, a time frame of 10 seconds per task and for analytical decisions, no time frame was given to ensure analysis. First, the intuitive part had to be applied and a candidate had to be chosen immediately after the given timeframe was over. Followed by the second task where the individuals had the time they needed to analyze the CV's and make their decisions afterwards.

To redescribe, first, they were handed out the task description of Task 1 and were told to not to turn the page until they successfully completed task one.

¹ The names and gender stated in all of the four CV's were invented only for this experiments' purposes and are not related to real life persons or cases.

This mainly was essential to prevent them from knowing what will come in the following and to ensure intuitive thinking. After that, they were told to read the task and state any questions they had regarding the instruction.

As soon as the participant was ready, the four CV's were laid down in front of him/her and time measurement was starting. (see Appendix 12.3. for the four CV's) After ten seconds they had to make their decision and choose the candidate they would want for the position of the new CEO. The next step involved turning the page and reading Task 2. This task told the participant to do the same exercise again but now without any time pressure. Finishing Task 2 led the individual to fill out some personal data, which were Gender, Age, and if they had any professional experience, meaning in any position and branch. If they had professional experience, they had to state what it was, for how many years they were in this position and how many hours per week they were occupied with this job. This was particularly necessary to calculate total experience years. Finally, choosing their highest educational level and stating their major was the last duty to complete the experiment successfully. (see Appendix 12.2. for the Handout)

6 Results and Findings

Starting with some general information about the constellation of the experimental design, the structure of age and educational levels of the participants are stated and analyzed at first. The small sample population consists of 30 participants, whereas 24 out of 30 are situated in the age group between 20 and 30, which means 80% of the individuals. 40% of the attendants had at least a bachelor's degree and

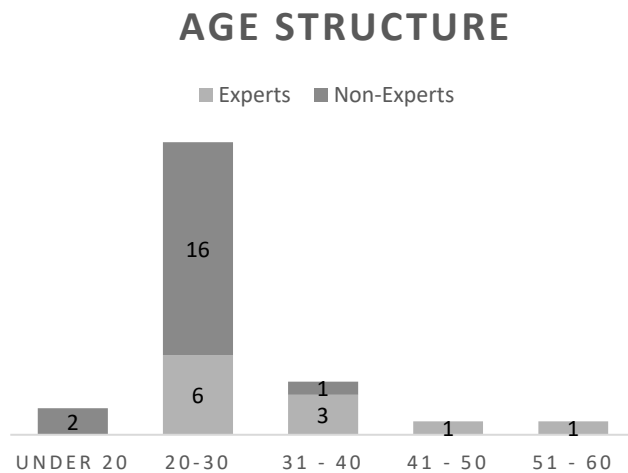


Figure 6-1: Age Structure

are therefore a very suitable target group for this experiments' purpose.

Other than that, dividing them into experts and non-experts brought the conclusion that the majority of them were non-experts regarding their years in professional experience. (see Figure 6-1)

This results out of the calculation of the average ($\bar{x} = 0,89$ years) of professional

experience in years with regard of hours worked per week in each of their positions. According to that, the participating individuals were detected as experts (same or greater than the average) and non-experts (under the average), resulting in nine expert-participants and twenty-one non-expert-participants.

Looking at the graph above, also gives us the information that the higher the age the higher the rate of experts involved as participants in certain age classes. Furthermore, it is also important to mention, that

there were no participants

with a primary school education, a finished apprenticeship or any other educational levels.

The remaining answers to the question about the participants' educational

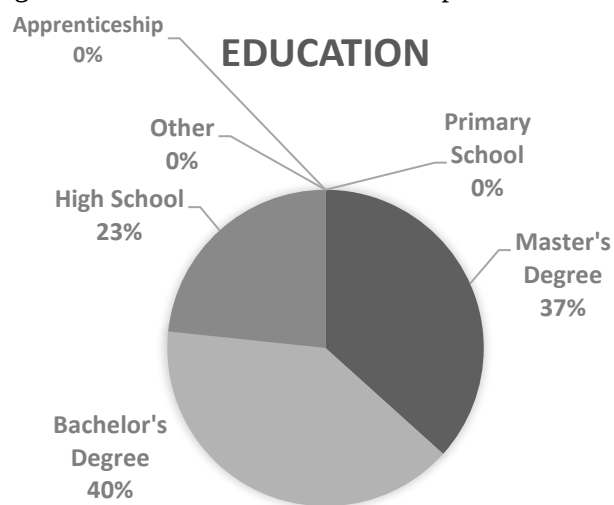


Figure 6-2: Level of Education

status included individuals with completed high school degrees. (see Figure 6-2)

Going further into more detail about the decision behaviors, one can say that in the state of intuitive decision-making, so in Task 1, 63.3% of the participants chose Education as a determining factor for hiring experienced staff, here the CEO. Whereas in task 2, in fact when deciding analytically, the participants turned their vote in the majority of cases to CEO candidates with more years of professional experience rather than a high education.

This also reflects the reaped feedback during the experiment. The majority of the attendees claimed afterwards that they did not realize that the educated candidate only had experience in form of short-period internships and therefore fully relied, in the state of intuition, on the high educational level the candidates had. They therefore overlooked the factors of where and how long the candidates had practical experience. But certainly, according to them, this kind of level of professional experience (only Internships) is certainly not enough for this kind of position, they stated.

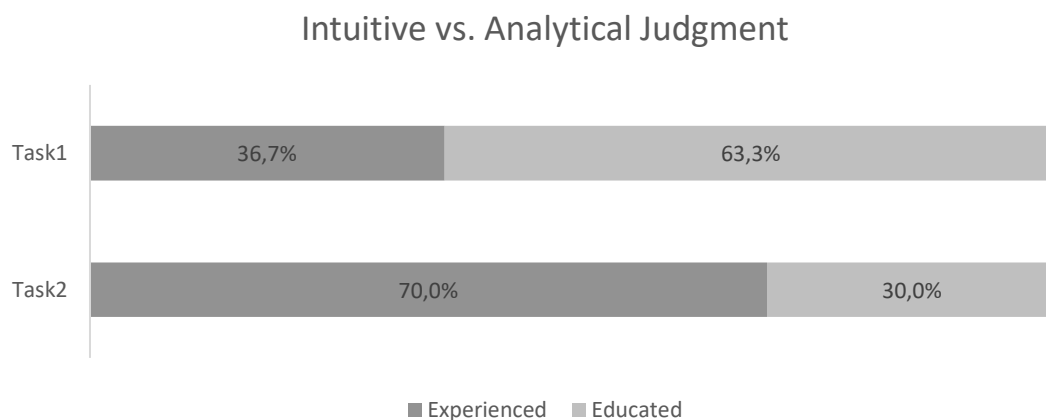


Figure 6-3: Intuitive vs. Analytical Judgement

Having said that, leads us to the arising question of how often participants changed their choices after deciding intuitively. Regarding Figure 6-3 closely, one can see that from a starting point of 36,7% of chosen candidates with a higher experience level, this quote was raised to 70% after the participants were deciding analytically. Overall, when hiring experienced staff with analytical decision-making, professional experience is seen as the more important factor amongst the two choices, education and experience.

A total number of 15 participants, which indicates a candidate change rate (CCR) of 50%, changed their selection of candidate after completing Task 2 successfully. (see Figure 6-4, changes in color)

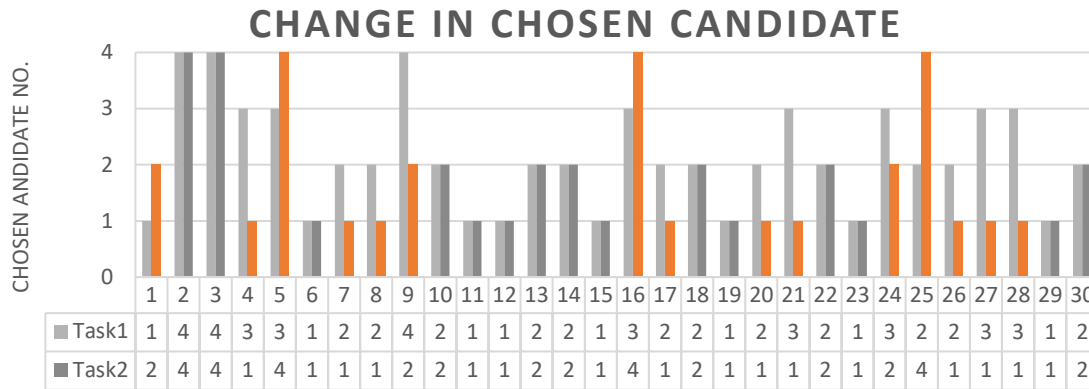


Figure 6-4: Change in chosen candidate – Comparison of Task 1 and Task 2

As the variable ‘expertise’ was the main focus in this experimental design, it is now necessary to divide the CCR into the expert CCR and non-expert CCR among the participants. First, focusing on the non-experts, which represents the majority of the small sample, one can say that this group focused educated candidates more with a percentage of 61,9%. (see Figure 6-5) However, after completing Task 2, and getting a closer look at the CV’s, actually 57,1% of the participants turned the tables and rather chose ‘Candidate 1’ or ‘Candidate 4’ (experienced candidate) as the future CEO of the company. Meaning that even having a lower amount of years of experience, and therefore assuming a lower expert knowledge in the field, in analytical judgments, it was more important to hire an experienced CEO rather than hiring a highly educated person. On the other hand, intuitive thinking led the participants to choose the educated type of person out of the pool of applicants with 71,4%. These results give the impression that education is important in the first hand (or look) but then it becomes less and less important by looking

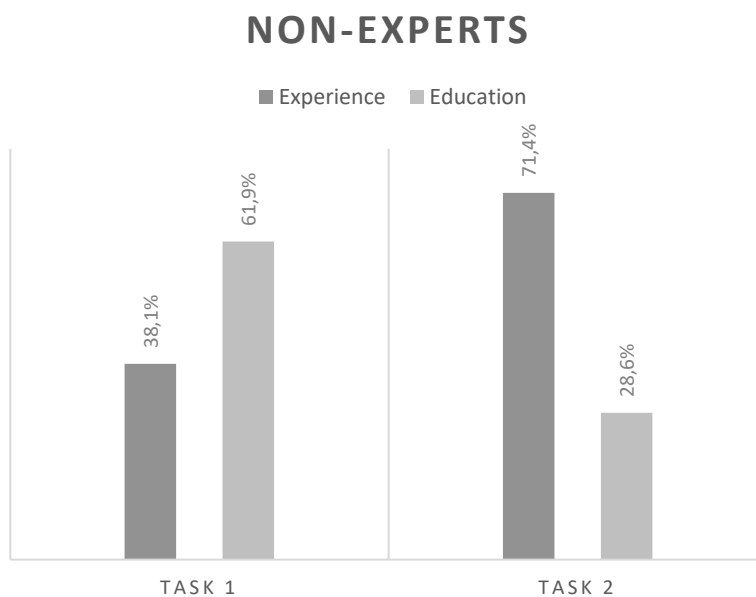


Figure 6-5: Non-Experts – Task 1 and Task 2

into the documents and facts in greater detail. Contrary to expectations regarding expert participants, the rate of chosen educated CEO’s in using intuitive thought was even higher with this target group. A majority of 66,7% chose a high educational level over years of crucial professional

experience. (see Figure 6-6) This result is certainly interesting, as these individuals were the most experienced ones amongst all of the participants. One would expect that these people would give a higher preference to one's equals, namely those with more experience than education. Among the experts, there were only 3 out of

9, which is 33%, who actually changed their chosen candidates after completing Task 2. In comparison to the non-experts, it has to be mentioned that the experts changed their selection to a lesser extent than the former. Consequently, one finding is that expert participants were rather sure in their first decision than

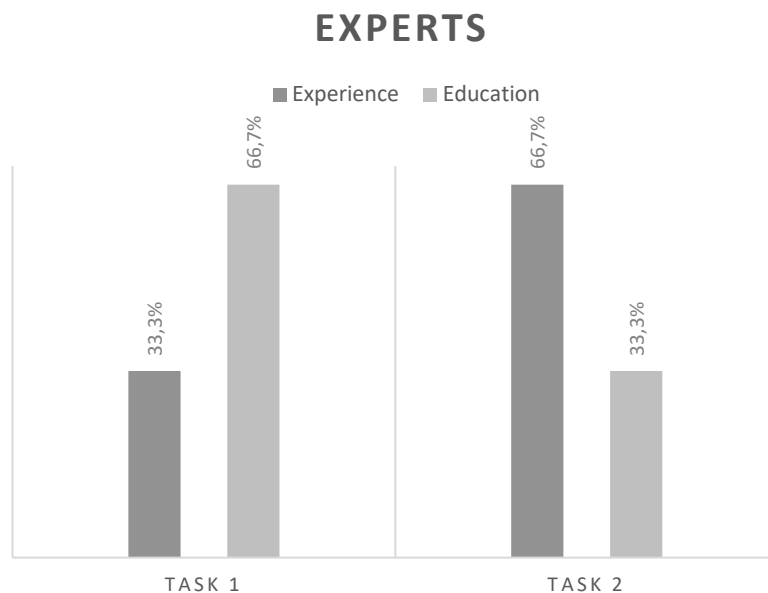


Figure 6-6: Experts – Task 1 and Task 2

the non-expert participants were. Nevertheless, the changes in fact turned the results in favor of the experienced candidates. In Task 2 they were then chosen with a percentage of 66,7% by the experts. However, in both of the profiles in the pool of participants, the most chosen candidate in Task 1 was 'Candidate 2' (educated candidate) and in Task 2 'Candidate 1' (experienced candidate) was preferred. This has the outcome of the selection of both types of future CEO's, namely education and experience respectively.

Heading deeper into the more statistical results of the experiment, will give us some more and detailed understandings of the impact of the different decision-making styles on the effect on candidate choices. Beginning with a Two sample T-test for paired Samples, the impact of the Analytical Decisions-Making styles (after deciding intuitively) was examined. This test was made to primarily observe if there is any difference between the two decision-making styles looked at. First of all, this report reflects under consideration of the t-Statistics with 2,01 that the mean of the chosen Candidate in the state of Intuition is higher than the mean of the chosen Candidate in the state of Analysis.

This simply describes, that going from the intuitive process of judgment into the analytical way of thinking, results in a shift to choose Candidate 1 in favor for all participants. To put it another way,

	<i>Intuition</i>	<i>Analysis</i>
Mittelwert	2,17	1,80
Varianz	0,90	1,20
Beobachtungen	30	30
Pearson Korrelation	0,53	
Hypothetische Differenz der Mittelwerte	0	
Freiheitsgrade (df)	29	
t-Statistik	2,01	
P(T<=t) einseitig	0,03	
Kritischer t-Wert bei einseitigem t-Test	1,70	

Figure 6-7: Effect of Analytical Decision-Making on Choice of Candidate

analytical decision-making has clearly an impact on changing or choosing a certain type of candidate (a change from Candidate 2 to Candidate 1 would mean a change from an educated candidate to a more

experienced candidate). Another important measured value is peaking out, namely the p-value is under 0,05 which means that the null hypothesis can be rejected. Hypothesis 1 is therefore confirmed, meaning that after deciding intuitively, analytical decision-making has an impact on the change of the chosen candidate in Recruiting. Having said that, this means, that Recruiting is not a perfectly suitable managerial task to rely only on unconscious thought as rational thinking clearly can change the choice of a candidate when solely looking at the Curriculum Vitae's.

Dividing the experimental group into experts and non-experts, interestingly, diverse outcomes were detected. Fitting to the results before, experts show the same effect when rational decision-making approaches are deployed. Here, the null hypothesis had also been declined, whereas the shift in the choice of candidates by changing from intuitive judgment to analytical judgment is not outstanding. Nonetheless, the choice of 'Candidate 1' in the first task is strengthened in the second task (t-Statistics: 1,89; avg1: 1,89; avg2: 1,33; p-value: 0,05). However, non-experts were behaving contrariwise. Notably, in their performance the results were not significant (t-Statistics: 1,24; avg1: 2,29; avg2: 2,00; p-value: 0,11). Therefore, the null hypothesis could not be rejected, and the main finding was that there was only a small effect of analysis on the choice of candidates when the participant was a non-expert. Also, regarding the averages of the differences between the choices show that non-experts did not respond as much as the experts to the manipulation ($d_1\{\text{experts}\}$: 0,56; $d_2\{\text{non-experts}\}$: 0,29). Another finding engages with the relationship between the educational level of the participants and whether they chose experienced or educated candidates for the open position.

Executing a Regression analysis facilitated to be able to see related outcomes, whereas the dependent variable the ‘educational level’ and the independent variables ‘Intuition/Analysis’ were. The fact at this point is, that there was a positive correlation between Intuition and Analysis and the educational level of the participant. However, the decision styles are not qualified to predict which educational level a participant has ($R^2 = 0,104$).

Nevertheless, some main statements can be derived. To give an illustration, the impact of intuition on the choice of candidates is that the more experienced a chosen candidate was, the less educated was the

<i>Regressions-Statistik</i>	
Multipler Korrelationskoeffizient	0,322
Bestimmtheitsmaß	0,104
Adjustiertes Bestimmtheitsmaß	0,038
Standardfehler	0,761
Beobachtungen	30

	<i>Koeffizienten</i>	<i>Standardfehler</i>	<i>t-Statistik</i>	<i>P-Wert</i>	<i>Untere 95%</i>	<i>Obere 95%</i>
Schnittpunkt	1,436	0,580	2,477	0,020	0,247	2,626
Intuition	-0,168	0,294	-0,572	0,572	-0,772	0,435
Analysis	0,543	0,309	1,754	0,091	-0,092	1,177

Figure 6-8: Regression Analysis – Education Levels and Choice of Candidate

participant (Coefficient: -0,168). Meaning, that individuals with lower educational levels intuitively choose candidates with more years in professional experience than the educated candidates themselves had. In comparison, the influence of analysis in Task 2 showed that the more the chosen CEO candidate was educated, the higher was the educational level of the participants (Coefficient: 0,543). In other words, when the experimental group had more time to look at the CV’s, they chose the educated candidate if the participant had also a high level of education.

Lastly, the need to perceive any effects of the different decision-making styles between Experts and Non-Experts and their chosen candidates was relevant, as this shows main answers to the questioned

<i>Regressions-Statistik</i>	
Multipler Korrelationskoeffizient	0,060
Bestimmtheitsmaß	0,004
Adjustiertes Bestimmtheitsmaß	-0,070
Standardfehler	0,482
Beobachtungen	30

	<i>Koeffizienten</i>	<i>Standardfehler</i>	<i>t-Statistik</i>	<i>P-Wert</i>	<i>Untere 95%</i>	<i>Obere 95%</i>
Schnittpunkt	1,810	0,367	4,931	0,000	1,057	2,564
Intuition	-0,036	0,186	-0,191	0,850	-0,418	0,347
Analysis	-0,040	0,196	-0,206	0,839	-0,442	0,362

Figure 6-9: Regression Analysis – Expert/Non-Expert and Choice of Candidate

relationship mentioned of this research. In this case the same statement in case of prediction can be given in the case of the relation between the decision styles and if the participant was an expert or a non-expert ($R^2 = 0,004$). Nevertheless, there are important propositions to be made. The effect of intuition hereby is described by the circumstance that the higher the professional experience of the chosen candidate, the higher the probability that this candidate will be chosen by Non-Experts. In the analytical environment the situation is just the opposite. That is to say, the more experienced the chosen candidate, the more possible that the candidate was chosen by an Expert.

In both regression analysis results t-Statistics were not zero, indicating that in all of the regressions, the coefficients had an impact on the dependent variables (educational level of participant and expert/non-expert participants). In other words, it was of importance what kind of education and how much one has worked, regardless of the branch or major, in the outcomes of deciding either analytically or intuitively.

All results considered, one can say that in the state of intuition the more experienced a candidate is, the more he or she is chosen by a non-expert who additionally has a relatively low educational level. This leads to the finding that experienced candidates are in the first hand, when deciding unconsciously, less chosen by individuals who are experts, with a higher total of professional experience years, and a higher educational level. Additionally, the latter mentioned target group mainly focused themselves on candidates with a higher education in this decision-making process. Deciding analytically, in fact, brought up that experts were at that point predominantly choosing more experienced candidates.

7 Discussion

In this experimental design, the relationship between intuitive decision-making, analytical decision-making and expertise was examined. Before conducting this small experimental study, expectations regarding the results were rather different than they turned out. Nevertheless, there are indeed a lot of findings worth to discuss about in this chapter.

In general, various differences between ‘experts’ and ‘non-experts’ in the topic of Recruiting have been found. The most outstanding difference is that ‘expert’-participants more often relied on their first choices and judgments than did the ‘non-experts’, which is something one could call professional maturity. Having the words of Dane et al. (2012) in mind, intuition indeed results often in bad decisions. One mentionable fact is that in this case, regarding ‘bad decisions’, as the tasks were not statistical based tasks or a task you can derive to its’ process steps after decision-making, individuals performed not that ‘good’ as expected on the beforehand of the study. But the question remains: What does ‘good’ mean in this manner? This led to the important assumption that ‘experts’ (in Recruiting) generally should first rely on time consuming decision-making processes than relying solely on decisions made within seconds. This leads us to the importance of looking at the relationship between analytical judgments and having a ‘helping hand’ from intuitive thought afterwards to confirm certain decisions. Accordingly, this suggestion was made before by Simon (1987, as cited in Dane & Pratt, 2007, p. 48) and was herewith enhanced by the conducted experiment for this specific topic of managerial decision-making in Recruiting. Subsequently, Miles & Sadler-Smith (2014) stated as an outcome of their qualitative study: “An important and consistent finding was participants’ perspective that intuitive and rational approaches are best used to complement each other.”, whereas their participants were different kinds of managers. (p. 622)

The results show, that experts in Recruiting are first focusing themselves more on candidates with higher educational background in intuitive judgment as would non-experts. They first relied on academic titles stated in the CV, rather than on professional experience. But then, after being able to analyze all the hard facts, they switched mostly to experienced CEO candidates. It is indeed interesting that the candidates who worked less in total, choose candidates which were highly experienced, whereas expert candidates intuitively only relied on educated candidates.

It may be that candidates' decisions who worked less to this time in life, are more oriented on their own state of professional experience and therefore are attracted by candidates with such high experience years. On the contrary, experts rather made contrary decision first and chose afterwards candidates with a professional career, which indicates what comes first in sight.

7.1 Limitations and Recommendation for Future Research

Heading back to the introductory part of this thesis and considering the results described before, one can say that a higher time period spent in professional environments is indeed a fact to consider in managerial decision-makings. Meaning that conducting a study in a similar environment, but with a target group of participants relatively older than the group of participants of this small experiment were, should be considered. Relying hereby on the assumption that participants in a higher age class would have more professional experience in years and therefore would contribute as 'experts' to the study. This gap of experts indeed was a disadvantage regarding the comparability of results afterwards. Additionally, the usage of both decision-making styled should be considered, as Employee Recruiting and Hiring is rather dependent on both approaches at a time. Leading us to the given time frame for this study, which was in fact too short to do a larger experiment, the factor time should therefore not be overlooked in future research. Likewise, important would be to answer the question in further research as to why experts make certain decisions, which would underpin the usage of the 'CTA (=cognitive task analysis) method' presented by Kahneman & Klein (2009).

Furthermore, it was detected that a longer time frame for deciding intuitively should be considered, as the participants of this experimental study were, in the majority of the sessions not able to go briefly through four CV's in ten seconds. Because of the higher content-driven task, the participants could not decide as quick as deciding between two handbags. (see study in Dane et al., 2012) Another thought in relation to why the participants, regardless if 'experts' or 'non-experts', were in the first hand choosing education as the determining factor for choosing experienced staff, is the fact that all CV's designed by stating educational backgrounds first. (see Appendix)

Thus, mixing up the designs by stating main characteristics in different positions would be highly recommended for future research in this area. At last, it is suggested to conduct this kind of study in relation with expertise in real-life situations, as a field experiment over a certain time, in a specific topic or branch.

As mentioned before, the usage of intuition in Recruiting is mainly based on personal preferences and situational environments. Additionally, it is tough to classify what is really 'right' or 'wrong' and what in fact is 'efficient' or 'inefficient' in the case of employee hiring. Also, natural environments show much more than artificial surroundings are ever able to demonstrate. This statement is also important to consider because of continuously changing environments and further because in this topic a lot of business problems are situation-dependent too.

It is to state that this small experimental study has restricted generalizability. It is important to mention that this experiment is limited as it did not observe both decision-making processes in a single task to determine potential usage practices of both styles at one time.

8 Conclusion

The theoretical background and review of important statements regarding this topic, in association with the conducted experimental study gives the reader a general understanding of intuition and analytical judgments. Getting a closer look on how these processes function in a certain managerial decision-making environment was a main goal of this thesis. Given the hard facts, one can derive a beginning knowledge of how intuition and analysis play a role in Human Resources Management, specifically in Employee Recruiting. However, this work should be seen as the beginning of experimental studies in the field of managerial decision-making. Therefore, it is highly recommended that research will continuously be carried on from now on, to improve and enhance ‘better’ decisions in this specific area. Having conducted this study and referring to its results, one can acknowledge the statement given by Hogarth (2010). He states that using analytical decision-making approaches are appropriate when it is simple to resolve them analytically. Otherwise, when “...tasks become more analytically complex, the advantage shifts to intuition...” assuming that the problem is smoothened by “kind environments”. (p. 345) As a retrospection, kind environments are surroundings where “...information tacitly processed leads to valid inferences.” (p. 343)

As mentioned in the beginning, acting quick may be required in today’s business environments is revised with this thesis. In some tasks, to be able to make effective long-term decisions, rapid handling and decision-making is not the appropriate way, so analytical judgments are sometimes essential. This study also indicates, that professional experience in the area of hiring upper-level employees is not to be overlooked. Regardless of how high one went in their educational status, if that person has little to no professional experience the chances are very low for that individual to start in higher positions when first beginning one’s career path. Revising the given initial definition of Intuition, there are still no claims to make about that. In summary, one was able to find that a certain level of expertise, suiting basic managerial decisions, does not implicitly result in the ‘right’ direction when using unconscious thought. It is therefore again important to accept the fact that intuition should really only be used on judgments where it is suitable, meaning on designated tasks or in appropriate order (the latter is still open for future studies).

Moreover, the results show that intuitive thinking is a highly sophisticated and tough topic to examine as the individuals' unconscious cannot easily be studied. Furthermore, this thesis raises the factor of finding the type of task, which is the best appropriate for using intuition. Summarizing, it is important to learn in future assignments and diverse studies which type of topic in the management area the best suitable is for the usage of automatic and unconscious thought.

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12 Appendix

12.1 Abstract (in German)

Stetig wandelnde Märkte geprägt durch Unsicherheiten brauchen Führungskräfte, die wissen wie man schnell und effektiv Entscheidungen trifft. Wir vertrauen heutzutage die meiste Zeit auf Resultate, die durch analytisches Denken entstanden sind und daher nachvollziehbar und überprüfbar sind. Zudem sind wir in unserer Gesellschaft davon überzeugt, dass nur solche Ergebnisse als „gut“ gelten. Nichtsdestotrotz entsteht seit geraumer Zeit der Trend einer neuen „Möglichkeit der Entscheidungsfindung“, die bereits automatisch geschieht, jedoch bis jetzt nicht wahrgenommen wurde, da dieser „Prozess“ im Unterbewusstsein passiert. Forscher und Wissenschaftler empfehlen daher eine bewusstere Wahrnehmung des intuitiven Denkens um mehr darüber zu lernen und somit dazu beizutragen, dass Individuen diese Art von Entscheidungsfindung besser kontrollieren können, um so „bessere“ Resultate erzielen zu können. Diese Darlegung soll nun anhand eines kleinen experimentellen Designs in Bezug auf „Expertise“ im Bereich Management erörtert werden. Dazu dient die Personalbeschaffung als solches, als Beispiel für alltägliche Entscheidungen des Managements.

12.2 Experiment: Introduction and Tasks (Questionnaire)

Page 1

Instruction Task 1:

Imagine that you are the Head Recruiter for Experienced Staff of the company you are working for, Foodies GmbH based in Vienna/Austria. Because of your recent excellent performance, the Board of Directors gave the special task to you to hire the new CEO of the company for the next 4 years as per contract. To be able to do that, you have 10 seconds to go briefly through the four CV's that are handed to you shortly and decide whom you would hire for this special position.

Please choose one of the four candidates:

- | | |
|-----------------------------------|-----------------------------------|
| ☐ Candidate 1 | ☐ Candidate 2 |
| ☐ Candidate 3 | ☐ Candidate 4 |

Instruction Task 2:

Now, do the task again taking the *time you need* for your decision, assuming that all other factors stated in Task 1 are the same for Task 2.

Please choose one of the four candidates:

- ☐ Candidate 1
- ☐ Candidate 2
- ☐ Candidate 3
- ☐ Candidate 4

Finally, please answer the following questions:

Gender: ☐ Male ☐ Female

Age: _____

Do you have professional experience?

- ☐ Yes
- ☐ No

*If **yes**,*

Position	Years in Position	h/week

What is your highest education level achieved?

- ☐ Master's Degree
- ☐ Bachelor's Degree
- ☐ High School (Matura/Abitur)
- ☐ Apprenticeship (Lehre)
- ☐ Primary School
- ☐ Other _____

Major: _____

12.3 Experiment: CVs

12.3.1 Candidate 1

CANDIDATE 1

MARY
OSBORNE

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South California
+1 2345 6789 ☎️
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Grade average: 1.1



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01/2013 – 01/2015

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01/2011 – 01/2013



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- Project Management Certificate
- Entrepreneurship Certificate
- Excellent MS-Office Skills, especially MS Excel
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07/2014 – 07/2016

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Bachelor's Degree in Business Administration | Harvard Business School

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01/2011 – 01/2014

Grade average: 1.1



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