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Clever decisions

Heuristic processes in supplier selection decisions

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Ph.D. thesis

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Esse Bálint

1. Introduction[1]

In my Ph.D. thesis I aim to explore the cognitive level of supplier selection[2] decisions. The keyword is *heuristics*: these are simplifying rules, rules of thumb, that can make decision making faster and simpler. I call heuristical decision making *clever* to express my positive view of heuristics. I see heuristic steps (which, as it will be shown, are not always necessarily heuristics) as the clever, in other words, smart or intelligent tools of the individual.

In this thesis I am searching for simplifying rules in individual decision making processes. I approach this topic from decision science perspective: I examine how individuals assess alternatives by the decision criteria, and how they reach their final decisions.

As a research field, I chose supplier selection decisions. The subject justifies the investigation of decisions taking place on a regular basis or at given intervals, with varying significance. Additionally, it is also true for supplier selection decisions that the alternatives involved are (in most cases) specific potential suppliers, rather than courses of action generated by the decision maker. Another point beneficial for the investigation of simple strategies is the fact that theoretical optimizing methods, which the decision maker could apply to supplier selection, actually exist. A further argument I find to be valid is that such decisions are affected by subjectivity to an extent smaller than, for example, human resource decisions. Last, but not least, my workplace (BCE Institute of Business Economics), my colleagues' professional profiles (purchasing, business relationships, etc.) and the resulting availability of professional support have also contributed to my choice of supplier selection as an example.

Thus, my research focuses on supplier selection decisions, in particular, personal decision mechanisms not codified at the organizational level, all of which I approach from a decision theory aspect. I do not deal with the issues of applying various methods

1 The dissertation was partly supported by TÁMOP-4.2.1/B-09/1/KMR-2010-005 project

2 The terms "picking a supplier", "supplier selection" and "supplier preference" all have equal meaning within this thesis.

to evaluating suppliers, I treat group and organizational effects, as well as product types, purchase situations and relationship effects as context, since it is the processes running in the heads of individual persons that I am interested in. I performed my research at small and medium sized enterprises – the justification for my choice can be found in the methodology section of my dissertation.

My research questions are discussed in detail in section 4 of the dissertation, at this point I shall just briefly summarize what I wished to find out as its author.
There are two topics that held my attention: the question of sticking to rationality and the application of simplifying decision rules to supplier selection. The question I ask in my thesis is what heuristic mental tools individual decision makers use, how they simplify their decisions through quick, elegant rules. Beyond the application of actual heuristics (or, as Kindler 1988 puts it, *thought simplification*) , I consider the application of heuristic decision strategies – i.e., rules applied without a preceding comprehensive analysis – as well. Besides the above, I was also interested to learn what the decision maker thinks of applying such – otherwise possibly fully efficient and repeatedly successful – simple strategies, or, to put it another way, deviations from the formal rationality known to us. It is the background and the motivations behind the application of heuristic steps that I wished to shed light on. Do decision makers consider heuristics an efficient tool that they can apply with confidence, or rather a necessary evil they resort to only when their time is limited? My main question in a single sentence is: *what cognitive shortcuts do decision makers use in supplier selection decisions and how do they evaluate these shortcuts?*
I carried my research out using the grounded theory methodology (Glaser and Strauss, 1967). Grounded theory methodology can be seamlessly adopted to the characteristics of my research subject, and ensure the research quality within the selected qualitative paradigm. Within the methodology process, it were interviews that I applied as a primary method.

My research was aimed towards a number of objectives; I would like to begin with detailing my *personal* ones. Firstly, I shall emphasize my *curiosity*. While conducting my seminars titled “Decision theory” and “Decision techniques”, I have learnt a lot about the way humans think. The topics I explored within the framework of my teaching practice attract the attention of even the layperson. The popularity of literature

on rationality, decision psychology and similar subjects, meant for general audiences[3] provides an indisputable proof for that. The literature I have read on some topics exceeds the level of the requirements set strictly by teaching purposes. Such topics are, amongst others, the usage of simplification rules, heuristics and rationality. There are different views, simultaneously present in the literature on the topic: while the usage of simplification rules is not argued by any of the platforms, they do differ in their views on the actual application. The opinion represented, for example, in Gigerenzer's works – i.e., that these algorithms, even though normative theory treats them as generally inferior, are, in fact, elegant, positive and effective tools – has made a favourable impression on me personally, and as such, has been a positive reading experience as well. I was curious to find out how well the practical manifestations of such algorithms can be observed and grasped, what decision makers think of them when using them. I was also curious to learn about the concepts related to decisions decision processes and rationality that individuals have. How much are these similar to (or different from) our teachings at the university? Literature examples are decisions – often binary ones – made in experimental situations. What interested me was how individuals detect the usage of such rules in real situations.

One purpose essays can have is to effect a *change*. If there is any change I would like to effect, then it has to be a move towards the positive approach. If I can successfully uncover the basic advantages of simple strategies, and prove decision makers to be satisfied with them, I will have partial evidence to support the studies of the positive approach. A possible future benefit of my research is the "softening up" of the classical rationality ideal, a better *acceptance* of natural, simplified personal decision making, perhaps even at organizational levels.

Although the task would be more difficult, I do not exclude the possibility of proven, efficient simplification algorithms which function well for longer periods being turned into prescribed processes (my thoughts on separation from persons, individual human beings are, however, ambivalent).

Should a set of examples taken from the life of organizations reinforce constructions previously illustrated by experimental examples, I would feel my research has resulted an achievement. As I am an assistant professor, my research is bound to be mixed up with *teaching* and the practice of teaching in my head. Thus, when considering the results, utilization in teaching will arise as an objective.

3 for example: Malcolm Gladwell (2010), Mérő László (2004), Jaksity György (2003)

The end results of researches based on grounded theory processes are substantive theories. The difficulties of the methodology lie in channelling it into articles and theses. Indeed, the demonstration of no more than the formation of the theory and the steps leading to it would be required, the latter being a mixture of the literature read and empirically uncovered relationships. Still, following the relevant conventions, I divided my essay into two parts: in the part on the theoretical background I review the literature I built my research plan on, while in the part on the results the relationships I uncovered empirically. I make some references to the literature in the second part too; I included the justification for doing so in the methodology part.

After the introduction, I proceed to introduce the theoretical background: starting with the clarification of decision theory concepts, I gradually reach the discourse on heuristic steps. In the third part I describe the characteristics of supplier selections decisions, i.e., the subject area of my research. In this part I give a summary of what I have learnt about the researched phenomena from my readings and experiences.

This is followed by the discussion of my research questions. The research results of the later sections will give answers to my theory based questions, thus contributing to the development of decision theory as well as the discipline of purchasing.

After the questions, in the methodology part, I outline the characteristics of the research paradigm, the methods applied and the sampling procedure.

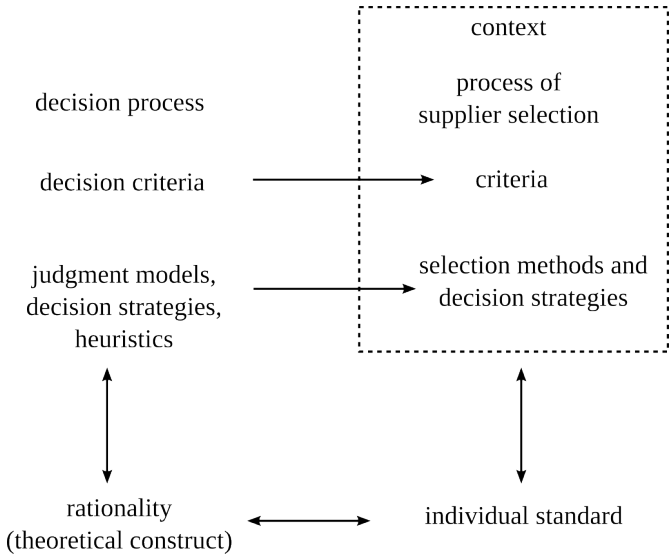
Next comes a summary of the system of relationships uncovered by my research, and then an evaluation of the results along the lines of research quality aspects. The concluding chapter briefly summarizes my research results, and sets out further areas for research.

2. Theoretical background

In the part on the theoretical background I introduce the theories, research results and personal experiences I used as a basis. This part contains the theories on the subject of my investigation that I have come to know. Maxwell describes four sources of theoretical backgrounds, namely „personal experience, existing theory and research, results of pilot studies" (Maxwell, 1996: p. 4). With so many components, discussion cannot be limited to a literature review, even though, of course, most of this chapter will be centred around the latter. According to Maxwell, it would be misleading to identify this part as a literature review, since knowledge has other, personal sources as well (e.g. conversations with colleagues, thought experiments). My task is of a critical nature; it is the problems I have met in the course of my readings, the gaps and contradictions my findings can fill and dissolve that I have to pinpoint. (Maxwell, 1996) This path will lead from the clarification and illustration of the theoretical background to the questions asked (although it contains them in itself, and the procedure performed at the theoretical framework–question phase is iterative).

Figure 1 illustrates the general layout of a concept map summarizing the theoretical background and the relationships between the concepts.

Figure 1. Concept map of the theoretical background



The left hand side of the figure shows the theoretical constructions, and the essential elements of the decision procedure: the decision process, the decision criteria and strategies. My research is focused on the simplification of the thought process, in other words, the usage of simple decision strategies and heuristics. Approaches to the latter, found in decision theory literature are based on the rationality construction: referring to their different concepts of rationality, various schools of thought have differing opinions on simplifications.

The right hand side of the figure shows the example of decisions examined in my research, i.e., supplier selection decisions. The way the process and decision criteria unfold is affected by a number of contextual elements. Extensive literature is available on supplier selection decision criteria, the evaluation of suppliers – and, indeed, selection methods. With my research, I intend to find out what cognitive processes of personal level supplier selection decisions are like: what criteria are taken into account, what strategies are applied when these decisions are made. These are the representative cases in which I look for the simplification mechanisms enabling faster decision making while using less information. Each individual has a standard against which they compare processes as decision makers. How this standard relates to the theoretical construction of rationality is a question I would like to have an answer to. Besides the

latter element, detached from all origins other than empirical ones, I illuminate the rest of the figure's elements in the chapter on the theoretical background. The first part of the chapter on the theoretical background discusses the theoretical constructions, while the second the specific example, namely, supplier selection decisions. The study unit of analysis is the supplier selection decision process. There are three central concepts of the process that I examine: rules of the thumb, the demand for rationality and the evaluation of the decision process.

My starting point is the general decision theory approach: I write about laying out the considerations and the decision strategies as two elements one has to familiarize oneself with when wishing to look for simplifications. Following that, I proceed to the part on rationality and the emphatic parts on heuristics. I also address the possible advantages of lowering the rationality requirement. In the second part of the chapter on the theoretical background (the third part of the dissertation) I provide a brief summary on the research field of supplier selection, simultaneously identifying the relevant aspects of decision theory concepts (supplier selection criteria, strategies, methods), as well as some of the context characteristics.

With the theoretical background laid out, the research gap my essay is meant to fill becomes clearly discernible. On the decision theory side, the latter presents itself as the exploration of simplification modes and contexts, and the in situ, out-of-laboratory observation of simplifications. On the purchasing literature side, it amounts to reinforcing the line of behavioural sciences, considered to be neglected by several sources (e.g. Carter & al., 2007). My research results should add new knowledge to the literature of both fields.

2.1. Decision process analysis

In the course of my research I was looking for and investigating simplification mechanisms emerging in decision processes. Thus, the illumination of the process elements critical with regards to heuristics, without an understanding of which my aim cannot be achieved, is necessitated. I narrowed down these elements to the subset of

decision criteria and decision rules as components where heuristics are most likely to be observable. There are other forms in which heuristics may appear, (e.g., probability judgments such as how reliable the individual deems a potential supplier when making their selection, or limiting rules on decisions – “we will wait no longer than n weeks for offers” – etc.), these, however, are mostly external details. (In the first example, for instance, the estimation output is taken as a decision algorithm input, and in the second case, an external limit excludes infinite optimization by imposing a stopping rule.) While I was looking for simplifications concerning the latter, it is criteria and strategies that I can write about as theoretically defined decision theory elements.

Taken within the scope of a decision process, simplifications are about how many and what criteria the decision maker lays down and makes use of, and through what algorithm they process them. How do they filter the alternatives (meaning the identification of the alternatives and simplifications applied to search stopping belong here), and how, through what strategies do they reach the final decision, based on the criteria? I shall begin the introduction of decision process elements with illuminating the decision criteria.

2.1.1.Decision criteria and criteria sets

Supplier selection decision situations have multiple criteria. They are situations in which an individual or an organization evaluates at least two alternatives based on at least criteria. Situations with a single, inevitably selected alternative do not fit into the category of decision scenarios.

Such multicriteria decisions are identified in the literature by a variety of terms. These terms include *multicriteria decision, multiobjective decision, and multiattribute decision*. Accordingly, the terms attribute and criteria are also in use. While using these terms interchangeably would stylistically enhance my essay, I prefer to clarify whether the usage of any single one of them is theoretically better justified than that of the rest. In establishing a distinction, I would first like to point out that my readings indicate the terms *factor* and *criterion* to be synonyms of each other. The distinction between the terms attribute and criterion is less clear.

Based on scientific encyclopedia, the two terms can be seen to be rather closely related, still, an attribute is essentially a characteristic, a value measured within a given dimension, while a criterion is essentially a crucial factor or consideration. For example: the criterion is a given factor (e.g. land surface area), while the attribute is the actual value of a specific alternative (e.g. 100 m^2). Henceforth, the two terms will be used with the following meanings: *criteria are evaluation factors, whereas attributes are values corresponding to specific alternatives by various given aspects.* Therefore, the terms multicriteria and multiattribute cover two different sides of the same meaning: evaluation by several criteria, and comparison by several characteristics of the alternatives, respectively. The term multiobjective is also in use – its meaning is the link to the next part.

Why are evaluation criteria set up? The first step of problem solving is laying out the objectives. Based on whether or not they serve as steps to higher level objectives, objectives can be categorized into overall and intermediate objectives, which form so-called objective hierarchies. Objective hierarchies assist decision making, since, after all, alternatives are selected based on objectives. The question one will investigate is how much specific alternatives contribute to achieving one's objectives. If one did not have objectives, one wouldn't make decisions at all, as they would be indifferent to whatever their future holds (Clemen, 1997).

Decision criteria are, in essence, the form objectives take in evaluations. When one has several objectives, one of which is low price, then the latter will be transformed into a decision criterion. In theory, decisions based on single criteria may exist. These may occur when a problem solving process is aimed at finding a solution for achieving a single objective. In such a case, the objective hierarchy would consist of a single level and a single element, consequently, no trade-offs would take place. Such situations, however, are rare. This is because most of the time the evaluation of the alternatives will reflect not only the current, but further objectives as well (to be more exact, the criteria the latter are transformed into). Their significance depends, for example, on the circumstances (consider the contrast in manner and meticulousness between decisions made in emergencies or under lack of time versus relaxed ones). It may be a representative trait that people make decisions based on a single criteria (usually the one

they deem to be the most important) when lacking time, while they are able to consider several criteria when having more time at their disposal. This could be because they wish to satisfy as many of their objectives as they can, or also because they find the difference measured by a single criterion too small and thus wish to find one that gives a higher contrast, and/or reinforces/refutes the selection made by a single criterion.
Hence, the terms multiobjective and multicriteria are in perfect harmony: namely, criteria assess the realization of objectives and the contribution made to achieving them. When the objective is, for example, profit maximization, the criterion will be the profit volume and the attribute the profit foreseen in a specific alternative (e.g. business plan) as expressed in monetary units.[4]

2.1.2.Decision making models and decision rules

Decision strategies (or decision rules – the literature treats the two as synonyms of each other) are the rules along which decisions, through judgment by the criteria, are made. My main question is how, starting with the available alternatives, one can gradually reach the objective of selecting one or more alternatives.

Decision strategies are the algorithms applied by the decision maker to attribute management. This is the manner in which the individual processes the information known on the alternatives identified and makes their decision. With some decision strategies defining the way in which the individual will keep looking for alternatives and the stopping limit, it is also closely related to the identification of the alternatives. I shall not deal with the process of alternative identification separately, only a single element of it, relevant to decision strategies: stopping rules. These are the rules by which the decision maker decides not to look for further alternatives and not to wait for their appearance either. Some decision strategies have presumptions integrated into

4 In this part I discuss differences from the aspect of term definitions, exclusively for the purposes of the present work, with the content in mind. This is not to be confused with schools of thought on multicriteria decisions, i.e., the two disciplines related to multicriteria decision making (MCDM): multiattribute decision making (MAUT), which is more of a branch of behavioural sciences, and multiobjective decision making (MODM), which is more of a branch of operations research.

them as to how and how long the decision maker will keep searching, while others presume a closed set of alternatives. The second case requires some sort of a stopping rule before the evaluation step to put an end to the search for alternatives. Since my main question concerns process simplifications, my interest does extend to stopping rules, which are suboptimizing strategies, even though they are not decision strategies in the classical sense.

Exploring decision strategies is important to me because their usage, or the usage of several strategies can occur in heuristic processes, with many strategies diverging from the formally rational process (to be discussed in more detail in the part on rationality). On a more general, abstract level decision strategies are models of human judgment making. They can be defined the same way as strategies – they simply represent a higher level of abstraction, in other words, are more of a summarizing nature. This is why I shall introduce them before the strategies.
Human judgment making occurs in decision making processes in typical patterns, which can be well described with a few base models. Several decision strategies can be built on each specific judgment making model. I shall quote the introduction of human judgment making models from Patton (1996). He gives a brief description of the two main categories and the quasi classical triple partition of the non-compensatory model:

a.) Linear compensatory models – weighted or unweighted. These are judgment making models which permit a weakness on one criterion to be compensated for by strength on another. Once the criteria have been defined, scoring, and then the summation of scores follows, so that the best alternative can be identified.
b.) Nonlinear, non-compensatory models (conjunctive, disjunctive, lexicographic)
In these models the decision maker does not permit a weakness on one criterion to be compensated for by strength on another.
Conjunctive – (*the best of the bad*) alternatives are compared by their weakest characteristic. Of these, the alternative with the best score is chosen. Another possibility is when a threshold value is established for each criterion, and alternatives with one or more scores below the relevant minimum value are excluded. The relative significance of the criteria is disregarded in this model.
Disjunctive – (*the best of the best*) the alternative with the best score is chosen, even if another alternative is better by, say, five other criteria.

Lexicographic – (*the most important attribute*) the order of the criteria is established by importance, and then the alternative with the best score by the most important criterion is selected. A second criterion is evaluated when (by the most important criterion) there is a draw at the first place. (Patton, 1996)

As mentioned earlier, decision strategies (also known as decision rules or filtering procedures) are more specific and concrete than judgment making models. The former are rules corresponding to the judgment making model, which describe an even more concrete filtering method. I rely on the strategies collected and examined by Bettman & al. (1991) and Payne & al. (2004), as I find these lists (see Table 1) exhaustive. For a better understanding of the discussion that follows, it should be noted at this point that – with the exception of the weighted additive rule – all of the strategies in the table can be seen as heuristic rules. The list is not complete, and it must also be added that in personal decision making the items can appear in any combination.

Table 1: Decision strategies

Decision strategy	Description
Weighted additive (WADD)	A compensatory rule, where scores by every criteria are considered for every alternative, and the importance of the criteria is weighted (the "deepest analysis" end of the scale)
Random selection (RAN)	There is no information sought for, a random selection is made (the "lowest standards set" end of the scale)
Equal weights rule (EQW)	The same as WADD, without the criteria being weighed by importance
Frequency of good and bad features (FRQ)	Decisions are made based on the proportion between strengths and weaknesses, by simply counting the number of attributes on each side. .Threshold values and focus are important.
Elimination by aspects (EBA)	The most important criterion and a threshold value are established. Alternatives below the threshold value are eliminated. Criteria are considered in their order of importance until a single alternative is left.
Majority of confirming decisions (MCD)	Alternatives are compared in pairs by every criteria, and the alternative better by the majority of the criteria is selected. When the number of criteria by which each member of the pair is better is equal, an additional rule is needed (e.g. the alternative better by the last criterion is selected).
Satisficing (SAT)	Alternatives are considered one by one and compared against the threshold values established for each criterion. Once an alternative satisfying every threshold value is found, it is accepted and the search is stopped.
Lexicographic method (LEX)	The most important criterion is selected, and then the alternative with the highest score by that criterion. In case of a draw. the same procedure is performed with the second most important criterion, and so on.
Semi-lexicographic method (LEXSEMI)	Similar to the lexicographic method, with the addition of the "just-noticeable difference" (JND) concept. A just-noticeable difference (by the most important criterion) between the best alternative and another alternative is considered a draw, and evaluation is continued with the next criterion.

Source: Own work, based on Payne et al. (2004) and Bettman et al. (1991)

Bettman & al. (1991) classify the above decision rules (most of which are simplifying rules) by several characteristics. The aspects along which they describe them are:

- Is the rule *compensatory* or *non-compensatory*? – In this respcet, WADD, EQW, MCD and FRQ are compensatory, the rest of the rules is not.

Is processing *complete* or *selective*? – The question here is whether or not an equal volume of information on each attribute of each alternative is processed. Compensatory rules normally fit the former, non-compensatory rules the latter description.

What is the *volume of the information processed*? – The volume of information will vary with the rules along which a particular decision process is run. Generally speaking, this is mostly dependent on the environmental variables, still, non-compensatory rules typically involve far less information processing.

Is processing *alternative-based* or *attribute-based*? – Alternative-based processing is when every attribute-value of a given alternative is examined before moving on to the next alternative. Attribute-based processing is when values of a given attribute are examined for every alternative, which is then followed by the next attribute. The latter is an easier cognitive task. WADD, EQW, SAT and FRQ are alternative-based.

Is the reasoning *quantitative* or *qualitative*? – Some strategies (for example, WADD) lead to decisions through quantitative reasoning – additions, multiplications – while others (for example, EBA) do so in a qualitative manner, i.e., by the simple comparison of two values. WADD, EQW,MCD and FRQ are based on quantitative reasoning.

Are there *complete evaluations* laid down? – Decision processes based on additive strategies, for example, will end up with a score for every alternative, while the same is not true for lexicographic processes. Complete evaluations can be produced by fully executing WADD, EQW, MCD and FRQ processes; the evaluation will be only partial when one of the other rules is used (Bettman & al., 1991).

These characteristics will also provide the principles for organizing the simplification rules explored in my research and linking them to concrete strategies.

Within the scope of my research, I did not wish to explore which of the known supplier evaluation methods decision makers use. My target was the decision process, the exploration of the strategies applied. On the other hand, once the applied decision strategies have been understood, and the strategies specific supplier evaluation methods

are built upon have been identified, it will be possible to link the two and find the known method most similar to the mental process through which a given individual will make their decisions. Several studies (for instance, Patton, 1997) raise the issue that in spite of newer optimizing models developed in academic circles, we still know very little about what methods purchasers actually turn to.

My line of thoughts will next lead to the terms of rationality, after which I shall turn to the set of issues revolving around heuristics. These decision theory terms will be useful in understanding and analyzing supplier selection processes and the simplifications occurring in them.

2.2.Rationality in decision making

In the preceding parts I have illuminated the issue of decision criteria and decision strategies. I am moving ever closer to the central issues of my thesis; even the previous part dealt with heuristic strategies. In a logical sequence, it would be the discussion of heuristics that follows right at this point, I, however, deem it important to briefly address the issue of the rationality ideal before turning to the rules of thumb, as the topic will be relevant to my research questions.

With little room for heuristics in the formal rationality concept, the theoretical aspect reveals a close link between heuristics and rationality. So far as theories are concerned, the positive or negative views on heuristics originate in rationality, they depend on the concept of rationality. The strongest base of comparison, or assessment factor in judging simplifications seems to be rationality. Then again, I have come across the comment that “individuals like to appear to be rational” not only in the literature and my colleagues’ research experiences, but have even heard it from leading managers. What does rationality mean to them, and why is it so attractive? In this part, I briefly summarize what rationality means, where its ideal-position originates from, and why individuals would like to appear to be rational, as well as the relevant literature.

2.2.1. The definition and forms of rationality

The dictionary meaning of *rational* is: having reason or understanding; relating to, based on, or agreeable to reason (http://www.merriam-webster.com/dictionary/rational). In my research I use the terms *rationality* and *reasonable* as synonyms of each other, with an open mind to my interview subjects' interpretations, and ready to accept the broader sense.

In the science of economics, however, the term has been used in a much narrower sense for quite a long time. Economists define a rational person as someone who strives for maximization and accepts nothing but the best solutions (Simon, 1978). This strict concept of rationality is *formal* rationality, one of several concepts of rationality.

Formal rationality can be defined as selecting the actions best satisfying the decision maker's objectives. This approach, known as the pure theory of rationality, assumes a profit maximizing decision maker, acting on clearly outlined axioms. The best known framework of axioms is that of von Neumann and Morgenstern[5] (Zoltayné, 2005).

The *substantive rationality* concept is not as strict as the formal one. It accepts a broader interpretation of rationality, in which people are almost always rational. It focuses on the correctness of decision process end results.

As Simon (1978) points out, the science of economics has been concerned with the end results of rational decisions, rather than their processes, even though the latter are becoming ever more important for decisions involving uncertainty. The science of economics, just like classical decision theory, has not been about exploring how people make decisions, but what decisions they make.

„In the past, economics has largely ignored the processes that rational man uses in reaching his resource allocation decisions. This was possibly an acceptable strategy for explaining rational decision in static, relatively simple problem situations, where it might be assumed that additional computational time or power could not change the outcome. The strategy does not work, however, when we are seeking to explain the decision maker's behavior in comple, dynamic circumstances that involve a great deal of uncertainty, and that make severe demands upon his attention." (Simon, 1978, p.14)

The *procedural rationality* concept is centred around the question of how efficient

5 These are the axioms of comparability, dominance, transitivity and independence. For more details, see Zoltayné (2005).

personal decision making procedures are, with consideration to the cognitive abilities and limits of the decisions maker. Being efficient procedures, heuristics belong here.

Herbert A. Simon's theory of *bounded rationality* has had a considerable impact. It stresses that rationality is bounded when the information obtained cannot be said to cover every detail. This is the case when not all of the alternatives are known, the likelihood of important external eventualities is uncertain, and there are unpredictable consequences of a decision (Simon, 1979). The basic tenets of the theory are the sequential management of alternatives, the usage of heuristics and satisficing (Zoltayné, 2005). At this point, I shall not delve into the theory; I will return to its elements relevant to my research in the sections on heuristics and opinions formed on rationality.

Ecological rationality is when an individual adapts their reasoning and behaviour to their environment (Gigerenzer, 2004). This definition is in sharp contrast with the classical forms of rationality – the latter claim reasoning and behaviour to be rational when they comply with the norms of logic, statistics and probability theories.

Purposive and value-rationality, introduced by Max Weber, is somewhat different from the rationality concepts introduced above. An action is value-rational when it is motivated by values and obligations, without any regard to the consequences. The actions of purposively rational individuals are driven by objectives and consequences (based on Kindler, 1990 and Zoltayné, 2005).

There is one more rationality concept related heuristics that has to be mentioned here. It is *metarationality*. This is a kind of rationality that steps outside the decision process and may lift even external criteria into it. An example would be that of a decision maker not optimizing their decision because – even though costs are not among the criteria – delaying the decision any further would entail higher costs than those foreseeably saved by choosing a better decision in the place of the suboptimal one. Metarationality is not a separate form of rationality, but a phenomenon which expands the framework of decision processes. I deemed mentioning it important because it may explain several simplifications (cognitive and real costs of the decision process could be the reason behind the existence of simplifications), and also, there may be metarational simplification rules (an individual may, for example, have a rule on how long a contemplation decisions are worth) (Simon, 1979; Zoltayné, 2005). The term metarationality will appear later again, as one of the arguments supporting simplified decision making.

As proven above, the literature on psychology and decision theory has a number of rationality interpretations in parallel existence. Wherever rationality or the lack of rationality in using heuristics are mentioned in this essay, they referring to the stricter, more formal concept of rationality. I consider familiarity with rationality concepts important for my research because the terms introduced above are all literature constructs. What I wished to learn was what meaning the concept itself carries, how it is interpreted in the decision makers' work and mental processes. Which concept of rationality is the best approximation of the one decision makers are led by, and the way they think about decision processes? This was important in the judgment that while accounts on simplifications and their usage may not necessarily fit any of the rationality concepts above, they can still work perfectly well within the framework of an individual's subjective rationality concept.

2.2.2. The rationality ideal

The interpretation of rationality has undergone several changes in the history of philosophy and sciences. I include the following brief summary and the subchapter after it in my thesis to provide a perception that the idealized role of rationality can actually be called into question, and in spite of it being the strongest point of reference in most sciences, its role has changed in the course of time. I think it is necessary to make mention of the fact that the role of this concept and the way it is defined is not constant, entailing the possibility that in a few centuries the concept of rationality will be completely altered. I wrote the following summary, barely a page in length, based on Rutgers' (1999) study.

In Greek philosophy *logos* and *mythos* were yet separate concepts (*ratio* is the Roman adaptation of *logos*), but in the Middle Ages it became attached to the divine *intellectus*. Re-separation came about in early modern times, more precisely, 16th century renaissance, when rationality was seen as a product of human intellect. Thus, instead of "how to participate in the divine", the question became "how can mankind govern nature and society". Rationality and ethics were separated as well: the earlier strong link was replaced by value-independent sciences. What is right and what is wrong was decided by the perceived rationality of specific actions. The positivist paradigm

incorporated the claim that any human problem can be solved through rational, scientific thinking. This condition necessitated the separation of purposive and value-rationality, which was done by Weber, who also pointed out that there is no clear line between the two. It was, however, beyond doubt purposive rationality that was internalised into scientific thinking. The concept of rationality was eventually called into question by Popper. He thought rationality was a word that is too strong, and believed only in its critical examinability. He believed in rational progress and also that individuals like to be rational.

Critical theory also attacked the single-typed concept of rationality, and claimed the omnipotence of purposive rationality to have negative social effects. With further progress, relativists emphasized the capacity limits of human thinking and the fact that people cannot be always rational. Other critiques were also published, with the claim that rationality is a political concept to legitimize the exercise of power, and as such, in short, it is a product of power, even more than that, identical to power. Rather than providing an unequivocal definition, postmodern criticism focused on the fact that rationality is language- and culture-specific, i.e., it has no single uniform concept to be explored. According Habermas' theory of communicative action, rationality, being dependent on communication, is based upon agreements humans make. This is a variation of the procedural rationality concept, as the rationality of a given action is not judged by actual criteria, but established in open discourse.

The short historical review above is intended to demonstrate the changes which the concept of rationality, as used by specific fields of science, has undergone (and may undergo in the future). Expansion may be a more appropriate word than change – rationality concepts continue to exist in parallel, with the simple addition of newer concepts. I wasn't sure, however, that practical decision makers stuck to rationality as much as the (mostly normative) theory.

2.2.3. Do decision makers wish to be rational?

According to Simon (1979): „In its actual development, however, economic science has focused on just one aspect of man's character, his reason, and particularly on the application of that reason to problems of allocation in the face of scarcity"(p.493) In this chapter I seek the reasons from which the role of rationality as an ideal originates.

Rationality and the abstractions of a world built on axioms can be indispensable. They are the foundations on which theories can be developed; even decision making methods developed for practical use assume a rational decision maker. The question is whether decision makers should also have a desire for the ideal of rationality (which, as shown in the philosophical introduction, has taken many shapes as time passed by). Do people seek rationality in their day-to-day lives? If yes, why? I have no ready answers to these questions, I will only make a few propositions.

Good (1962) asks how rational managers have to be, how much rationality the interests of the organization demand from the individual. In his interpretation, rationality is equal to consistency. He lists various benefits of rationality capable of steering decision makers towards rational decision making. These include psychological benefits (when the decision maker has to justify their decision in a complicated situation, and while they deem intuition suitable for simple problems, they still think it is burdened with too many biases), benefits in training (algorithms can be standardized and passed on), the benefits of formalism (formal rationality is formal because of the axioms, and in the case of properly made judgments, this enables good analysis), the opportunity to cooperate with operations researchers (managers do not necessarily have to waste their efforts on using formal theories, that is what researchers are for, there must, however, be a common language) (Good, 1962).

Businessmen's accounts prove the psychological benefits in Good's system of classification to be actually valid – rational arguments are easier to use (see, for example, Bojár Gábor's lecture held as a part of his seminar on decision theory).

The roles culture and education play cannot be ignored. What are the accepted norms in teaching future decision makers? What ideals do they pick up? To what extent are decisions based on gut feelings accepted? When introducing theories to our students at universities and colleges, either deliberately or unconsciously, we are conveying values and ideas. Several disciplines, models and theories have inherent assumptions on individuals and groups, which may affect the way people think. The abstract world described by axioms is easy to grasp and secure. Models and theories are valid. I do not intend this thought to be a critique of pedagogy – after all, it is the profession I myself practice at a certain level.

For some reason there is a difference between descriptions given by individuals in

retrospective and those given in concurrently. One way to detect this difference is through decision process research. According to Kuusela and Paul (2000), when made to give an account on their decision processes in retrospect, individuals will often give socially better accepted descriptions, so as to make a better impression on the researcher. Similarly, they will mention decision making or selection strategies which are more rational and thorough than the ones from real situations. Apparently, they have a general tendency to show themselves as clear, systematic thinkers.

The formal rationality model and the axioms constitute a logical system providing a framework of reference. It is based on the assumption of individuals who think logically and systematically, moreover, every individual falling into that category. Such assumptions allow for the construction of larger models, even macromodels. To accomplish this task, one needs something to hold onto – a need satisfied, in my opinion, by systems of axioms, however unrealistic the latter may be. As Simon (1979) points out several times, there are two possible ways of looking at human decisions: optimization in a world simplified by axioms, or trying to satisfice in a world described more realistically. Attachment to optimization is under significant influence of ones ideas of the world and the possibility of fully understanding it. Lindblom (1959) for example, underlines how high-performance operating systems reinforced the belief in a fully understandable world, in turn in the quantitative tradition, and, through the latter, in the optimizing approach. Thus, frameworks formed by axioms have been set into our thinking as if in concrete.

The thoughts presented in this part are not scientific proofs, but simply signs of rationality being idealized. They indicate not so much a wish to be rational on the decision makers part, but rather a simpler desire to be systematic and rational. With a high number of known forms of rationality, it would be difficult to prove whether or not this attraction exists, and if yes, how strong it is, not to mention setting up the corresponding theory. Still, it is a fact that the systematic norm discussed here has a level that is often violated. The research program which is the topic of the next part is just about that.

2.3. Heuristics

Simplification rules, also known as heuristics are in the focus of attention of the *heuristics and biases* research program. In this part, I will give definitions of the term, and a brief summary of the research program's traditions. At the end of the chapter, I will link the opinions on rationality to heuristics, which I think has a significant influence on the method of applying heuristics and the accounts on it.

2.3.1. The concept of heuristics

Interestingly, barely any attempt at a definition of heuristics can be found in the literature on heuristics and biases. The concept itself is so ill-defined, that even here I cannot give more than a few approximative (or, to better align my style to my topic, heuristic) descriptions of it.

The word heuristics is of Greek origin, with the meaning "serving to find out or discover". In Kahneman and Tversky's (1974) interpretation heuristics are simplified methods used to deal with the limits of human capacity. The same view is shared by Kindler (1988), who claims heuristics to be the thought process simplification strategies used in place of detailed analysis.

„For the Stanford mathematician Polya, heuristic thinking was as indespensable, as analytical thinking for problems that cannot be solved by the calculus or probability theory. Albert Einstein used the term *heuristic* to indicate an idea that he considered incomplete, due to the limits of our knowledge, but useful." (Gigerenzer, 2004, p.62). Putting the matter simply, the author writes on heuristics in several of his works the following: these are shortcuts leading to effective decision making (Gigerenzer, 2004; 2007). Later on, Gigerenzer and Gaissmaier (2011) make their positive view more evident: „heurictics are strategies that ignore information to make decisions faster, more frugally, and/or more accurately than more complex methods"(p. 453).

Gigerenzer (2004) says that simplification rules have to fulfil three conditions in order to be heuristic. By this definition, heuristics are heuristics if:

They exploit evolved capacities – They condense evolved knowledge and skills into

simplification mechanisms, which can be applied to new situations.

They exploit structures of environments – The rationality of heuristics is ecological, rather than logical. This means that heuristics per se are neither rational, nor irrational, but always fall on either side under specific environmental conditions. Every heuristic is environmentally specific to some extent, and can dominantly be successfully used in one given environment. To summarize the above: heuristics can be simple due to knowledge, and clever due to environments.

They are not "as-if" optimizations – An "as-if" optimization approach is when it seems "as-if" the mind calculated the solutions for the equations within the optimization model for a complex problem, but may actually do so subconsciously. Heuristics are not like that, their logic is completely different from that of optimization.

According to Gigerenzer „a model of a heuristic specifies 1, a process rule; 2, the capacities that the rule exploits to be simple; and 3, the kinds of problems that the heuristic can solve, that is, the stuctures of environments in which it is succesful" (Gigerenzer, 2004: p. 67). In my research I sought simplification rules fulfilling such rules, however, I did not check strict compliance with all three conditions.

Kahneman and Tversky borrowed the word "heuristics" from the literature on artificial intelligence. The launch of the research program and the identification of the first heuristics (for example, representativeness, availability and anchoring[6]) in experimental situations are attributed to this pair of authors. Their approach accepts heuristics as efficient tools of probability estimation, which, however, may lead to errors in certain cases. Several other authors joined the research program, and later on, Gerd Gigerenzer came up with a different approach. Gigerenzer finds ambivalence in the fact that Kahneman and Tversky, while they are among those who find heuristics useful, devote most of their lifetime work to how these heuristics can lead to errors. These two approaches are easily distinguishable from each other; both of them acknowledge the

6 The sources of representativeness heuristics can be insensitiveness to prior probability of outcomes, insensitiveness to sample size, misconceptions of regression and other reasons leading to incorrect probability judgment. Availability heuristics are when individuals judge the probability of an eventuality based on how easily they can recall an example for a similar event. Anchoring heuristics are when individuals adjust their later estimations to an initial value, even if that value is irrelevant. For a more detailed description of these three basic, as well as further heuristics, see Tversky and Kahneman (1974), or in Hungarian: the Tversky and Kahneman, Pápai and Nagy anthology (1991), or Zoltayné (2005).

effectiveness of heuristic decision making, yet, one of them is focused on the errors caused by heuristics, while the other on their potential.

Heuristics are scarcely discussed in the literature on supplier selection decisions. „The supply chain management field has tested a wide range of frameworks and models which have relied on the assumptions of neoclassical economic theory, the new institutional economic theory, and in particular transaction cost economics" (Carter & al., 2007: 631.o.). This way, however, the supplier-chain literature aimed its focus on efficient process configuration or resource distribution, strongly grounding itself on an assumption of the homo economicus. „Yet there is abundant evidence that individuals often violate the rationalistic paradigm in economics, thus leading to suboptimal results. (…) research concerning behavioral and non-rational aspects of supply chain management in general, and supply management in particular, has been almost non-existent since the field of supply management began to develop as an academic discipline in the 1960s"(Carter & al., 2007: p. 632). In their purely theoretical work, the authors sought examples for the points at which cognitive heuristics may appear in supplier selection decisions, and the nature of such heuristics.
I was interested in the conscious usage of heuristics occurring in supplier selection decisions. What heuristic, satisficing rules, enabling suboptimal results, can be expected to be explored in the course of the research?

2.3.2. The "heuristics and biases" program and its critique

The beginnings of the approach which became known as the "heuristics and biases" research program go back to the work done by Amos Tversky and Daniel Kahneman (1974) in the 1970s, and has been a school of thought with a considerable influence ever since. As Gigerenzer points out, this research tradition, expanding beyond social psychology, has had a significant effect on the science of economics, management, medicine and several other fields. Even Ward Edwards, of whose researches Kahneman and Tversky's researches originate, has not made such a considerable impact (Gigerenzer, 1991). Keren and Teigen (2004) put the program's popularity down to the fact that it started at the time of the "cognitive revolution" (when attempts were made to find the roots of human behaviour in cognitive reasons), as part of the so-called

probability revolution, yet, it also led to a lot of new knowledge on cognitive limitations (which is why a relationship between the subject of heuristics and the concept of rationality was established). Thus, it not only gained success in the field of psychology, but also put the basic tenets of the theory of economics to the test. Another reason for great popularity was the way the program carried on the tradition of research on behaviour in uncertainty situations. The simplicity and comprehensibility of the experiments used as examples also contributed to the success. The classical descriptions of the approach are considered to be the ones found in Kahneman and Tversky's works, and those of their earlier and later peers from the 1980s.

The research program was mainly focused on studying human behaviour (judgment making) in uncertainty situations, and examining the level to which this behaviour coincided with normative probability calculations (Keren and Teigen, 2004). This is the relationship disputed by Gigerenzer. He calls into question the framework of reference based on which judgment making is declared to be either wrong or right. He disputes the claim that so-called cognitive illusions (the term by which Kahneman & al. identified systematic biases and errors) violate the theorems of probability theory. The way he sees it, these researches first identify the error (deviation from a norm he considers questionable), and then look for the causes. Another question is what exactly heuristics and judgment making have to do with theories on statistics and probability calculations. In Gigerenzer's opinion: not much. What this tradition calls the "normative theory of probability" is actually a slice of the neo-Bayesian theory of probability. This theory has fewer representatives than, say, the frequentist theory of probability (dominant since 1840), so it is hard to tell why it was chosen as a framework of reference (Gigerenzer, 1991).

The simultaneous introduction of the terms "heuristics" and "biases" may have been unfortunate, as their parallel treatment may give the impression that biases are an inevitable consequence of heuristics. Critics also point out that the heuristics identified by Kahneman and Tversky are vague and hard to test, cannot be integrated into a coherent model of probability judgment making, and, being automatic, they are different from problem solving heuristics, which are conscious and thought through. It may be just fair that they were not introduced as a theory, but rather – similarly to Einstein's model – as a heuristic, which provides hints to thoughts on subjective probability instead of dictating them.

I make frequent references to Gigerenzer as a critic of the research program. Even though there have been a number of critics (their names will turn up in the next part), I decided to cite Gigerenzer as both in present day literature and books intended for general audiences he is the “other side”, the most often mentioned expert of the positive approach to heuristics.

The usage of the word “heuristics” itself is close to being problematic: even though Kahneman and Tversky took the term from the traditions of research on artificial intelligence, „In artificial intelligence research one hopes that heuristics can make computers smart; in the “heuristics and biases” program one hopes that heuristics can tell why humans are not smart.

.”(Gigerenzer, 1991: p. 16) He refutes the claim that the term “error” is applied by them to actual errors (such errors are errors only by a narrow theory of probability), consequently, the subject the program is intended to explain does not exist in the first place.

Gigerenzer writes that in earlier times, when mathematical models and human judgment making did not coincide, mathematicians returned to the board and corrected their equations. „Those good old days have gone, although the eighteenth-century link between probability and rationality is back in vogue in cognitive and social psychology. If, in studies on social cognition, researchers find a discrepancy between human judgment and what probability theory seems to dictate, the blame is now put on the human mind, not on the statistical model”(Gigerenzer, 1991, p. 21.)

His only intention with his writing is to show that it is wrong to focus on errors and biases, and it would be better to step over these narrow limits to examine “what kind of a statistician the intuitive statistician actually is”. In his opinion, the human mind operates in a frequentist fashion (which theory of probability is still dominant). He justifies this claim by arguing that in experimental situations defined in frequentist terms, most individuals do not fall into the traps documented by the other school of thought (Gigerenzer, 1991). He also gives a summary of how known “cognitive illusions”, presented to be errors, can be sensible judgment creation processes given the environmental structures and sampling specifics (Gigerenzer, 2004: p. 65).

In conclusion, the literature of heuristics can be said to be exciting and represent a program popular to the present day, in which, in spite of conflicting opinions on the usage of heuristics present, all authors acknowledge that such simplification tools of the

mind can lead to fast, effective decision making.

2.3.3. The grouping of heuristics

I think it is important to divide heuristics into groups. This is because the term can cover no more than the phenomena identified by Tversky and Kahneman (one of which is, for example, representativeness heuristics), based on looser definitions, however, every simplification rule can be considered to be heuristic.

When analyzing heuristic thought processes, the literature divides judgment making into several, typically two phases. Some call these *System1* and *System2 Thinking*, while other use talk about the phases of *editing and encoding* and *evaluation* (Gigerenzer, 2004; Keren and Teigen, 2004). To explain it briefly, in the first phase, a quick, non-conscious judgment is made, and then, in the second phase, an analysis is carried out to decide whether or not to accept the quick answer from the first one. When the mind generates an incorrect answer in the first phase, and then decides to trust it in the second, the thought process will lead to a bias. The important point is that there is a quick process that the conscious mind cannot keep track of, followed by a slower process of analysis. I build the distinctions below to some extent on these process-based distinctions. I group simplification rules by the events of the first phase, together with whether or not the decision has such a first phase at all, and if yes, what sources the answer is taken from.

The description above referred to consciously used heuristics as *problem solving* heuristics. Traditional heuristics are not consciously applied rules, but simplifications which work fast, but are not conscious. An example would be buying shares with names that sound familiar on the stock exchange.

Decision makers may use heuristics consciously, especially when they have time. When time is limited, however, heuristics can be triggered automatically. They are a consequence of the mind's operating mechanism. Then again, there may be simplification rules which do not originate from here, but are purely empirical. They can, of course, be brought into relationship with one of the classical heuristics, still, they are formed through experience and used consciously. Within the area of supplier selection decisions, such examples could be "I keep looking for potential suppliers until

I find five of them", or "I chose the first one who makes an offer", or "there is no point in negotiating with more than two", or "I chose the one who...". These may include strategies fitting into the very decision process itself, or so-called meta-rational decisions adapted to the environmental conditions of the decision process (an example for the latter would be "there is no point in waiting for more than five offers", as this rule is not about the way the individual works with the alternatives they identified, but sets a limit for the process itself).

Thus, I find three groups of simplification rules, or, to be consistent, heuristics to be distinguishable:

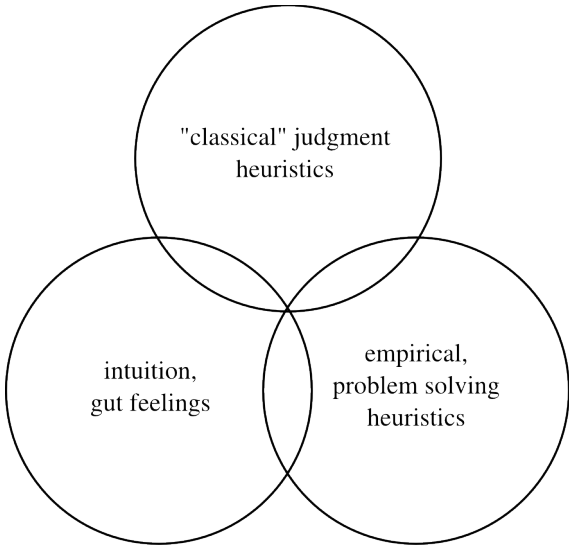
1. *"Classical" judgment heuristics* – People virtually obey these when making judgments. I call here these heuristics classical because they are the ones identified in the literature on the heuristics and biases research program from the beginning, and their names are uniform. They operate automatically, and overwrite normative axioms and mathematical rules. This is where availability, representativeness, anchoring and adjustment, as well as some other heuristics belong. Carter & al. (2007) where the ones to focus their research on searching for known heuristics appearing in the purchase process. Unlike them, I was looking for simplifications in general, that is, not only the heuristics identified by the program's researchers. (For a summary of these heuristics see, for example, Tversky and Kahneman (1974), on the case of purchasing decisions, the works of Carter & al. (2007), or in Hungarian: the relevant chapters from Zoltayné (2005).)

2.*Conscious, empirical, problem solving heuristics* – Selection is not suggested by the operation of the mind, but a repeatedly successful rule becomes a part of the thinking to a nearly identical extent. These rules are formed by negative and positive experiences. They may prescribe stopping after a certain number of alternatives, negotiating only with the two suppliers making the best offers or the one having been on the market for the longest time, asking an acquaintance, etc. I consider these rules to be heuristic, as they simplify, consciously allowing for a suboptimal result with faster completion and simpler calculations.

3. *Intuition, gut feeling* – In the Hungarian literature, intuition is discussed with a focus on decision theory, among others, by Zoltayné (2008), Mérő (2004) and Jaksity(2003). Here, I will not deal with intuition in detail, as it is not the kind of process simplification that I wish to explore. In the present context, I mean intuition to be the cases when

simplifications are not used consciously, but something suggests the solution that seems to be right. The causes may be an inner voice, classical heuristics, or even accumulated experience, the volume of which is too high to be consciously processed, as well as other, deeper factors. The decision maker cannot explain their feelings. A unique characteristic of the process is that it remains hidden, and is thus hard to reproduce. Unlike classical heuristics, it is not a systematically recurring answer.

Figure 2. The grouping of heuristics



source: own work

Within each category there are elements not shared with any other category, on the other hand, there are also intersections between the categories.

The intersection between *gut feelings and classical heuristics* covers cases in which – unconsciously – intuitive answers are chanelled through classical heuristics, behind which their effect cannot be discerned.

The intersection between *classical and problem solving heuristics* covers the situations in which the decision maker actually realizes the fact that, for example, potential suppliers include one well known and several unknown entities, and, due to the lack of any additional information, is drawn towards the one they know simply because the latter's name sound familiar. Availability heuristics do take effect, still, the decision maker tells themselves that they will consciously let it happen so, because, say, such strategies have always been successful in the past. The difference from classical heuristics lies in the fact that the latter are subconscious processes, after the completion of which decision makers cannot justify their selections, and which may appear as

sudden intuitions triggered by the lack of time. In contrast, conscious usage is a recognized application of the given heuristic rule: decision makers are aware of the reason why a familiar sounding name can be more attractive, and they know that it is this reason because of which they select it – the selection is not clouded by any kind of mystery.

The intersection between *gut feelings and problem solving* corresponds to consciously letting gut feelings take effect. An example may be a decision maker collecting information on all suppliers, then taking a glance at their data sheets and choosing the one they have a positive feeling about.

I had to make this distinction not so much for the sake of the literature as to focus my own research. This way, I have been able to delimit the second category as the one in the centre of my attention.

I focused primarily on empirical heuristics, as they are the easiest ones to gather information on. I did not target my research directly at either gut feelings (except for, possibly, the intersection where the decision maker lets some subjective, indefinable strategy to take effect in the actual decision phase), or look for concrete heuristics of the classical kind (except for, possibly, intersections with problem solving, namely, situations in which decision makers consciously let such heuristics take effect or consciously use their thought processes). My research connects most closely to Kindler's (1988) doctoral research. He examined what kind of heuristics decision makers use in an experimental, well-structured problem. He divided the problem solving heuristics he uncovered to three groups by decision process phases: i. e., he distinguished information gathering, communication and decision heuristics. I will also try to observe the points at which heuristics appear in decision processes; my grouping, introduced above, helps delimitation.

2.3.4. Satisficing and heuristics

In this part, I will demonstrate how the literature can be separated into two segments along the lines of accepting sub-optimality and the views on heuristics. I consider this to be important because I wished to learn how my research subjects themselves view the usage of simplifications. As the twofold division is known based on Jungermann's

article, and it was him who gave the two sides names, I will introduce the following ideas along the lines of his original article.

Jungermann (1983) gives an apt presentation of individuals' opinions on rationality. As he says – quoting several experimental results (on biases, axiom violations, etc.) to support his claim – anyone presuming people to be generally rational will meet opposition, or, at best, scepticism. Yet, when an individual is told that they themselves are irrational, they will probably protest; the will begin giving an explanation of how their decisions are actually sensible.

In Jungermann's opinion, the problem is caused by the words "generally" and "usually". Humans are not rational or irrational every time, in every situation. He emphasizes the importance of using the various rationality concepts with precision.

Based on the approaches to rationality, he divides the literature into two camps, which – in spite of readily admitting to some exaggeration – he still calls the *pessimistic* and the *optimistic* camp, respectively. Pessimists put the stress on the frequent, serious and systematic errors entailed by decision- and judgment making in uncertainty situations – such errors are traced back to characteristics integrated into the human cognitive system. Violations of rationality axioms are interpreted as the decision maker's deficiency. Optimists claim decision- and judgment making to be operational and effective even in complex situations.

Pessimists find several faults with human judgment and decision making, which can be summed up as follows: the usage of heuristics renders judgment making biased (while they acknowledge the possible efficiency of heuristics, Tversky and Kahneman illustrate with several examples how they can also lead to wrong decisions), decisions become inconsistent when the same problem is presented in a different format (such an example is the framing effect, under which the description of a problem affects the decision), moreover, due to motivational factors, searching and combination are wrong (postponement and decision shifting, for example, cannot be considered to be rational behaviour). (Jungermann, 1983)

The optimists are described by Jungermann as members of a countermovement that started in the 1970s and 1980s. Their representatives claim human judgment- and decision making to be implicitly rational. They support their opinion with various arguments: an important factor, namely, the costs of decision strategies had been

ignored (the argument of metarationality), judgment making and decisions had been treated as discreet events, and not as the stages of a process (the argument of continuity, i.e., the argument that decisions are best examined as parts of a complete process), and finally, the internal, personal representation of problems has been ignored (the structure argument, i.e., the argument that the subjects' minds cannot be proven to interpret experimental games and problems in exact accordance with the researchers' expectations). In all three cases, the emphasis is shifted from proving efficiency to a deeper examination of the conditions and the kind of conditions under which individuals perform specific behaviours as well as „not to too easily adopt the crude view on human rationality"(Jungermann, 1983, p. 77).

Jungermann considers the existence of the two "camps" a good example of scientific development. First, there was a group of theories on rational individuals, which model was then questioned by the pessimists in the 1950s, and the image rendered by the latter on errors was, in turn, gradated by the optimists.
Exchange of opinions between the two camps goes beyond the arguments introduced above, and it is continuous. The optimists criticize the ecological validity of the environmental situations, the way cognitive costs are ignored, the problems with problem interpretation, and the excessive focus on errors and biases. Pessimists reject meta-rationality, claiming that every irrational action can be rationalized by being raised to "a higher level of interpretation". They argue the experimental situations to be lifelike, and deem the issues raised against problem interpretation to be speculative (Jungermann, 1983).

The discourse has moved on from the question of whether or not the capacity of the human mind is limited a long time ago. Everyone acknowledges the answer to be yes. The only question left is how individuals make their judgments, how they decide, and, most importantly, whether or not they make rational decisions *within their limits*.
The discourse is still about whether or not focusing on the errors is too negative an approach (Jungermann, 1983, p. 80). The author also brings up the idea of possibly abandoning the concept of rationality, as it has been a long time since it carried the same meaning to everybody.

It is not necessary for anybody to decide if (accepting Jungermann's terms) it is the

pessimists or the optimists that they feel closer to. Neither camp disputes the usage of heuristics or satisficing. What is important in my eyes, on the other hand, is the approach to the application of these rules. Do we see heuristics as negative elements, errors to be rectified, or, in the words of Gigerenzer (2007), "wonderful, elegant" mental tools? I wrote about rationality for the same reason that I introduced Jungermann's piece: when reading about the usage of normative models and discussing it with colleagues, I sensed a negative tone whenever heuristics and simplifications came up. To me, the question was what concepts there are in decision makers' heads on rationality, and what accounts they give on heuristics. Do they feel explanations to be necessary, or can they actually be even proud of these effective simplifications?

2.3.5. What are the possible benefits of "dropping" the optimization requirement?

Personal interpretations of using heuristics will have implications on more than which "side" individuals take in the optimistic-pessimistic dichotomy. The exploration of the thought process will also throw light upon the possible benefits of simple strategies. That is because dropping the optimization requirement can have far more benefits than mere cost efficiency. These benefits are underlined by authors closer to the optimist side. Gigerenzer (2007) emphasizes speed and ease, Schwartz (2002) and his co-authors go so far as to link the acceptance of satisficing to the individual's general psychological well-being. The latter authors bring up the example of how the expansion of a set of alternatives, contradicting normative theories, is not attractive. One possible explanation is the objective of avoiding potential regrets. The more alternatives are available, the higher the probability of the selection of a suboptimal one is. Another possible explanation is the avoidance of unmanageable information volumes. It should be noted that set expansion, for example, poses a problem to individuals striving for maximization: satisficing individuals, after having found an acceptable alternative, will not worry about newer ones. Maximizing individuals, on the other hand, will begin a new investigation to find out if the best alternative of the expanded set is among the new ones.

With the above in mind, is it worth to strive for satisficing instead of maximizing? What

benefits come with it each choice? Why are there individuals tending towards one of the two, and others tending towards the other? Even though I can come across allusions in my research (for example, to individuals who are forced to maximize by organizational reasons), I do not consider the issue to be any of my main research targets.

Schwartz & al. (2002) sought more general links between the tendency to maximize and the avoidance of regret. They also measured happiness, life satisfaction, optimism, depression, neuroticism and perfectionism with psychological tests. I will not discuss the latter here, only the results: Maximizers show less life satisfaction, a lesser degree of optimism and self-esteem, as well as significantly more regret and depression. The hypothesis is that maximizing strategies lead to results which are objectively better, subjectively, however, worse.

Simplification instead of maximization may be a question of disposition. It may be that some individuals are capable of it, while others are simply devoted to maximization. Of course, environmental factors play a role too; time limits, for example, can determine the choice between the two. I wished to identify the kind of feelings simplification mechanisms are used with, when they are used at all. Are any benefits mentioned in the explanations justifying their applications (if/when explanations do take place)? Can the explanations include allusions to a reduced stress level, cognitive costs incurred by suboptimizing strategies, and the like? The existence of such benefits can be deduced from the interpretation environment of suboptimization processes, the accounts on which, naturally, can be influenced by other cognitive phenomena (often cognitive dissonance).

3. The supplier selection decision process

I was looking for simplification strategies in personal decision making processes which took place in organizations. For a number of reasons (repeatedly made decisions, specific alternatives, existing models), my choice fell on supplier selection decisions. This term covers less than supplier evaluation: by selection I mean the momentum at which the individual purchaser makes their criteria-based selection of one or more from the potential suppliers to do business with. In the case of personal level supplier selection decisions, most situations are likely to involve several alternatives and

multiple criteria, as well as the appearance of heuristics

The topic of purchasing decisions has great importance in business management sciences, as indicated by the distinction it receives in the literature and education. Its set of issues is discussed mostly within the literature on supply change management and interorganizational marketing. The subject is dealt with by several schoolbooks of business and business management education, among others, Chopra and Meindl (2009), who discuss purchasing decisions in a separate chapter, Fawcett & al. (2006), who write about purchasing, and its subtopic, supplier selection processes in general, and Lambert (2008), who discusses the problematics of purchasing decisions within supplier relationship management. The topic is dealt with more specifically by Monczka & al. (2008), who discuss purchasing processes, strategic purchasing decisions, selection and supplier development processes, and current purchasing trends in detail.

Dickson's (1966) study is considered to be standard reference in the literature on supplier selection criteria, Weber and Current (2001) and deBoer & al. (2001) have complied concise literature overviews on the topic. Extensive literature is available on the actors in purchasing decision processes and their influence in various process phases as well (for example Robinson et al., 1967; Webster and Wind, 1972; Johnston and Bonoma, 1981; Jackson et al., 1984; Bonoma, 2006).

Other topics of significance include product specific characteristics (Kraljic, 1983; Lehmann and O'Shaughnessy, 1982), the influence relationships play in supplier evaluation (Ellram, 1987), and the influence purchasing situations play in supplier selection decisions (Robinson & al., 1967; deBoer & al., 2001). The first significant study of purchasing from a behavioral scientific aspect was Sheth's article in 1973.

Independent, concise works are available on methods of supplier selection and -evaluation. These often compare the efficiency of the various methods, and ask the question how much they are used in real life (Thompson, 1990; Vokurka et al., 1996; deBoer et al., 1998; Sonmez, 2006).

Several Hungarian experts have addressed the issue of purchasing decisions, in a broader sense, purchasing, in the literature on supply chain management, or, more specifically, logistics and value creation process management. The subject is approached from the value creation process management aspect in concise books of the

Hungarian literature (Chikán – Demeter, ed. 1999; Demeter, ed. 2009), Vörös's (1991) schoolbook deals with production management independently. In her books mentioned above, Vörösmarty Gyöngyi devotes whole chapters to a more direct focus on purchasing (Vörösmarty, 1999; Vörösmarty, 2009), while Balaton approaches the subject from the management-administration side in his schoolbook titled organization and management (Balaton, 1991). Vörösmarty writes on the topic in a number of workshop studies and articles, as well as her dissertation (Vörösmarty, 1996; 2002; 2007). Vörösmarty (1996, 2002) and Vörösmarty and Pecze (1998) write about the importance purchasing has within the company, and treating purchasing decisions as strategic ones.

Standard reference books of the Hungarian literature on logistics represent both the business management scientific and the technological approach, for example, Halászné (1998), Kovács (2004), Szegedi (1998), Prezenszki (1997, 1997), Szegedi and Prezenszki (2003). In Cselényi and Illés's (2004) book Bányainé and Cselényi (2004) deal with purchasing specifically.

Representatives of a number of fields of expertise have addressed the issues of interorganizational marketing, the characteristics of business relationships and their management. Berács (1991) and Mandják (2000, 2005) approach the topic from the marketing aspect. Kolos (2006) links business relationships to competitiveness, while the influence exerted by relationships on performance is explored by Wimmer and Mandják (2003), Wimmer (1997, 2004,2005), and Király (2007). Also focusing on relationships, Gelei (2005) examines the various aspects of the two different kinds of relationships – strategic partner relationships and market exchange relationships. In her PhD essay, Gelei (2007) narrows her focus down from relationships in general to suppliers – with the automotive industry as her example, she identifies various types of suppliers.

There is a number of authors discussing the topic with a focus on decisions as well. Supplier selection methods, namely, applied methods and methods developed in academic circles are discussed by Vörösmarty (2007) and Törőcsik (1992). Decision making roles, and the introduction of the decision process are also addressed by Ötvös (2000), Kenesei (1998) and Törőcsik (1992, 1996). Mandják & al. (2010) write about decision criteria, and Wimmer (2007) about subjective factors in supplier evaluation.

My dissertation further extends a line of works on decision theory, at the same time, it explores a topic I have not come across as yet. By exploring thought processes behind personal purchasing decisions, I believe I can contribute to the literature on both decision theory and purchasing.

3.1. Description of the purchasing decision process

The purpose of the supplier selection process is to find the best supplier, which, however, does not imply that no other supplier can eventually be selected. „The best supplier can not always fulfill the needs, that is why in many cases the buyer buys also from the second, third supplier. There are situations, when the best could supply the needed quantity, but the buyer prefers to have more suppliers." (Benyoucef et al., 2003) This problem is known as the dilemma of single-sourcing versus multiple sourcing. The problem does not interfere with the questions of my thesis, as both cases involve selection and filtering processes, the only difference being that in multiple sourcing, filtering is only partial.

Decision processes are often confused with problem solving processes. Theoretically, decision dilemmas are parts of problem solving processes; decision making, in other words, selection among the alternatives, is a momentum in the problem solving process. The most precise term possible to use would actually be "problem solving process", and not "supplier selection decision process". Still, with its popularity in mind, I feel the more comprehensible term, *decision process*, to be a better choice of words.

There are several known model type descriptions of the decision process. A general description would include the following steps: recognition of the decision situation, situation assessment, situation analysis, definition of the criteria and the objectives, development and evaluation of the alternatives, decision (selection among the possible alternatives), and finally, execution and checks. Such process descriptions are mostly systematic sequences of steps following each other linearly. They are built on the rational decision maker model, the steps, however, will remain valid even with the application of other concepts of rationality (see the part on rationality). The supplier

selection process is presented in the literature as a sequence of steps similar to the one described above. The most comprehensive description of such decision processes is comprised of the supplier selection phases (Robinson & al., 1967) which are defined as elements of the BUYGRID[7] model.

According to the model, the process steps are as follows:

1, Need recognition

2, Definition of the characteristics and quantity

3, Definition of parameters and specifications

4, Search for potential sources

5, Acquisition and analysis of proposals

6, Evaluation and selection of suppliers

7, Order placement

8, Supplier performance evaluation

(Robinson et al., 1967). The literature has a number of other process descriptions similar to BUYGRID, which typically follow the same lines. An interesting example is the work written by Jackson et al. (1984), who divide the decision process into two phases: in the first one, the decision maker selects the product, then, in the second one, they select one of the suppliers. While this is no more than a separation of the previous model's phases into two groups, in their work it was still relevant, as the actors involved had influence of differing levels over the two decisions.

3.2. Decision theory characteristics of supplier selection decision processes

In a number of systems introduced to decision theory literature, problems can be positioned within certain given dimensions. This may be necessary when the characteristics of an actual problem determine the tools it can be analyzed with and the technique it can be managed with. What follows here is an identification of the decision theory characteristics pertaining to the supplier selection problem, based on which it can be positioned within the various systems.

7 BUYGRID is a rational decision model describing the purchasing decision process. Its main components are the process steps and purchasing situations introduced in the present study later on.

Howard's problem space (Howard, 1968) makes it possible to position problems within three dimensions. Dimensions are not single direction vectors, but should be interpreted as dichotomies instead. The three dimensions of the problem space are *complexity* (low vs. high number of variables), the *degree of uncertainty* (deterministic vs. probabilistic problems), and the *time factor*(static vs. dynamic problems).

Within the uncertainty[8] dimension, supplier selection falls closer to the probabilistic end. Circumstances may change, the same alternative may entail varying results on various occasions, the consequences of decisions cannot be predicted with full confidence. Therefore, the decision is considered to be risky, where the extent of risks is determined by the purchasing situation, the product and other factors.

By the time factor, supplier selection problems could be classified as dynamic rather than static, since they do change with time. The effect and the role of the factors, as well as the reactions they enter into witch each other, varies (Tóth, 2008). From the time factor dimension aspect, decisions can also be grouped into those occurring only once and those occurring repeatedly. The buying of a building, for example, is more likely to occur only once, whereas the purchasing of a regularly used input is repetitive. It is important to supplement the above with the fact that repetitive decisions (especially those repeated frequently) boost learning and the formation of a routine. Thus, a decision situation difficult to manage the first time will become an issue of a set routine after a certain number of repetitions.

In Howard's problem space, complexity is measured by the number of variables, besides which, however, complex problems are also characterized by a high degree of connectivity, the instability of relationships in time, the volume of the information to be processed, and the effect on future decisions (Jonassen, 2000; Beach and Mitchell, 1978). Problem *difficulty* is a function of complexity (Jonassen, 2000). Complex problems can be assumed to be difficult because they involve more cognitive operations. According to Tóth (Tóth, 2008) simple problems are in the "static-deterministic-few variables" corner of the problem space, and difficult ones in the corner that is the most far away from it. Supplier selection decisions include examples for both simple and difficult problems.

In another problem space, that of Bartee's, problems can be positioned by problem taxonomy (actually, the actors), problem-solving modes, and problem-solving processes

8 Risks are differentiated from uncertainty by the probabilities' being assignable to the outputs.

(Bartee, 1973). By problem-solving modes, every problem can be put into one of the following categories: *group, institutional and social*. Supplier selection problems are typically personal, group- or institutional problems. Purchasing decisions affecting the entire society are also known – after all, however, they also take place within some sort of an institutional framework, therefore, I consider them to belong in the institutional category. Any given decision's category is identified based on the type of the entity preparing and making it – even such problems are personal when evaluated by and decided upon by a single person.

An important distinction has to be made at this point for group decisions. A decision is a group decision when evaluation and decision making are carried out by a complete purchasing department group (let us call such groups institutionally *homogeneous*). Decisions made with the participation of representatives from several functionality areas are also group decisions, their character, however, is different (such groups are *heterogeneous*). I will justify the importance of this distinction later on.

The third dimension of the problem space is that of the problem solving modes, among which the author distinguishes *conceptual, empirical, behavioural* and *social* problems. Of these four categories, the supplier selection problem fits best into the empirical and the behavioural ones. It is empirical because it goes through significant changes with experience, and there is feedback. It is also behavioural, because – as pointed out by a number of authors (particularly Sheth, 1973) – it is influenced by a number of behavioural science factors.

Simon classified problems as *well- or ill-structured* (originally: programmed or non-programmed). The importance of this distinction lies in the knowledge and skills required for the solution. In the case of a well-structured decision, the objectives are clear, and decision maker looks for a way to achieve them. The question can be answered in a routine manner, by applying simple algorithms. Boundary conditions do not change, the solution does not require estimations. Ill-structured problems are far more complex, quite often even the objective to be achieved is not clearly set. Boundary conditions change, intuition and estimations frequently have to be relied on. Simon writes that ill-structured problems differ from well-structured ones in the following: in the case of the former, the criterion for achieving the objective is complex and hard to define, not every piece of information is available, and finally, the rules for exploring all the alternatives in each of the steps are missing (Simon, 1979). As I shall prove when

making distinctions between various supplier selection situations later on, some of them are ill-, while others well-structured (the simple, repetitive purchase of a stationery product, for example, is different from acquiring an expensive piece of production equipment in a new situation). By the way, structuredness and complexity partially overlap: most ill-structured problems can also be categorized as complex ones (Jonassen, 2000).

Decision situations can also be classified by their obscurity (Beach and Mitchell, 1978; Tóth, 2008). Obscurity in this context means that the problem is an unusual one for the decision maker. In a familiar situation experience may help with selecting the proven successful strategy, or at least filtering out the ones that do not work. When experience is lacking, the decision maker will have to approach the problem more attentively. New situations bring uncertainty and a need for change; consequently, they are often covered by a mist of suspicion and fear. Just like with any other problem, the decision maker's experience will play a significant role in determining the extent of these, the environment's becoming turbulent, or a new market orientation, however, can also affect the ratio of obscure situations. Where the supplier selection problem will be positioned in this dimension is dependent on the individual and the environment involved.

Having established the characteristics, one can conclude supplier selection decisions to be of varying sorts, among which examples can be found for most of the types set up by systemizing decision theory characteristics. For my research, it is important to provide analyses with these characteristics in mind.

3.3. Supplier selection decision criteria

The exploration of decision criteria is one of the more accentuated lines in purchasing decision literature. This research program goes back to Dickson's 1966 study. Since then, several authors have addressed the subject. (e.g., Weber and Current, 2001; deBoer & al., 2001). The various kinds of methods each of the article authors worked with, however, must not be overlooked. In 1966, Dickson built upon a questionnaire survey, and sorted 23 criteria into a list based on the managers' replies. Weber et al. (1991) reviewed 74 articles on the topic, and then gave their opinion on the changes in

the importance of individual criteria and their significance based on the time at which those criteria were addressed and the number of authors (articles) discussing them. This latter method cannot yield more than an estimation on the real changes in the precedence order of criteria, although, undeniably, it still provides some clues on developments.

Apart from a few simplification methods, supplier selection decisions are characteristically made along a few criteria. What makes the situation difficult, are, of course, the many pairs among these criteria pointing into opposite directions (one such frequent pair is formed by quality and price). The criteria one works with cannot be expressed in numbers. In practice, a significant number of criteria are subjective – and as such, cannot be quantified.

In the order of priorities he set up in 1966, Dickson lists *quality*, *the ability to deliver in time*, *performance history* and *warranty policies* as crucial criteria. Two of the criteria mentioned as more important than the average are *price* and *reputation*. The criteria considered to be the least important were *geographical location* and agreements with future relevance (Dickson, 1966).

Weber (1991) found it interesting to note that all authors discuss several criteria, a proof of how prevalent the multi-criteria approach is among them. Having reviewed 74 articles, Weber ranked the criteria by the frequency with which authors analyse them. The items ending up at the top of this list were *net price*, *quality*, *delivery* and *capacity*.[9]

In the Hungarian literature, supplier selection criteria are discussed by, for example, Kenesei (1998) and Törőcsik (1996). Neményi (2005) analyses the opinion on the importance of supplier evaluation criteria at greater length, while Vörösmarty (2007) writes about supplier evaluation in general, and the methods applied to it.
In my introduction of practice in Hungary, I rely on the latest research results. I use the results of the latest competitiveness survey carried out in 2009 by the Competitiveness

9 It must not be forgotten that all we write about are our own assumptions, therefore, this ranking order is not a perfect description of what decision makers deem to be important. These are the criteria that literature authors considered to be the most interesting candidates for analysis. Needless to say, they built on earlier research, still, the fact must be borne in mind.

Research Center, a sister department of the Institute of Business Economics at Corvinus University of Budapest. Within the framework of the competitiveness research program, a questionnaire survey was carried out in 2009 – for the fourth time since 1996 –, in which 4 senior managers (CEO, production, trade/marketing and financial lead) from each one of 300 companies answered general questions and questions concerning their own fields of expertise. Part of the questions pertained to economic facts and business characteristics, while the purpose of another part of them was to tune in on company managers' opinions.

According to the authors of the executive summary based on data gathered in 2009, the number of long-term commitments is on the decline (Chikán et al., 2010). The point relevant to the present essay is that some of the forces interlinked with criteria act towards commitment, but some others away from it. The strongest arguments in favour of long-term commitments are *known, reliable quality, reliable supply and predictable supplier performance*, while the motivational force against it is the need of *flexibility* (the ability to modify suppliers' conditions, payment terms and purchase prices).

In the Center's previous survey, taken in 2004, the most important criterion proved to be *price and favourable payment terms*, the second most important one *quality* and the third most important one *delivery performance (reliability, speed, flexibility)*.

The 2009 Competitiveness Research resulted in a similar ranking order: the most important criteria remained the same, however, *delivery performance* moved to the first place, *favourable price and payment terms* ended up in the second place, followed by *product quality*, and then *low logistical costs* and *high technological standards* (Mandják et al., 2010). The items at the end of the list are *geographical proximity*, *supplier potential (the ability to improve/performance history)* and the *environmental friendliness* of the supplier's products and processes.

According to Weber et al. (2001) the difficulty of the supplier selection problem lies in the requirement to consider several kinds of criteria. Even though there probably are purchasing decisions of insignificant consequence, which may not even require more than one criterion for evaluation, I presume supplier selection to be a normally multi-criteria decision. A strategic approach to purchasing also justifies considering several criteria. Ellram (1990) for example, points out that in a strategic relationship, besides traditional criteria, specific criteria, such as strategic compliance or the assessment of

future production capacity will also appear. A further problem may be posed by a mixture of quantitative and qualitative criteria, and the possible conflicts between criteria. I will discuss the dependence of criteria on the purchasing situation, the character of the relationship and the product itself in the next part.

Certain environmental variables exert significant influence on the number of criteria applied in the decision process and their ranking order, as well as on the decision strategies used. Based on the literature, I will address the organizational role, the types of the product and the relationship, and on the characteristics of the purchasing situation in the parts to follow.

3.4. Context factors in supplier selection decisions

One of the relevant questions is *whose* decision is discussed when purchasing decisions are addressed. In organizations, purchasing decisions may be either personal or group decisions. The size of the company discussed is yet another important context characteristic: the “all-round manager” of a micro-company with only a handful of staff members will make their personal decision a situation different from that of the purchasing manager of a medium enterprise dealing exclusively with this field. It is similarly important how closely functional limits and regulations predetermine the organizational actor’s decision. All these are entailed by the **organizational role**.
In the case of group decisions, either several organizational units are represented in the decision making, or a group is formed by purchasing department employees. The most common concept on purchasing process actors is that of the so-called *buying center*. The term was introduced by Robinson et al. (1967), with Webster and Wind (1972) further improving the conceptual framework later on. A buying center means the organization members participating in the process of purchasing a product or a service (Johnston and Bonoma, 1981). In the Hungarian literature, Ötvös (2000) introduces Webster, Faris and Wind’s model of the individual decision phases, the roles identifiable in the buying center, the decision criteria considered to be the most important for each functionality area, product types and the structural characteristics of the decision. Kenesei (1998) examines possible group decision making modes in the context of the buying center.

The expression “center” in the term, being associated mostly with organizational units, is somewhat misleading. Buying centers actually do not operate as formal groups, but are continuously changing, complex formations. The number of members may vary from decision to decision, thus, delimiting such groups is not always easy. Buying centers can be considered to be typically informal groups, as they do not (or, at least, not always) coincide with organizational units. This fact is one of their interesting aspects, due to which they may be an attractive field for analysing group decision making, too. Then again, the extent of formality can still be called into question, as it is not quite clear how much a group of – normally, the same – individuals performing their duties in accordance with their functions within an organization can be said to be informal.

Johnston and Bonoma distinguish various buying center compositions by the type of the input to purchase. They find that in the case of production tools, the decision will be made with contributions from the engineers, the production leaders, the purchasing department and the management. When the item to purchase is a service, the leaders of only three functional areas will be members of the buying center: namely, purchasing, production and planning (Johnston and Bonoma, 1981; Garrido-Samaniego and Gutiérrez-Cillán, 2004). To put it in another way, the product type will affect not only the criteria set and the strategies, but the set of purchasing decision actors as well.

One of the role descriptions considered to be classical is Webster and Wind’s (1972) system of classification. Their approach is partially different from the one discussed above. Instead of functionality areas, the pair of authors indentifies actors by their role in the purchasing decision process. There are the following five roles operating in the buying center: *users* (those who use the purchased product or service), *buyers* (those who are formally responsible for contracting), *influencers* (those who influence the process by providing information and criteria), *deciders*, and the so-called *gatekeepers* (those who control the flow of information in the buying center).

Bonoma (2006) identifies analogies between the pervious and Webster and Wind’s approach. He adds one actor to the list: the *initiator* is the actor who is the first to realize the need for purchasing a given product or service. Using the case of a

telecommunication device as an example, Bonoma illustrates which functionality areas the classical buying center roles can be linked to. (See: Bonoma, 2006)

Why is it important to identify buying center actors and distinguish them from each other? It was Sheth (1973) who marked the beginning of a new era by analysing purchasing decisions from a behavioural scientific aspect. This approach answers the question why I consider identifying the actors so important. On the difference in importance between criteria Sheth (1973: p. 53) says: “expectations will substantially differ among the purchasing agents, engineers, and product users because each considers different criteria to be salient in judging the supplier or the brand. In general, it is found that product users look for prompt delivery, proper installation, and efficient serviceability; purchasing agents look for maximum price advantage and economy in shipping and forwarding; and engineers look for excellence in quality, standardization of the product, and engineering pretesting of the product.” Evaluation criteria characterizing each of the functionality areas is discussed in more detail by Morris (1992).
The representatives of the various activities assert their considerations in varying phases of the buygrid model, typically at the point where the competence-based role is the most emphatic. Sheth points out the way the organization motivates the various actors by rewarding the representatives of each functionality area for their specialized skills. The purchasing agent for economy, the engineer for quality control, and the production personnel for efficient scheduling (Sheth, 1973).

A number of interesting questions can be answered when organizational roles entail significant differences in criteria sets. If, for example, the focal point of attention is quality, then the organizational actor feeling it the closest to themselves can be sought after. There will probably be obvious links, however, the status of criteria not strongly associated to any of the functional areas – such as, for example, the “greenness” of purchasing – can also be examined. Other questions can also be answered in a similar manner, such as, for example, why answers are different when only the representative of a different functional area is available at another company.

For me, it is important to familiarize myself with each organizational role in order to properly interpret research results. Roles explain the differences between personal criteria sets and decision strategies. These are determined on the one hand by the functionality area represented by the individual, and their roles in the buying center model on the other.

Decision criteria and their treatment is strongly dependent on the **product type** in question. The number of criteria and decision strategies applied in the decision process varies by the product type. To illustrate that point, I will present here one kind of product typology, which shall be sufficient to get my idea across.

Vokurka & al. (1996) put each product in one of the following for categories:

1.) *Routine order products* – routine products frequently ordered and used;

2.) *Procedural problem products* – products where problems are likely because personnel must be taught how to use the product;

3.) *Performance problem products* – products where there is doubt as to whether the product will perform satisfactorily in the application for which it is being considered;

4.) *Political problem products* – products that give rise to "political" problems in that there is likely to be difficulty in reaching agreement among those affected if the product is adopted.

Attribute importance for each of the four product types is shown in Table 2. (Vokurka et al., 1996)

Table 2. An example for decision criteria varying by product types

Product type	Attributes considered to be the most important
Routine order products	Reliability of delivery Price Flexibility Reputation Technical specifications
Procedural problem products	Technical service Ease of use Training offered Reliability of delivery Flexibility
Performance problem products	Reliability of delivery Flexibility Past experience Reliability data Reputation
Political problem products	Price Reputation Reliability data Reliability of delivery Flexibility

Source: Vokurka & al., 1996

Such and similar input-categorizations (e.g. Kraljic[10] (1983)) help me to correctly interpret cases where for some inputs, the decision maker considers several criteria and manages alternatives using some sort of optimization strategy, but they make their decision faster and accept sub-optimality easier when another product is involved. It is not difficult to explain the appearance of simplification rules in either situation: with the first category of products, the simplification rules may be applied to manage complexity, with the second one, they may appear because – for some reason – the decision involves low stakes and has a low impact, or is not worthy of attention due to other characteristics. Exploring such differences will not be among my research objectives, however, wherever they do appear, I will have to interpret the results with the characteristics of the product or the service in mind.

10 Kraljic (1983) categorized products by profit impact and supply risk: he made his distinctions between leverage, strategic, noncritical and bottleneck products.

As their **relationships** with certain firms develop, companies may change the set of criteria they use when evaluating suppliers. When there is a strategic partner, criteria in the foreground in the initial stage of the relationship may be replaced by different ones. According to Ellram (1987), once the strategic partnership phase has been reached, the decision makers of the purchasing company, besides the classical criteria, will consider newer ones as well. She presents the criteria which may be important in selecting the suppliers the company wishes to establish a long term relationship with (Table 3).

Table 3. Supplier evaluation criteria for strategic partnership

Factors	**Criteria**
financial issues	economic performance financial stability
organizational culture and strategy	feeling of trust management attitude/outlook for the future strategic fit compatibility of top management compatibility across levels and functions organizational structure and personnel
technological issues	assessment of current production capabilities assessment of future production capabilities design capabilities development speed
other	safety record business references customer base

Source: Based on Ellram, 1987

The decision criteria and strategies explored in my research may be influenced by the relationship maintained with the supplier, or the lack of it. The quality of the relationship or established confidence may be a decisive criterion, while offers from one or more partners who have been suppliers in the past may be a narrowing criterion. Effects like commitment, sunk costs and decision escalation also appear. The reason behind the difference between two inputs and the two corresponding sets of decision criteria may also be the character of the relationship, and I have to take that into consideration as well.

In addition to the various characteristics of the product, the characteristics of the given **purchasing** decision **situation** may also have an effect on criteria ranking. The criteria (and thus, the objectives they originate from), can be safely said to differ from situation to situation, too. Depending on the situation an individual or an organization finds themselves in, criteria ranking order and the methods applied may also change.
Robinson et al. (1967) differentiate the following buying situations on their BUYGRID model (my presentation is partly based on Törőcsik's (1996) work):

New task – The decision maker buys a completely new product/service, and has no previous experience. The suppliers are unknown, the level of uncertainty is high. These are the "real" buying situations, which require comparisons and evaluation. Törőcsik (1996) describes them as unpleasant situations with "real" decisions, as they are the ones demanding great investments from the decision maker.
Modified rebuy – The purchase of a new product/service from a known supplier, or the purchase of a product already in use (or similar to one already in use) from a new supplier. Uncertainty is of a low level, the scope of problem solving is more limited. Some of these decisions may be made based on habits, provided the decision maker is already familiar with the market, and changes only within the limits they consider acceptable.
Straight rebuy – The decision maker is fully informed on the both the supplier and the product. Repeated orders made under contracts and agreements belong in this category. (Robinson et al. are quoted and translated by Törőcsik, 1996)

DeBoer et al. (2001) combined Robinson et al.'s category model (characterizing buying situations) with the Kraljic matrix (Kraljic, 1983) and used these two classification systems to show how decision criteria and decision process characteristics can vary depending on the kind of product, relationship and situation involved.
New tasks are characterized by a small initial set of suppliers, the lack of available historical records, many criteria and much interaction. The problem definition is: "Use a supplier or not?". *Modified rebuy* situations are linked by the authors to the category of leverage items. In such cases historical data on suppliers are available, and previously used criteria are re-applied. The set of alternatives is large in the initial pre-filtering phase, and small right before the decision. There are fewer criteria to apply and less interaction occurs.

Straight rebuy cases involving routine items are characterized by the same conditions as above, and differ only in their problem definition. In modified rebuy situations, the question is whether to user more or fewer suppliers, whereas a straight rebuy entails the replacement of the current supplier. Strategic and bottleneck items are typically involved in *straight rebuy* situations. The definition of such problems is: "How to deal with the supplier?". The decision maker works with a very small set, most often evaluates only one supplier, i.e., concentrates on only one source.
While it is rather theoretical, deBoer et al.'s (2001) classification system with its quasi-matrix underlines the effects various context variables may have on problem definitions, filtering and decisions in the course of the supplier selection decision process.

3.5. Supplier evaluation methods and the underlying decision strategies

The literature discusses several methods applicable to supplier selection and evaluation, a brief review of which can be found in one of my earlier works (Esse, 2012). Each method is put into one of the following six categories (see, for example, Vörösmarty, 2007): the weighted-point method, the classification procedure, the analytic hierarchy process (AHP), the vendor profile analysis (VPA), the total cost of ownership (TCO) and the cost-ratio method.
Every supplier selection method is built on some decision strategy or combination of decision strategies. In this part, I shall examine which of the decision strategies introduced above each of the methods most frequently discussed in the literature are built on. The reason why I find this question interesting is that while decision makers may apply certain decision strategies in their thought processes, they will not necessarily realize the similarity such processes happen to have with particular supplier selection methods of the literature. Another point of interest in this kind of strategy-identification is that it shows the character – optimizing vs. simplifying – of supplier evaluation tools.

The *weighted-point method*, *AHP*, *VPA*, and in some cases, TCO are based on the weighted additive model (WADD) – in other cases, the latter will be built in the equal weight rule (EQW). All of these methods satisfy the following description: values are added up by criteria, good and bad values can compensate each other, and criteria have

normally differing weights. They do differ in weights and evaluation, as well as the way in which values are assigned, still, all of them are based on WADD.
The classification procedure algorithm is best fit by the “frequency of good and bad features” (FRQ) strategy, as the final result is derived from the ratio of favourable and unfavourable evaluations. The cost-ratio method would be difficult to unequivocally identify strategies for.

The majority of normative methods found in the literature are compensatory, and thus, geared towards optimization. Patton (1996) lists a number of possible reasons for the proliferation of the methods, yet, as he points out, we still know little about the methods actually applied – the methods above are models of the literature. Possibly due to its normative nature, every method is geared towards optimization, even though optimization is not necessarily effective (de Boer, 1998). Some of the rare works exploring methods used in real life lead one to suspect that compensatory models are the very models decision makers actually do not choose to use, due to, for example, error aversion (Patton, 1996).
The question whether compensatory optimization is really this emphatic in the true algorithm of personal and group decisions remains open.
It must be added that the model used and strategy selection depend on a number of factors. De Boer & al. (1998), for example, highlight time pressure, the novelty of the situation, the number of criteria and the number of suppliers. Patton stresses that model selection may be influenced by the purpose of the evaluation as well: the methods applied by decision makers vary with their objectives (finding a strategic partner, exclusion of a partner) and their situations. However, according to the author, there is no evidence to support this claim. Even though I explored the appearance of decision strategies, and not the application of the methods, I believe that by drawing the above parallels between methods and strategies, and also with my research results, I can provide evidence of this context dependency.

4. Research questions

The above clarifications prior to the formation of the research questions were necessary to see where unexplored relationships are, what gaps and deficiencies can be observed in the research field. The exploration of the nature of simplifications, the circumstances under which they are used in business life, and individuals' attitudes towards them were such identifiable gaps. Exploring the personal, cognitive processes of supplier selection, and in doing so, reinforcing the behavioural scientific line – which can safely be said to be neglected – has proven itself to be an ideal target for the literature on purchasing. This is the gap I intend to fill with the answers I got to my questions.

The absence of research hypotheses from this part is no coincidence. Questions are about what one wishes to learn; hypotheses, on the other hand, are initial, uncertain answers to questions. Maxwell (1996) does not reject hypothesis testing, however, in his opinion, in the case of qualitative researches, there are many misunderstandings and quantitative research standards are applied aggressively. Several authors call their assumptions of such kind propositions, while using them for the same purpose as hypotheses. It must be remembered that when qualitative researchers form hypotheses, they will do so – if at all – after their work has started: hypotheses are built and formed based on data in an iterative process, and are not initial ideas tested with data. Initial hypothesis formation is an important element of quantitative researches: only statements made before data review are statistically correct. The same, however, is not true for qualitative researches.

The generality of the questions is interlinked with the sample size. If the purpose was generalization, sampling logic would have to be followed, and questions would have to be phrased loosely to ensure representativeness. Qualitative methodology can be applied more suitably to *case logic*, along which it makes understanding, describing and interpreting the events of individual cases easier, as well as the subsequent theory formation.

I phrased my questions with a *realist* approach (as opposed to the *instrumentalist* one). The instrumentalist way of asking questions would be phrasing them to find out what individuals mention in their accounts, which factor is the most important one to them.

Such questions deliberately accommodate biases, the idea that individuals will not give full accounts, and they will talk about reality as interpreted in their minds, not actual reality. With the above in mind and aiming for validity, I still phrased my questions along the base concept of "What is most important to them?" „Far better an approximate answer to the right question, which is often vague, than an exact answer to the wrong question, which can always be made precise"(Maxwell, 1996: p. 57) In other words, I deem accounts given by individuals to be evidence on the given phenomenon, and treat them accordingly. I endeavoured to minimize biases by ensuring validity.

I wasn't looking for differences. The questions I worked with were not of the sort "*how much*", "*to what extent*", and the like, but began with the words "*why*" or "*how*". To put it briefly, instead of variance questions, I worked with process questions. I phrased my questions not to seek out differences, but to help understanding and reflect processes.

The five types of understanding (Maxwell, 1996) are descriptive, theoretical, interpretive, generalizable and evaluative understanding. Qualitative research can be more effective at some levels than at others. Questions asked for the purpose of *description* are inquiries into what happens, i.e., behaviour or events. *Interpretative* questions are asked to find out what certain things mean to the individual: what they think, how they feel about them. *Theoretical* questions are about why whatever happens happens, how it can be explained. These are the three levels covered by many qualitative researches. Generalization and evaluation are difficult to achieve with purely qualitative methodology: the first mainly due to the unique sampling characteristics of the researches, the second due to the manageability issues the researcher has to face when dealing with evaluative statements.

To summarize the above: instead of hypotheses and propositions, I stuck to forming research questions and subquestions. I endeavoured to ask my questions in a process centric, realist manner, at a general level where limits are not set too tight. My questions served the purposes of description and interpretation.

***Research question A**: What is the cognitive process of supplier selection decision like?*

My thesis is descriptive and interpretative in character. I wished to understand what is in the head of the decision maker. What conscious processes run when they select a supplier? Most of the research on decision making focuses on the result of this process. I am interested in the process.

***Research subquestion A1**: What judgement model, what decision strategies do individual decision makers use?*

Is the individual's thought process framed by a compensatory model, encompassing every piece of information and geared towards optimization, or by some faster, non-compensatory model? What decision rules/combination of decision rules do they apply?

***Research subquestion A2**: What heuristic steps (stopping rules, heuristic decision strategies, threshold values etc.) can be identified in the process, and in what phase of the process are they used?*

By heuristic steps I mean non-finalized, non-rational mechanisms aiding simplification. Is there any heuristic decision rule applied, how are threshold values used for filtering, what meta-rational rules (for instance, stopping set by a time criterion) are applied? Do simplifications typically occur in the filtering, the evaluation or the selection phase? Which criteria fall under the scope of these simplification rules? Do heuristics seen applied to criteria very important to the individual differ from the ones applied to less important criteria?

***Research subquestion A3**: How can the environment, in which the decision maker uses (or happens not to use) these heuristic steps, be characterised?*

What product-, situation-, relationship-specific and other characteristics describe the decision situations in which simplified decision making is more likely to be "indulged in"? What scope do heuristic decisions cover within the entire decision set?

***Research question B**: What is the attitude of the individual towards the rationality of the process?*

What does rationality/sensibility mean to the individual? Is it defined in their minds, do they stick to it, do they reason using the term appropriately? I asked these questions to learn about the kind of attitude the individual applies simplifications with, and to enhance the views of the optimistic/pessimistic sides by adding subjective ones.

Research subquestion B1*: How does the individual interpret what the literature calls rationality, rational decision making? How specific is this interpretation?*

Systematic, consistent and rational processes, tools are taught about at our university in great detail. What is, and what is not sensible to the individual? What do they deem to be rational, which concept of rationality provides the best description of the concept they have in their minds?

Research subquestion B2 *: Does the decision maker adhere to any kind of rationality ideal of their own internal interpretation?*

What role of rationality can be deduced from the accounts? Are there any traces of rationality being present as an ideal, a standard to follow?

Research subquestion B3 *: If the individual uses any kind of non-formally rational decision strategy, what is their attitude towards it? Do they consider these to be positive, effective tools or a kind of necessary evil?*

What statements do they make on simplifications and the heuristics they profess to use themselves? Do they have positive or negative attitudes towards the latter?

5. Research methodology

In this part, I shall give the approximative layout of the paradigm forming the framework of my activity, then give my reasons for having chosen the grounded theory methodology and the applied methods. Having discussed the methods, I will also write about the steps I took to assure the quality of my research.
There are several, widely spread research methods applied to the research on the decision process and its individual elements (such as criteria sets). Of these, the most frequent ones are the Likert-scale, ranking and comparison by pairs. These methods may be suitable for research in well defined and fully explored areas, the bias effects their application entails, however, must be kept in mind. With the research I carried out being open and more of the exploratory kind, instead of these concrete methodologies, I chose one that fits my purposes better.

The topic I chose concerns internal thought processes. Bias effects are proven to appear in the accounts on these, which is why I decided that a good result could only be achieved through methods geared towards and aiding deeper understanding. This attempt at a deeper understanding was my main reason to delve into my research topic using qualitative methods.
Strauss and Corbin (1998) present the possible justifications for carrying out qualitative researches: one can be the personal preference or experience of the researcher. There are researchers, whose direction and personality fits this type of research. The stronger reason, the authors claim, is that the topic requires qualitative methodology. They also point out that when thought processes (or emotions and feelings) are the subject of exploration, qualitative methods will provide better comprehension, as traditional methods are not really suited to approaching such topics. Since I could have made my choice of methodology based purely on technical considerations, I must add that in my case, the first reason is valid as well, that is, I am attracted to qualitative methods.

Within the traditions of qualitative researches, I would like to place my research in the appropriate paradigm, so that the research can be carried out in compliance with the assessment criteria of the paradigm. According to Denzin and Lincoln (2000), and

Mason (2005) the paradigm within which a researcher thinks and carries out his research work can be identified by the definition they give of their opinion on the world, of the limits to which it can be understood, of the nature of knowledge and by their choice of the matching methods they consider to be appropriate.

My research is interpretative. I would like to explore the subjective world of the individual, the subject of my curiosity are personal, internal processes. Indeed, according to Denzin and Lincoln (2000), every research is interpretative: it is guided by the researcher's set of beliefs and feelings about the world and how it should be understood and studied. The category of interpretative paradigms is a comprehensive one, with several specific paradigms within it. The authors describe these briefly with three characteristics: the criteria for assessing the quality of the research, the form of theory and the type of narration. This is the framework in which I wish to position my research, based on what I think of reality (ontology), what relationship I presume to exist between myself and the subject to explore (epistemology), and in what way I see it possible to gain knowledge on the subject to understand (methodology). A paradigm can be defined using this grid of three parameters.

Judging by the above, my research fits two of the paradigms, or, to be more precise, is on the borderline between the two. As I shall explain in more detail when discussing the grounded theory method, I would place it somewhere on the limits of the postpositivist and the constructivist paradigms. Even though its roots and its aim for rigorousness place the grounded theory closer to postpositivism, in the research process itself I would categorize myself as a constructivist.

The *constructivist* paradigm assumes a relativist ontology (there are multiple realities, reality does not just "exist"), a subjectivist epistemology (the researcher and the research subject cocreate understandings), and uses naturalistic methods (for example, observations, deep interviews) (Denzin and Lincoln, 2000). The methodology and rigorousness of the grounded theory can take effect here too, the traditional criteria of research assessment (validity, generalizability and reliability), however, are replaced by other ones: trustworthiness, confirmability, credibility and transferability. Chiefly due to the epistemology standpoint, the quality of the research can be assessed by the examination of the process, not by a comparison to "reality". Consequently, I shall assess the research process by the four latter criteria in the part on research quality.

5.1. The methodology framework chosen

Within the paradigm, I sought answers to my questions using the grounded theory methodology. This has left its mark on the research process, as it determined the sample size, the process sequences (the order in which steps followed each other), as well as the iterative process of the research.

By grounded theory (henceforth abbreviated to GT), the literature means a theory „that was derived from data, systematically gathered and analyzed through the research process." (Strauss and Corbin, 1998: p. 12). „A researcher does not begin a project with a preconceived theory in mind (unless his or her purpose is to elaborate and extend existing theory). Rather, the researcher begins with an area of study and allows the theory to emerge from the data."(Strauss and Corbin, 1998: p. 12) The benefit of such a way of thinking is that the theory, having been derived from the data, will match the practice well, and be comprehensible to the sociologist and the layman alike (Glaser and Strauss, 1967).

Grounded theory is mentioned as a paradigm (Babbie, 2004), as a theoretical form (Denzin and Lincoln), as a method (Ryan and Bernard, 2003), and even as a methodology (Kennedy and Lingard, 2006). Strauss and Corbin (1998) make a distinction between method and methodology, and thus, they give their definition of GT as well. According to Strauss and Corbin (1998), a "method is a set of procedures and techniques for gathering and analyzing data, while methodology is a way of thinking about and studying social reality." (p. 3) According to the pair of authors, GT is not only a method, but „a way of thinking about and of viewing the world that can enrich the research of those who choose to use this methodology." (p. 4)

This is the approach I assumed in the research process. I applied specific methods in a way that fits the GT logic. The purpose of this logic is to ground the theory as much as possible in the data, to have the former rooted in the latter as deeply as possible.

GT's aim for rigorousness can be attributed to the fact that it was born in an era when rigorousness was a requirement for quantitative research. Glaser and Strauss's contribution was making theory generation the research objective instead of theory testing. (Later on, Strauss started working with Corbin, and their ways with Glaser were

separated. Many representatives of grounded theory follow either the way of one or the other of them, some, however, build on both. The important difference is in opinions on hypothesis-testing and validity.)

Glaser brought with him rigorousness and systematicness from the qualitative traditions, while Strauss brought openness and symbolic interactionism. The way these two researchers combined their respective approaches, originating from their professional past, was interesting, and, as such, a novelty. Later on, their differences probably caused tension – the professional debate between the followers of the Strauss-Corbin line and Glaser continues to the present day (Glaser conducts the debate himself, Strauss has already deceased) (Charmaz, 2003).

I gave this brief review to show that GT guidance is far from being unequivocal, and there is no such thing as a uniform grounded theory methodology. There are debates going on in the literature on which coding method should be applied, how much information one is "allowed" to gather from the literature prior to empirical research, how sampling should be carried out, and similar topics (see, for example, Larossa, 2005; Suddaby, 2006).

There is a number of interpretations for the process described by Glaser and Strauss in 1967 to be found. Mills et al. (2006) describe it as the development of several permutations of grounded theory in the course of time, a development which takes the shape of a methodology development spiral, where researchers can place themselves by their respective standpoints in ontology and epistemology. Within the multiple schools of thought on GT, they consider it important, however, for everyone to define their standpoints with respect to the following elements: theoretical sensitivity, theoretical sampling, treatment of the literature, constant comparative methods, coding, verification, identifying the core category, memoing, and the measure of rigor. In the following, I shall show which interpretation of the process and my methodology I accepted as my own, and why.

So far as theoretical sensitivity and the treatment of the literature are concerned, I followed the constructivist grounded theory line (Charmaz, 2003; 2006). I did not deject the idea of reading the literature before and during research. Whenever relationships I suspected to exist between certain answers or codes drew my attention to a new area, I looked it up in the literature as well. According to the program represented by Strauss

and Corbin, and later on their student, Katy Charmaz, literature is a legitimate source of knowledge, and it also increases theoretical sensitivity (Goulding, 1999). They consider the idea of the researcher approaching their topic as a totally *naive* questioner, with *tabula rasa* to be unrealistic. They recommend that the researcher treats initially suspected relationships, formed on theoretical grounds, consciously separated from the data, even though the effect cannot be fully excluded. Several authors emphasize the importance of reading on theories (Charmaz, 2003; Mavetera and Kroeze, 2009; Mills et al., 2006). Suddaby (2006) goes so far as to call the deliberate lack of information a misassumption on what grounded theory is. The general recommendation is to read the literature of not just one, but several related areas in the process, as in this manner the chance of being open to a single topic and being actually influenced by nothing but prior readings can be reduced. I shall discuss theoretical sampling, coding and research quality criteria separately, in each of the respective parts.

Having identified the paradigms and GT, I would like to narrow my position down with one more point. As I have already mentioned, in my approach I am the closest to the constructivist grounded theory. The methodology, however, is built in its original form on symbolic interactionism, which, based on Strauss, is rooted in phenomenology. This is the program that brought into grounded theory the idea that the exploration of meanings and meanings given within interactions are important, as they are the factors determining an individual's relationships. Larossa (2005) asks the question whether a GT process can be built exclusively on symbolic interactionism. In his opinion, GT processes lacking this *perspective* have to have another, similar one. He lists constructivism, poststructuralism cognitive sociology and culture researches as such possible candidates. What he intends to say is that the GT process cannot be "empty". I used two options in my research: there are parts where the issue of given meanings and interpretations have a strong presence (phenomenology, symbolic interactionism), while the spirit and my attitudes are dominated by constructivism.

The creation of a complex theory is not among my objectives – indeed, grounded theory rejects the formation of a grand theory in the first step. The methodology at hand is suited to the formation of substantive theories, i.e., theories situated between smaller hypotheses and the "grand theory". The substantive theories it results in (relevant to a narrow area), which can later be expanded to a more general, formal level by further research. (Glaser and Strauss, 1967)

5.2. The sample

My questions serve the purpose of exploring personal thought strategies with supplier selection decisions as an example, and I chose my research sample accordingly. I chose to ask about personal decisions only, group decisions were not a subject of my examination. Even though negotiation situations are easier to explore, with group dynamics at play, I consider cognitive processes more difficult to understand under such circumstances.

One of grounded theory's principles is *theoretical sampling*. This means that the researcher chooses their next interview subject during the process. Normally, they will begin with a very loose, free set of choices. Carrying out data analysis in parallel with data generation, they decide upon each subsequent subject in accordance with the indications of the analysis on whom to look up and what questions to ask. Sample size cannot be initially predicted, as stopping is determined by saturation. Representativeness and comparability are not any of the objectives (Glaser and Strauss, 1967).

As I intended my research to be exploratory, I tried to avoid companies with codified processes, namely, purchasing policies, to allow personal thoughts to appear as freely as possible. I must add that I made my first interview at a location with a policy, and my second subject, from a large enterprise, dispersed my belief that decision makers are fully constrained at companies with purchasing policies – although it is still a fact that their hands are tied in many respects.

After my first two interviews, which still provided knowledge on relevant thought processes, it was **small and medium enterprises** where I sought further subjects, due to the unregulated nature of the latter. Within this category of size, companies with an independent purchasing function can be found as well as companies where the function cannot be separated from other functions either organizationally or by the person responsible for it. Most of my interview subjects (with the exception of two of them) work at small or medium enterprises, where they perform purchasing as a part-time task. Consequently, the internal validity framework of the research is limited to this population. On the other hand, I believe the examination of the relationships explored could be carried on to a research on full-time purchasing managers. In the process of *theoretical sampling*, I had to make this decision on excluding large enterprises. The

decision was not obvious – eventually, I was led to it by the contrast between the regulated and the unregulated thought processes. I could gain knowledge on the most open personal thought processes by asking SME executives. As my research is exploratory, I think it could be expanded to the purchasing managers of larger enterprises in the future. Beyond the extent of regulations, there is a number of differences between the two populations, such as purchase decision making in full time, the tools applied, volumes, personal motivation and its effects on decision criteria, the time and the resources available.

As to the decisions examined, they mostly concerned the purchasing of products, although services cannot always be separated from them.

GT does not provide unequivocal guidance on sample size. It provides the question of the theoretical saturation of categories and relationships as an aid to making this decision – a rather unfixed, but still useful rule. What it means is that a researcher should carry on their work until they notice that a newer case will not significantly enhance category properties or help to understand the relationships (Glaser and Strauss, 1967; Suddaby, 2006).

In an ideal GT process, analysis is begun after interviews with the first few subjects have been accomplished, and then goes on simultaneously with the subsequent interviews (and not after gathering has been finished). This is so because it is knowledge gained from earlier interviews that will help to determine who further data should be collected from, and how. Work is not carried out on a sample with a predefined number of elements and composition, but the sources where further data are sought are determined in an iterative research process (Glaser and Strauss, 1967). This does not mean that multiple interviews cannot be prearranged – what it does mean is that the process in its previously introduced form is suitable to either confirm or refute the eligibility of the subjects of such already arranged interviews.

In sociology, the questions raised by the later steps of sampling sound like *what sites to visit to make observations, what groups to extend the scope to,* etc. I reinterpreted the questions on “where to” and “what”, so that sampling became virtually dual: theoretical sampling carried out along constant analysis helped me to judge who eligible interview subjects were, at the same time, it also provided guidance on what questions to put to the subjects, which categories were not yet fully saturated. With the analytical units being decision processes, an image of which can be formed only through accounts, and

not actions – which would be *observable* – the questions *where* and *what* were reinterpreted in a sort of a cognitive space. Thus, the steps of choosing samples that I was lead to by theoretical sampling covered not only *whom* else to ask, but also *what* to ask them about.

The steps I took were the following (see Figure 4 on the research process): after the first two interviews, unregulated, small size enterprises emerged as the definite target. Reanalysis after the fifth and the sixth interview brought adaptivity and meta-decisions into the foreground as new sets of questions, which I found two of the topics outlined by my interviews to be closely related to each other. Accordingly, following the analysis, I added new questions to the interview thread (for example on learning, comparisons made by decision makers between their present and former selves).
With relationships between age, experience and the nature of the decision making process becoming apparent, I targeted decision makers much younger than previously, as in the case of the latter big jumps in the evolution of decision making is a fresher process, a memory easier to recall. I cannot claim the complete topic to have taken its final shape, still, I feel the direction the categories currently point to (more details on which can be found in the part on possible further research), are independent topics in their own right, and are only loosely related to my research questions.
I used databases from earlier researches to find my interview subjects, and then, on some occasions, I moved on applying the snowball effect, or reached my interviewees through acquaintances. There were two interview subjects whom I had met earlier. There have been some interview subjects whom – due to the path determined by theoretical sampling – I first put aside, and eventually did not interview at all.

I have made a total of twelve interviews. Even though the stopping rule is the saturation rule, some actual numbers on how many interviews researchers “used to” stop after do show up in the literature. The numbers indicated mostly fall into the range between 10 and 30. Goulding (1999) refers to the 8 – 24 range found in the literature attempting to define such rules of the thumb, more specifically, the number 12 as the most common one. Still, she is critical about these numbers, and rightly so, as the fundamental principle should be saturation. These numbers are based on habits, and not methodological considerations. On my part, I did my best to make enough interviews to be able to claim my categories saturated, and see that they provide ever less new

knowledge on the phenomena targeted by the research questions, with the same patterns turning up over and over again. With so many interesting phenomena and relationships surfacing, the process could have taken me much further, yet, I had to draw a line beyond which I did not go in the chain of relationships. I felt my picture on the focus of the research questions and the related phenomena to be broadened most significantly by my sixth to ninth interviews.

In a GT process, the objective is not representativeness, but saturation. Accordingly, beyond the absence of regulations and purchasing relevant to the operation of the company, I had no requirements, unless necessitated by the more precise dimensioning of the categories.

Out of my interviews, I made five with leaders of Hungarian, and seven with leaders of Slovakian companies, enterprises. I detected no effect of cultural differences in the way of thinking. Among the leaders, there has been one female and eleven males, with ages varying from 26 to 61. With regards to the field of operations, the sample consisted of two chemical and two printing companies, a paper mill, a book publisher, a stone processing plant, a manufacturer and distributor of decoration and art accessories, a network manufacturing and distributing decorations and floral arrangement accessories, an IT company, a tool manufacturer and a manufacturer of occupational clothing.

Ten interviews took place at the subjects' workplace, and two at hospitality units. The interviews – with two exceptions – were conducted one-on-one. At one of these two, the assistant was also present, but gave no responses, only confirming gestures, at the other, there were two subjects interviewed (and, accordingly, the interview took more time). The interviews lasted between one and two hours.

As a possible future research could be carried out in an exploratory manner, the selection of further elements would still be determined by the categories, their characteristics and the relationships between them. I will discuss these points in the part on further areas for research.

5.3. Methods of data generation

In the following part, I shall first discuss my data generation techniques (interviews, verbal protocol analysis and ethnographic decision modelling), and then my data

analysis method. I use the term *data generation* in place of data gathering because the data do not "live" somewhere, but are generated by the interaction between the interview subject and myself. Interview subjects rarely have to talk about their thinking and their mental steps in the process, if at all. Due to this reason, my research has been strongly interpretative, and fits well to the interactionist branch of grounded theory. It was me who arrived to the subject, with all my traits, with which, whether consciously or unconsciously, I affected them – and the reverse is true as well. In this interactive situation, through questions and dialogue, we generated the text I later analysed. The text cannot be separated from us. What I dealt with was not a reality existing independently from us, but a process in which first, data came to be, then, from these data, I constructed my knowledge on the area, which, in turn, I will publish in the part on the results. The quality of this construction depends on how well I can adhere to the *aim of complex understanding*, what my *communication skills* are like (while I also try to understand others' interpretations), and to what extent I am able to be critically *self-reflexive* with regards to my own processes of understanding (Taylor, 1996).

5.3.1. Interview

In the course of my research, I conducted semi-structured life-world interviews. The interviews were semi-structured because the number of the questions I had prepared was small, and could be supplemented by other topics coming up during the interviews, as well as questions I created on the site. The interviews were life-world interviews because I wanted to learn about the subjects' perceptions and interpretations. Henceforth in the present text, the term *interview*, without any modifying adjectives, refers to semi-structured life-world interviews everywhere.
I am aware of the fact that interviews are a method of data generation, and not data gathering (Mason, 2005), and also my responsibilities entailed by it. Similarly, I am aware of the significance my role as a researcher carries, and the fact that – not being a neutral collector – I must analyse it in the course of data generation (King, 1994; Mason, 2005). I have actually done so in the parts on the results and validity.

King (1994) considers a number of research situation characteristics to establish whether qualitative interviews (his term for open and semi-structured interviews),

structured interviews, or some transitional form between the two extremes is the most appropriate. It was based on these considerations that I found it right to choose interviews as one of my research methods. That is because, according to King, the qualitative research interview is most appropriate where (among other points):

a,) A study focuses on the meaning of a particular phenomenon to the subject;

b,) Individual perceptions of a process within a workgroup or an organization are to be studied;

c,) Exploratory work is required to provide the foundations for a later quantitative study.

My research can be characterized as follows: some of my research questions are targeted at individual interpretations of concepts, or motivated by an interest in the meaning of concepts. Purchasing decisions typically occur in organizations, what I studied, however, were personal decision making and individual judgments, and the interpretations within the process are also personal. My objective was to explore rules of the thumb, spontaneous and learnt simplification rules. With a lack of works on the topic within the literature, my work is justly called exploratory.

I used semi-structured life-world interviews because the cognitive thought processes and the attitudes towards them, that is, the target of my research interest, were present in the subjects' heads, consequently, I needed some sort of data generation to make a part of these processes known to myself. The topic is difficult to approach in any other way, and of all the possible methods, interviews constitute the one that is the easiest for the subjects to accept, and meets the least organizational obstacles to prevent usage (as opposed to, for example, concurrent observations). These are the reasons why I see the primary method in my set of tools in the interview.

The progress of the interview thread, in accordance with the grounded theory approach, is iterative. Initially, I approached my interview subject with a few open questions, then, later on, I also asked about the relationships I hypothesized. To illustrate the process, I present the threads of the first and the last interview (Annex 9.1).

I recorded the voice material of the interviews using a dictaphone, on which I requested the subject's opinion prior to each interview. There has been one interview that was an exception to this routine – on the subject's request, I took notes on the site, and filled in the missing information right after I had left the scene. I typed this particular interview in the same day. I typed in the first three voice materials myself, and had another,

experienced typist type in the rest.

Following their conversion into the appropriate format, I managed the texts using the TAMS Analyzer[11] program. The latter is an open source tool for qualitative data analysis, allowing the management of codes and texts within the same project.

Embedded into the interviews, I applied two additional methods (more precisely, some of their elements), which I shall introduce in the following parts.

5.3.2. Verbal Protocol Analysis (VPA)

With an understanding of the cognitive processes taking place during decision making – that is, an image of what information the decision maker uses, in what way, and what sequence – it is possible to explore the criteria and their treatment. Some time passed by before methods were focused on these, with most of them examining the outcomes of decisions only; scales, sequences, proportions. According to Payne et al. (1978), those who are interested in processes should study the behaviour preceding the decision. The VPA method, recommended by Payne for the purpose, originates from the information processing approach. It is a process-tracing method.

The central element of VPA is asking the research subject to give a continuous verbal account, in other words, to "think aloud". The researcher treats the account as the minutes of the subject's problem solving and decision making behaviour in progress (Payne and Bettman, 2004).

As an interesting point on sample size, Crow et al. (1980) mention the prevalence of researches performed on small samples. They list several examples of six, four, or even only a single subject being studied. Bettman (1970), for example, followed five housewives with a portable tape recorder as they shopped for grocery products to record the thoughts they said aloud. Of these five subjects, he created models of the thought processes of two. The exploratory nature of the method and its objective to create a model/theory does not exclude the option of working with such small samples.

The method is rarely applied, in spite of its potential to eliminate deficiencies: there are many fields on which we have knowledge based exclusively on results from methods

11 TAMS - Text Analysis Markup System, © Apple Computer, AGRegex is © Aram Greenman, PCRE Library is © Philip Hazel.

analysing outputs, with little information available on the decision makers' mental activity in the decision situation. On the case of supplier selection, for example, Crow et al. (1980) say „Most of the other studies in the area of vendor choice have focused on the determination of attribute importance rather than on how these attributes are utilized in the decision process" (p. 34) This method makes it possible to identify the decision strategies (rules) which in turn can be integrated into a system that is nothing but a "black box" from the aspect of all the other methods. Whatever is discovered inside this black box of the unknown, it will help to understand decision processes, as well as with the correct interpretation of results gained by other methods.

Critiques published on the methods, and in particular the results attainable through its application, mostly target validity (I shall discuss the issue in more detail in the part on the quality aspects of the research). Another disadvantage of the method is its time requirement, as pointed out be several authors (Bettman et al., 1978; Crow et al., 1980; Kuusela and Paul, 2000). This requirement can be felt when the transcripts are being analysed.

Kuusela and Paul (2000) mention among the weaknesses of the method the fact that it cannot trace cognitive processes that never reach consciousness, and is in this respect limited – let us not forget, however, that the same is true for every research method.

One of the issues is the timing of the research: should recording be carried out concurrently or retrospectively? In the former case, the researcher has the subject think aloud as the decision making process is taking place, while in the latter, after the process. The two are compared by Kuusela and Paul (2000), who come to a few noteworthy conclusions. With part of the subject's mental capacity being taken up by putting the continuous account into words, concurrent analysis will artificially slow down the decision making process. The desire to satisfy social expectations appears in both cases. Processes described by the subjects in retrospective analysis will typically appear to be more systematic and rational than those described in concurrent analysis. Retrospective VPA will normally provide less information.

Supplier selection decisions processes take more than just a few minutes from the realization of the need to the final selection. Decisions remain on the agenda for days, even weeks, with active communications going on in parallel with all the other tasks to be performed. Thus, creating an image of ongoing processes concurrently was not a

viable option – not only from the managers' point of view, but, mine, the researcher's as well. On a few occasions, I have happened to get images of ongoing supplier selections, or come across supplier selections due to be made, still, descriptions of processes recalled from the recent past or carried out regularly were more frequent. In such cases, I encouraged my subjects to look for situations as recent as possible, so that they would have the most possible details still in their minds.

VPA in itself would be no more than thinking aloud, a free description of the process. I did let it take place, on the other hand, at some points I interrupted it with my questions. I tried to ask these questions so that they would always be relevant to phenomena already mentioned, include words already said, while bringing in as few new constructs alien to the interview situation as possible. Beyond these, I asked only technical, deepening questions ("Would you talk about that in more detail?", "What were you thinking prior to this step?" and the like). Besides these, once the process had been described, we evaluated it and its generality, and normally, I also deployed contrastive questions, too. These are the elements of the method described below.

5.3.3. Ethnographic decision modelling (EDM)

Ethnographic decision modelling is a qualitative method suitable for cause-effect analysis. The method was developed by Christina H. Gladwin, who based it on the presumption that human thought processes could be modelled, and illustrated by decision trees (Hill, 1998).

Ryan and Bernard (2003) introduce retrospective questioning, that is, they do not ask their questions in a hypothetical situation, but ask the subject about their most recent relevant decision. They ask their subjects to recall *why* they decided the way they did. A detailed description of the method can be found, among others, in Garro's (1998) and Hill's (1998) works.

A The method consists of getting the decision maker to work with real alternatives, and exploring the applied criteria (of which it is best suited for the identification of the most significant ones) with the application of the so-called technique of *contrastive questioning*. An example for a contrastive question could be: "If you had to face a decision in the future, for what reason would you select supplier 'A' instead of supplier

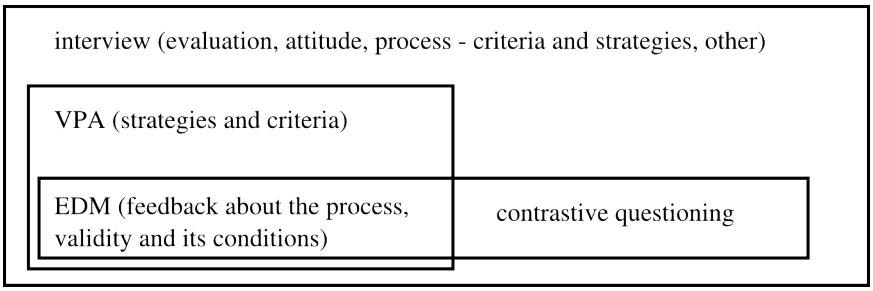
‘B’, whom you have chosen now?” Instead of using the method in itself, I combined it with VPA, and thus attained a more structured process description. As it can be seen, the contrastive questioning I used is an effective means of exploring and identifying chiefly criteria which motivate subjects to change course, but other criteria as well.
I recapitulated the decision processes just explored as a simplified image to my subjects, asked them let me know if it was correct, and also to give examples where, or criteria under which the process would have been different (search for exceptional cases).

5.3.4. Practical application and coordination of methods

Within the framework of the interviews, I applied the VPA and EDM methods basically as structuring tools. The interviews comprised evaluative questions (self-retrospective on processes), questions on reports (of phenomenological nature), and questions concerning mainly behaviour performed in decision situations. With these questions I intended to create an approximative image of what objectives, etalons and ideals decision makers have. Besides these, process descriptions on the strategies applied also play an emphatic part in the interviews.

As shown above, the main framework of my method was formed by the interviews, within which I used two other methods framed within each other.

Figure 3. Research methods and the topics they targeted



Source: own work

With my general interview questions I tried to get answers on the evaluation and the purpose of the processes, and I used them to break the described processes further down with my subjects. I used the VPA method primarily to explore criteria and strategies, as well as other parameters (such as the number of alternatives and threshold values). With contrastive EDM questioning, I think I stepped outside the boundaries of exploring processes, as it makes subjects contemplate hypothetic changes. Member checks have an additional, important role in assuring the research quality.

5.4. Data analysis

With the sequence of introduction and the separation (of data generation and data analysis) being possibly misleading, I must explicitly state the fact that in a grounded theory process, data generation and data analysis are not two separate phases, but activities performed iteratively and simultaneously. There is a wide range of applicable data generation techniques; data analysis, on the other hand, is based on more-or-less traditional techniques and principles.

The method I used for data analysis was **coding**. I complied with the principle of *constant comparison* by not separating the processes of data generation and data analysis From the first few interviews onwards, analysis indicates terms and categories in need of clarification or of special interest, as well as relationships which are closely linked to the research topic and worthy of a closer examination, thereby helping to phrase further questions and find subsequent subjects. Substantive theories are constructed in parallel with data generation and analysis.

Coding is an analytic process through which data are fractured, conceptualised, and integrated to form theory (Strauss and Corbin, 1998). The purpose of the process is to recognize, develop and relate the concepts that are the building blocks of theory. Coding is a multi-level process. The phases distinguished by Glaser (1978) are the *open*, the *theoretical* and the *constant comparative* ones. In the process of open coding, data segments are labelled, categories are created and the core category is identified. In the theoretical phase, the relationships between the categories and their characteristics (perhaps more properly, dimensions) are outlined, and the third phase is one of the

central principles of GT itself, constant comparison. Strauss and Corbin's phases are far more common. They distinguish between *open*, *axial* and *selective* codings. The process of open coding reaches its end with the creation of the categories, the axial phase is characterized by the search for relationships and links, and finally, in the selective phase, the selection of the core category takes place (LaRossa, 2005; Moghaddam, 2006).

Disparities between the two approaches are negligible; the only difference of any significance is in the delimitation of the phases, and the fact that the latter approach applies constant comparison as a principle instead of a phase. In my interpretation, constant comparison covers not only the coding, but the entire process, so I went through the second series of phases.

I did not follow technical parameters, that is, I did not do coding by lines or words, but assigned one or more labels to thoughts and steps. This is the so-called *incident based* coding.

I later arranged the terms created through the labels into categories, with which in turn I set about examining the relationships. This sequence of steps is yet again characterized by the possibility of differing interpretations: some researchers put only near identical terms into the same category, while others claim categories to be dimensionable by nothing else but the grouping of different terms which still belong together. With regards to characteristics and dimensions, some firmly insist that the dimensions (e.g. depth, intensity, shade) of an object type (e.g. colour) should be defined this way, while others argue that defining each of the above as independent variables will cause no problem, as they will eventually end up grouped by the objects anyway. LaRossa (2005) gives an excellent methodological review on this aspect.

Choosing the path to take is always up the to researcher, in this case, myself. Having read the methodological and the original writings, however, I came to the conclusion that all the various paths lead to the same set of relationships, and the only difference will be in the presentational form of the theory.

In the open coding phase, I tried to preserve openness, that is, to put my existing knowledge on the topic into "brackets", and I treated the research focus in a similar way. As I have mentioned in the part on the interviews, I let concepts to surface whenever they happened to do so spontaneously. In the open coding phase, I tried to

proceed using questions like “What is the point here?”, intended to be subsidiaries by Strauss and Corbin (1990).

In the axial coding phase, to find the relationships between categories, one can use the so-called “*six Cs*” (Glaser, 1978): causes, contexts, contingencies, consequences, covariances, and conditions, or the so-called *paradigm model*, developed by Strauss and Corbin, where the causal conditions of the phenomenon, the intervening conditions, the context conditions, the action/interaction strategies and their consequences are distinguished. The most important difference between the two is that the latter model puts context conditions into a single category, and puts stress on the strategies with which individuals react to the phenomena. Unlike constant comparison and theoretical sampling, these two are not two virtually different principles, but rather methodological aids. They help with organizing all the categories around the core category. As they are difficult to distinguish from each other, the six elements are often reduced to four: causal conditions, the strategies along which the actor acts with respect to the phenomenon, the consequences of these, and the conditions among which the phenomenon discussed occurs (Moghaddam, 2006; LaRossa, 2006).

Basically, when looking for relationships, one is trying to find out what phenomena lead to the phenomenon in question, what context the phenomenon occurs in, what strategies the individual follows and what the consequences are.

There are additional research tools applied in the GT process. These are either created by the researcher for themselves, or used in the final phase to structuralize and represent the theory. Of the latter, I shall briefly address the ones I have used myself.

According to Mills et al. (2006), whatever form of GT a researcher is engaged in, they will be required to write some sort of **memos**. Memos are notes a researcher either writes separately for each step, or collects into a single document. They are a process tracing tool, glancing at which at any given moment, the researcher can clearly see how they got to that particular point. This “Ariadne’s thread” is a great support to rely on when constructing theories. I put a memo file in my research material folder, and also recorded my thoughts in a notebook, which I copied into the file at the first opportunity. As a result, the memo file shows step-by-step, for example, what I learned from each interview (construction tracing), where I was in the coding process, what new labels

each interview brought about, what new questions I would need to ask in the next interview, what new theories I would have to read about.

The preparation of **cause-effect matrices** and **diagrams** has to be mentioned here, too. The condition/consequence matrix is a representation of the cause-effect relationships between the categories, which, in the process of the research, helps the researcher to show how one category or concept influences or effects the other, and reversely: what it is the effect of. I applied these methods myself. To promote dimensioning, I applied it even at the level of nearly fifty non-marginal concepts and labels, so that wherever it seemed to be necessary, I could break down the given categories. Such a need could arise when, for example, two concepts I had put in the same category behaved in totally different ways. I represented these relationships both as matrices and graphically. I represented core relationships in independent stubs. I used all these tools as aids to the creation of the final, simplified figure.

Research diagrams are another researcher support tool. Principally, they are schematic graphical representations of the processes recorded in memo files. In Goulding's (1999) opinion, they are an important tool, with which a clear, comprehensive picture of the evolution of the theory as well as the critical nodes can be rendered. The research diagram (Figure 4) is shown in the next part.

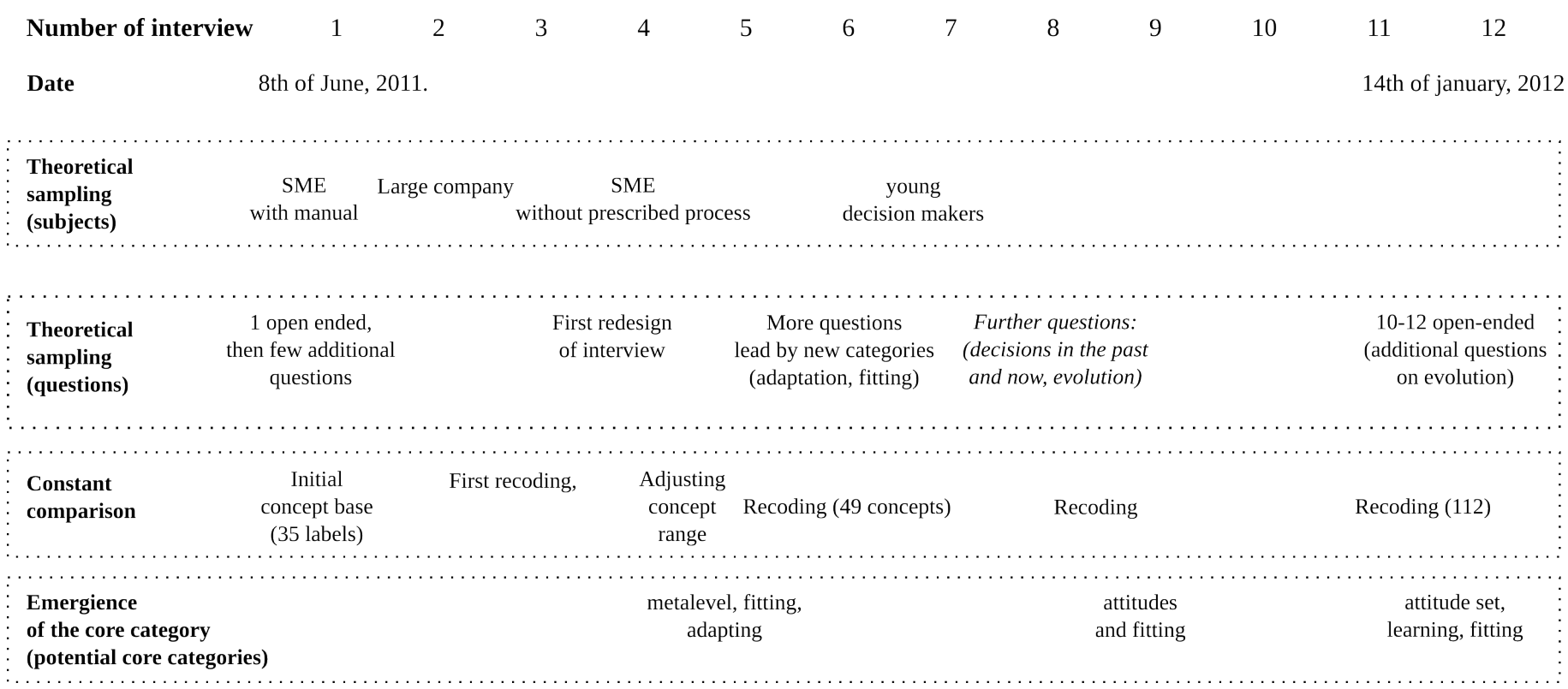
5.5. Research process

As a summary of the part on methodology, the process of my research work is represented in figure 4. Within the process, the theoretical sampling concerning subjects was rather loose, after which, having familiarized myself with the first, regulated SME and large enterprise practice, I turned my attention to unregulated SME's (that is, SME's without a purchasing policy). There has been a single additional consideration surfacing after the sixth interview, namely, the requirement that some of the subsequent subjects should be less experienced. There have been two later interviews fulfilling that requirement. As to the phenomena explored, in other words, the questions, it is quite clear that the interviews comprised one very open initial question, targeted at illuminating the decision process, followed by a few evaluative questions. As I have mentioned in the part on methodology – and it goes without saying – during the interviews, questions along differing threads and stops took place as well. These questions, however, were of a technical nature: checking interpretations, requests for further details, clarifications of ambiguous terms used by the subject, and the like. By the end of the process, the interview thread expanded into several specific questions, and became more focused.

Constant comparison of data to data, codes to data and codes to codes is an iterative activity performed continuously, still, greater rethinking and reflective coding waves have occurred. By reflective coding I mean the occasions on which I returned to the first interviews with an enhanced set of codes. By the code realm clarification I mean steps naturally occurring in coding processes: some of the codes I created belonged to the more abstract level of categories, while others were specific and very small in scope. When facing such dilemmas, I clarified what within the category could be broken down, and what category the fragmented, smaller concepts belonged to. This had an effect on the later steps of the coding and reflective coding process, too. In my opinion, the abstraction level reaches equilibrium in the process of coding. The literature on coding I referred to in the part on methodology helped me to find a way of managing differences in levels.

Halfway through the process, the core category, i.e., the concept or phenomenon emphatically present was matching, the level of meta-decisions. Later on, the attitude set ran in parallel with it, and eventually, the latter emerged as the core category.

Figure 4. Research process



Coding based on the grounded theory is a consuming task demanding extreme meticulousness. Using the methodology, I experienced the feeling of preparing for the interviews by reading the texts of previous interviews and my earlier analysis results over and over again. Constantly returning to earlier interviews with newer code sets results in the researcher's discovering new points of interest even in the first interviews. Regularly returning to earlier points in this manner prevents the under-analysis of texts. In GT methodology, one has ensure not only a sufficient number of interviews, but also the adequate processing of the data volume generated.

The number of codes increases continuously. Naturally, the rate of this increase is high in the phase of the first interviews, after which ever more refined and fewer codes appear. I found category construction and the search for relationships to be the steps requiring the most mental effort. As an aid, I drew figures on paper, and marked out cause-effect relationships at the level of categories, or even codes. This was a major data processing task, as I had no IT tools to rely on. The software I used provided a lot of support for text analysis and search, but has no feature designed for this process phase. This segment of the research often required incubation time – in such instances, it took days for a partial picture to take shape, and the process was strongly characterized by iterativeness. Several attempts and the decomposition of figures to trunks were needed for the relationship elements to integrate into a consistent picture. This work process is difficult to accelerate. This process was the aspect of the research work in which I experienced my personal contribution, mental work and the eureka moments the most vividly. I reached my results through lots of dilemmas, re-thinking and "aha"-moments.

Following GT's methodological principles in actual interview situations requires unwavering attention and a significant effort. Knowledge extended by every interview, attention paid to the prevention of negative researcher effects, phrasing new questions appropriate for varying situations is mentally burdensome. In contrast to fully structured interviews, I felt such situations to be more challenging.

It has been my pleasure to meet these challenges, as I was motivated by the desire for new knowledge and the belief in knowledge gain in such a manner. I experienced my personal acquisition of methodology skills as a process that may be useful for future researches, too.

5.6. Assessment of data generation methods from a research quality aspect

The risk most often pointed out in critiques on interviews as a method is that of leading questions. „The qualitative research interview is particularly well suited for using leading questions for checking the reliability of the interviewees' answers. Thus, contrary to poular opinion, leading questions do not have to reduce the reliability of the interviews, but may enhance it; rather than being used to much, deliberate leading questions are today probably too little applied in research interviews." (Kvale, 1994:p. 10) Such questions must be explicitly put down in writing, in their exact places and order, so that the reader can see their effect in the text.

Such critiques are rooted in naive empiricism, the belief that the researcher is independent and neutral, collecting data like a botanist collecting plants. Interviews, however, are interpersonal interactions, the shared products of two or more individuals. The important point is not whether questions lead the way to a particular direction or not, but whether there is new and useful knowledge in the direction that they lead to (Kvale, 1994).

Within the paradigm of my thinking, interviews help to generate data through mutual interaction, and these data are later analysed. I will discuss the researcher's effect and other risk sources relevant to interviews in the next part on particular techniques of research quality assurance.

Russo & al. (1989) quote Ericsson and Simon when, among **VPA** applications, placing concurrent protocol creation higher than retrospective protocol creation. They do so because in the retrospective case, memory slips and alterations cause biases.

There are two risks the threat of which is commonly identified in the literature: reactivity and nonveridicality (Russo & al. 1989, Leighton 2009). Reactivity means that due to the continuous verbal reporting, the result of the process will be altered, or at least reaction time will increase. Nonveridicality means that some cognitive processes that take place may not be given an account on, while others may be given an account on but not actually happen. To put it more simply, the phenomena at the center of

interest cannot be accessed – something that is true for every analytic cognitive technique. According to Bainbridge and Sanderson (1991), while it is true that correlation between what is said and what is thought cannot be verified, still, if VPA's not proving a theory, at least it will not refute it either. This is the reason why those in whose eyes the scientific value of data is in its potential to reject theories find collecting such information useless. (Bainbridge and Sanderson, 1991) Since this effect cannot be monitored, the main point of attention was filled by the prevention of reactivity. The latter phenomenon is more relevant to my case as well, as the analysis I performed was not concurrent.

Russo & al. suggest four potential causes of reactivity to be present: (1) the additional demand for processing resources (part of the mental capacity is taken up by giving an account), (2) the auditory feedback, which can increase accuracy, (3) learning, and (4) the motivational shift. The fourth effect is that of the subjects' wish to give correct answers and reduce errors, thus, behaving more carefully when aware that they are involved in a research and the results will be revealed to others. I have no means of preventing such effects. Then again, the question in my research is not whether they appear, but whether they have make an effect on obtaining the knowledge the research is aimed at. Do the effects introduced above influence the exploration of decision strategies? The answers is definitely yes. Rationalization entails serious losses, especially in the case of the retrospective method. With this fact in mind, due to the reasons presented in the part on methodology, I still used the retrospective method. This is the reason why I focused my efforts on eliminating reactivity elements blocking the exploration of strategies none other than the not fully rational ones. The issues with EDM are the same as those relevant to VPA, with an additional cause to closely scrutinize possible changes and shifts (contrastive questioning), the subjects' answers to which, however, normally allude to real-life examples.

5.7. Research quality assurance

Reflections on research quality assurance are a general requirement, in spite of the fact that assessment criteria for research quality can differ by paradigm. In this part I will give a report of the measures I took in the course of my research to comply with the

quality assurance criteria relevant to my paradigm.

I accepted the approach according to which research quality assurance is a process of making a meticulous effort to identify potential risk factors and eliminate as many of them is possible. Miles and Huberman (1994), Maxwell (1996), Lincoln and Guba (1985) list several tools that can be applied to ensure compliance with quality assurance criteria. Rather than reproducing the whole list, I will mention only those which I have used myself.

Of the possible biases, I will first address the *researcher's effect*, then the risks associated with the *various types of understanding*, and finally, discuss the four research quality assurance *considerations* of the paradigm.

Maxwell identifies *reactivity* as a natural biasing effect of the **researcher's presence**. The researcher's presence cannot be excluded, its effect is obvious. The researcher's task is to identify this effect and use it productively (Maxwell, 1996).

I found keeping my presence as a researcher under control difficult. In the course of mentally exhausting conversations conducted with persons I did not know, it was not easy to pay attention to what I brought to light with my presence as a researcher and what another researcher would have brought to light. What I am referring to here are my appearance, personal sympathy, my style of communication, including both verbal and non-verbal communication. Thus, I tried to keep at least the effects I could pay attention to under control. Beyond everything else, I tried to minimize the so-called *motivational shift*. To achieve that aim, when it came to analysing and evaluating decision processes, I made an effort to maintain the neutrality of my words and my intonation. I could have reacted in either a positive or a negative tone to a number of concepts and words that came up, yet, I tried not to let my opinion out. Of course, it was impossible for me to be perfectly successful on that point, as – due to constant comparison and the analysis simultaneous with data generation – my ideas were under continuous development, and, naturally, I was pleased to either see them reinforced or, indeed, a counterexample brought up in a later interview. What I did manage to do consciously was controlling my choice of words so as not to pass judgment on optimizing, simplifying or any other decision processes. Considering how – being a young researcher – I made my interviews with persons older than myself (apart from a single exception), in the native tongue of both myself and my subjects, on an everyday topic, and not an abstract one, I did not observe my status as a university educator and a researcher to cause any

submissivity.

Out of the **various types of understanding**, Maxwell (1996) identifies some potential sources of risks reducing validity for descriptive, interpretive, theoretical and generalizable understanding.

The primary possible validity deficiency of ***descriptions*** is the incompleteness of the data. This can be manifested in incomplete observation notes, incomplete sound recordings and the like. In order to avoid the issue, I checked my dictaphone regularly, and recorded the interviews to multiple short files, so that with any one of them becoming corrupted, the remainder would still not be lost. I saved my data to a computer right after each interview, so that I had a backup copy to increase their safety. I created the backups in the first few hours after each interview so that in case the records had not been made successfully, I would be able to write down everything I remembered.

The main risk in ***interpretation*** is the researchers forcing their own framework or interpretation, instead of being led by the desire of understanding. The lack of attention and inductive, closed questions can have such undesirable consequences. Validation carried out with the subjects can be an effective method of filtering them out.

King's (1994) two pieces of advice, bracketing and blind coding, which strived to heed, bear relevance to this level. With the so-called *bracketing*, the researcher makes an attempt to identify, phrase and put their knowledge and assumptions into writing prior to analysis, and then make a conscious effort to put them aside during the analysis itself. They let the data take them by surprise. In the part on the theoretical background I put down the thoughts that occurred to me when contemplating the theories and the relationships between them. Consequently, this was the part gradually detaching myself from which I had to analyze my data. The core issue here is the treatment of the literature and prior knowledge, an issue which I have already dealt with in the part on methodology. Needless to say, I am aware of the fact that I cannot fully neutralize the effect of this knowledge – but then, the methodology does not require putting it aside either.

King's second recommendation is blind coding, that is, asking a colleague to code an interview memo or two, then compare the results and consult on the differences. With my colleagues being experienced users of the coding technique, I have had an opportunity to do so. I asked one of them to carry out the task. I gave them a part of one

of the interviews, and asked them to code it for decision process analysis the way they would normally code such material. It was interesting to see their terminology, as well as the phases to which they divided the text. Coding was followed by a consultation to discuss what they meant by each of their labels. This step of blind coding helped me to make my labels more specific, and, still more importantly, provided points of reference for dimensioning the categories.

The greatest risk in ***theory creation*** is a disregard for data that do not fit in, and their possible alternative explanations.

The grounded theory process in itself provides safeguards in the steps of interpretation and theory construction, preventing biases to the highest possible extent – I shall not repeat its description here.

The classical **evaluation criteria** of the positivist tradition (generalizability, internal validity, reliability, objectivity) were reinterpreted in the qualitative tradition, where they became known as **transferability**, **credibility**, **dependability** and **confirmability** (Healy and Perry, 2000; Stenbacka, 2001). As a result, qualitative researchers attained the liberty of proving the quality and rigorousness of their work by applying qualitative characteristics, instead of forcing it into a quantitative framework for the purposes of quality assessment. In Annex 9.4 I provide a brief overview of the criteria set by the positivist tradition, as well as the reasons why it is inappropriate to aim for them in an interpretative work. Here I shall present the criteria pertinent to interpretative paradigms, and the measures I took to comply with them.

The four criteria are usually put into the collective category of **trustworthiness**. Trustworthiness is a summary criterion on the extent to which the research complies with its four sub-criteria.

Credibility corresponds to internal validity. A study is internally valid if the researcher measured what they intended to measure. In contrast, a study is **credible**, if the researcher has described the phenomenon conscientiously and in rich detail. In the latter case, instead of making arguments to prove that they have indeed measured what they intended to, the researcher simply presents their data precisely.

Both the reader and the participants have to see the reasons for the application of a specific research model and the selection of their own selves. The description has to

provide a credible link between the subjects' accounts and the coded topics, results. Credibility is a total of the measures ensuring a high degree of harmony between the subjects' terms and the researcher's interpretations. Have I chosen the right subjects? Is my data gathering method appropriate? Are the subjects giving open, honest answers? To what extent can the given methods and the given subjects be believed to provide a correct picture on the phenomenon examined? (Given, 2008: p. 138)

The measures taken to ensure credibility are *theoretical sampling*, *constant comparison*, the *blind coding* mentioned before and *member checks*.

Grounded theory processes have a specific way of triangulating sources (interview subjects). The point of triangulation would be obtaining data from multiple kinds of sources. What these kinds of sources should be like is determined by theoretical sampling. Theoretical sampling determines the questions to ask and the persons to put them to in a manner that will direct the researcher towards dimensioning the relationships and the categories. While I have followed the process as such, I cannot claim it to have had any significance as a kind of triangulation.

Not only did I aim questions at phenomena, but I also 1., followed single processes through on several examples, and 2., returned to processes with contrastive questions. In this manner, I believe to have increased the credibility of my research as compared to simply interviewing subjects on phenomena or describing the decision process in isolation. While I still do not consider the latter factor to increase credibility to the same extent as the application of three methods more distinct from each other, I had – as I have justified in the part on methodology – no option of any more distinctive triangulation. Thus, I had to do what I could within my limitations.

Another available method is consultation with fellow researchers. This was partially implemented in the formal steps of the preparation of this thesis, such as consultations with my supervisor and others or the defence of the draft, but the step of blind coding mentioned above belongs here, too. All of these have helped me to be more perceptive to topics and step outside my own frames of interpretation.

Member check is a regularly used technique. There is a debate going on within professional circles on which level of abstraction the feedback requested should address. According to Glaser, there is no point in requesting feedback on anything beyond the level of raw data. The raw data of each interview, that is, its written text, however, was

twenty pages long on average. From the fourth interview onwards, instead of returning to my interview subjects, I switched to concurrent member checks. Applying the so-called *effective listening* technique – and thereby sacrificing valuable time from the interview – before moving on to the next question, I often asked questions along the lines of "If I am understanding you correctly..." followed by a recapitulation of what had been said up to that point, and then expecting some gesture of confirmation from the subject. Such prompts triggered correction, rephrasing or additions on several occasions. With these questions I tried to make sure that I had clearly understood everything up to the given point.

Transferability is similar to generalizability. While generalizability extends the scope of discoveries and deductibilities, transferability covers the requirement of circumspectly considering and describing the focal point of the qualitative research, so that the possibility of its applicability to other – either narrower or broader – scopes can be assessed. In consequence, no work is without merit just because it is not generally applicable: the merit of such works is in the thorough descriptions given by the researcher on what other contexts their conclusions can be true for.

In the quantitative research context, generalizability means that results of a study performed on a sample taken from a population can be inferred to be true for the entire population. Transferability means that the results of a study performed on a small sample can be transferred to other contexts and situations. With regards to transferability, two aspects have to be paid attention to: how closely the participants examined are attached to the context, and what the contextual limits of the area studied are. In the light of the first one, it is important for the subjects to be relevant members of the population under examination. The second one requires a good delineation and characterization of the context. The reader has to be introduced to the context so that they can decide if the knowledge gained can be transferred to a different context. With transferability it is incumbent on the researcher to characterize the context within which they carry out their work, so that the reader can tell if it fits into their environment (basically, has the option of a reader's analytical generalization). Transferability can be increased in two ways. The first is dense description: this requires the researcher to give a meticulous description of the entire process, each and every one of its elements. The

second is purposive sampling – the best results can be achieved with subjects who are relevant members of the context (Given, 2008: p. 886).

I did not have to take any particular measures to ensure transferability. Lincoln and Guba (1985), for example, simply say that if someone wishes to know if the conclusions of a research are valid in their own context, then they should just repeat the same research in the latter, and find out. There is shifting in this attitude, yet, truth as well. Complying with the transferability requirement means giving every piece of information on the place and the manner of the research. In my case, this requirement was easy to comply with, as sample characterization and methodology presentation are traditional elements of PhD dissertations. By delimiting the substantive area (decision strategies and attitudes of SME purchasing decision makers), and characterizing the sample, as well as the relevant selection mechanism, I have taken the required measures.

Dependability: A research is reliable (reliability approach), if the same procedures in the same context always produce identical results. Such an objective would present a great challenge to qualitative researchers examining an ever changing world. Therefore, the dependability concept is more suitable than that of reliability.
The concept of dependability encompasses the realization that the environment is changing, and *a priori* cannot be understood in the same manner as a snapshot. The latter criterion is built on the same need as the reliability requirement of the quantitative tradition: providing the reader with the methodology information they have to have to repeat the research on their own. In other words, the researcher has to describe the process and their research tools in great enough detail for others to attempt a similar research under identical environmental conditions. With the environment constantly changing, the researcher has the additional responsibility of documenting the changes. If methods have been adopted to these changes (extra interview questions, etc.), then the latter changes have to be recorded, together with the time at which they occurred (Given, 2008: p. 208-209).

As with the previous requirement, I tried to comply with this one by including the traditional dissertation sections. I presented my research paradigm, described the methods, attached the interview threads and described their developments, as well as the coding process. I documented the changes in my memos and the research figure.

Based on these (and consultations on the parts omitted or shortened due to space constraints), anyone wishing to do so can repeat the research and then compare the results. Results are not expected to be identical, but then, I gave the second researcher every tool to make them realize that the differences between our results are due not to the omission of any methodological step, or other step that I have not presented, but natural reasons: the time, the context, the subjects and the interviewer are all different. The construction process described in the present thesis is based on my knowledge; the interactions a researcher with a different personality, coming from a different background takes part in with different subjects may result in a different theory.

The counterpart of objectivity is **confirmability**: In objective research, data are considered to be unaffected by bias. With confirmability, the emphasis is instead on the requirement to fit interpretations and conclusions to the data. Only claims that can be supported by data are made. Ensuring confirmability means integrating guaranteeing the truthfulness of report content into the research processes.

Confirmability is the provision of evidence to prove that the researcher's interpretations are rooted in the subjects' constructions, with data analysis and conclusions being rooted in the subjects' accounts as well. The researcher's compliance with this quality requirement does not equal to a claim that other researchers will not derive different results from the same data. Instead, the purpose is for the researcher to be maximally open to the elimination of their own influence, and treat it appropriately. (Given, 2008: p. 112)

The **neutrality** requirement is closely related to that of confirmability (Given, 2008: p. 555-556.). Neutrality means that the study is free of biases, and isolated from the researcher's views, background and position. Neutral researches are confirmable and legitimate. While these values are important in qualitative researches, perfect neutrality appears to be unattainable in most cases. Neutrality means the ability to view phenomena objectively, without biases. The objectivist approach claims reality to be fully understandable and fixed, observable by the researcher without affecting it. This claim implies that every researcher capable of perfect neutrality will get the same image. This view has been reversed: reality is a construct, and – being complex and constantly changing – it can never be understood in an objective manner. Connection with the researcher and their effect have been identified as inseparable factors making an influence. The very terms "subject" and "research object" are misleading. Not even

the postpositivist paradigm accepts the possibility of perfect neutrality any more. One can and has to aim for neutrality, without forgetting that it can never be fully attained.

I can comply with the confirmability requirement by proving the theory that emerged to originate from the subjects, or at least from the subjects' side in the interaction (interview) that has occurred between us.
A typical characteristic of grounded theory is the great emphasis laid on the process of data turning into theory. By introducing the coding process, it can create a link between the data and the research process results. As a researcher, I cannot fully eliminate my own effect, by creating this link, however, I can minimize it.
Besides describing the process and presenting the emergence of the core category, keeping a research diary is also crucial. I have not kept an independent research diary, as I used the document in which I collected my memos for the purpose. This is where I kept track of the interview analysis process, the new questions raised after each step, and theoretical dilemmas. It is from this memo file that the theory crystallizes from by the end of the process. Its contents were incorporated into the essay in a digestible form through the description of the coding process and the emergence of the theory.
The codes (concepts) and the categories I was looking for relationships between all originate from this material, I can show the points at which each of them appears, and the times at which they appeared in the analysis process can also be identified in the memo document. In the figure on the theory there is no category that cannot be found anywhere in the texts.

Besides the four general criteria, or rather, in their place, Strauss and Corbin (1998), as well as Creswell (2002) present a check-list-like series of questions, with the aid of which the the quality of the research process and result can be evaluated. These include questions like whether or not concepts have been successfully found, relationships between categories have been looked for, the link between the raw data and the theory can be seen, there is a core category, the emerging theory has gone through the three phases of coding, and the like. I have answered these questions in the earlier parts of my essay, and some of them in the present one.

5.8. Researcher's responsibility

According to Kvale (2005) the researcher's role comes with three kinds of responsibility: scientific responsibility towards the profession, responsibilities towards the subjects, and independence as a researcher. These are the aspects I shall address below.

My responsibilities included the general criteria relevant to my role as a researcher: investing the resources, time, professional and moral support at my disposal into exploring a suitable topic with a serious attitude. I do not wish to delve into this issue here, as I believe I have already done that by justifying the relevance of the topic.

Similarly, I owe the scientific sphere an evaluation of the quality of my work based on the relevant criteria of the paradigm. Beyond proving the validity of my research results, this also serves the purpose of enabling other researchers to repeat the work process, possibly under different circumstances, or to build on it further research, even if using it in their own work only to ask a question examining single relationship.

It is my responsibility – although heavily disputed in the methodological writings on grounded theory, which branch out into a multitude of directions – to carry out the research adequately prepared. I feel I have fulfilled that responsibility.

I have, however, a much stronger sense of responsibility towards my research subjects. I saw such responsibilities manifested in a number of ways, all of which I did my best to manage.

First of all, I was responsible for illuminating the **purpose and the topic** of the **interviews** before starting them. On some occasions, I have had difficulties in doing so, as I had to draw the limits of the topic (responsibility towards the subject) so that they would be reassuring, without being too narrow not to have an effect on the discussion or the emergence of particular topics (responsibility towards science). Essentially, I was looking for an ideal state between the insufficient and the excessive volume of information (Kvale, 1996) – an issue I had to contemplate a lot. My research questions concerned simplifications. Sacrificing some of the research focus, I did not ask direct questions about the latter, as they may not have been emphatic at all, in which case I did not wish my subjects to talk a lot about them. Accepting the possibility that I would hear only a little, or nothing at all about simplifications, I made the subjects talk about

decision processes in general, and asked about simplification strategies only of they brought them up. On such occasions, I always tried to go deeper into the issue using the same vocabulary as subject had already used during the interview, so that I would bring in as few artificial constructs as possible. As far as I noticed, being led this way, they did not have a strong sense of their attention being directed.

Beyond full disclosure, the voluntary character of participation and the right to opt out at any point have also been present, all of which put together mean compliance with the principle of *autonomy*. (Orb & al., 2001)

Confidential information: Whenever a company name or some other piece of information which I was authorized to include in the work material but not the publication was shared with me, it was my responsibility to actually omit it. Due to the topic and my interest, there have not been too many such pieces of information, and, as they did not add anything substantial to my work, I had no difficulty in avoiding mentioning them. Subjects typically mentioned such data only after having used expressions like “a certain firm” a couple of times, and, having grown tired of doing so, they simply said the actual name.

Another reason why I avoided direct focus on simplifications was the possible **evaluative interpretation** of the term. The usage of such a term to designate incomplete analysis and simplified decision making tools could have blocked my subjects from being open, by making them feel it conveyed a negative judgment. Similarly, trying to avoid making an influence, especially when examining attitudes, I did not wish to make my own attitude towards the topic of simplifications known. In other words, reinforcing any view on simplifications in order to encourage my subjects to go into details with less trepidation would have led to a scientifically unsound result. While I feel I have learnt less about specific simplifications in this manner, I do consider the few results that emerge from the text spontaneously all the more valuable.

There has been one particular phenomenon with regards to which I sensed the strongest responsibility dilemma. During the interviews, subjects often claimed that they did not look for the best alternative, but were satisfied when their requirements were fulfilled to some extent, and that is all right. I always asked them further questions on such examples, in order to get some idea of what objectives they followed with such decision making, what concept of rationality they had, and generally, what their attitudes were towards the decision making process they themselves described. The question aimed at the attitude consisted of simply asking what their attitudes towards decision making

were, what they thought about it, how they were looking for the best alternative. At this point, I often noticed – and, in retrospect, it is actually obvious – this question to seem to be, if not judgmental, at least an indication that optimization should be a requirement. The first reaction to it was often a pensive face and some humming. The most striking case was that of a subject who had just been let down by a supplier whom they thought to be their friend, and, linking the two aspects, said "*Oh, well... I have been slackening up lately... I believed that... I should have done it another way*". I felt as if I had held a mirror to their face, making them tense over an issue against my wish. These tensions were usually eased up after the interviews, in some cases, due to the subject's professional curiosity, in others, in a simple informal chat. Even in this latter case, with the incident I referred to above just being resolved, it is probable that the subject was not looking back to the distant past, so their reaction was triggered by the events, not my question. Apart from this single case, I cannot recall any significant tension being created, and I believe the tension that was created was usually alleviated in the conversation following the interview. The way I tried to keep this aspect in mind and felt responsible for such tensions corresponds to the principle of *beneficence*, according to which, the researcher should do good and avoid hurting others (Orb & al., 2001). I did not feel the principle of *fairness* to be relevant to my research, as the topic did not necessitate it.

6. The results of the research

In this chapter, I summarize the results of my research, which is a system of relationships on the SME's supplier selection decisions as a result of a process performed with the grounded theory (GT) methodology.

In presenting a GT research as a thesis, the challenge is that the research process is iterative, but its presentation is sequential. "This gap occurs because the norms of presentation in management (and other academic) journals have positivist origins and impose discrete and sequential categories of data collection and analysis on authors trying to present grounded theory research. In pure form, grounded theory research would be presented as a jumble of literature consultation, data collection, and analysis conducted in ongoing iterations that produce many relatively fuzzy categories that, over time, reduce to fewer, clearer conceptual structures. Theory would be presented last." (Suddaby 2006: p. 637) It became a custom however that the writings are presented in the classical structure, so my thesis follows this way. The disadvantage of this construction is that those readers not familiar with methodology can easily confuse the two theoretical stages, and may think that GT process can be fit into the positivist framework (this is however only editorial alignment).

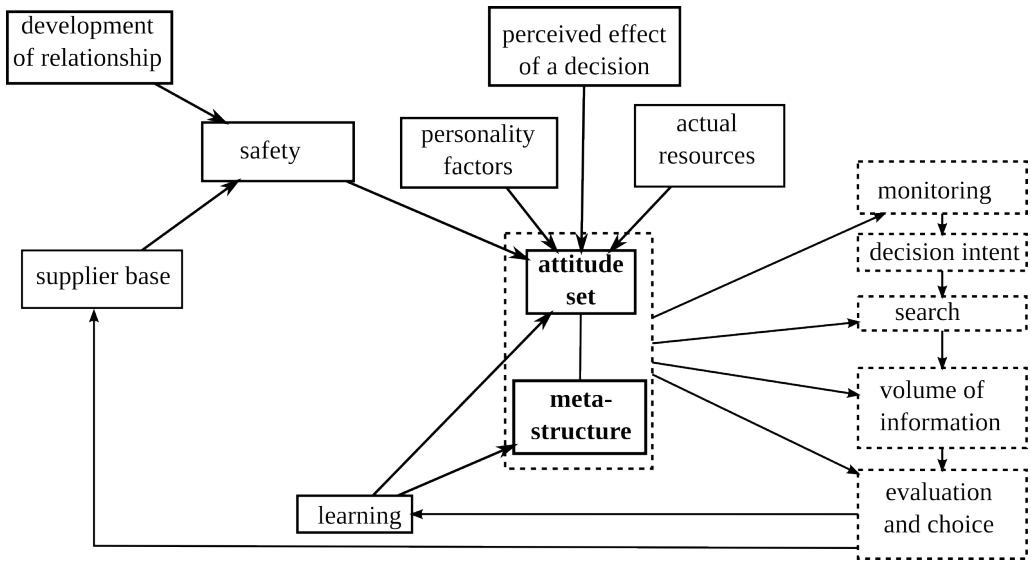
I have prepared for my research by compiling the theoretical background already presented, but the result of the GT process is also a mid-level substantive theory (namely a correlation system created in a limited field). The two theoretical parts can be isolated properly: the theoretical background was not complemented subsequently. In those parts, reviewed theories are included prior to the empirical part. It is necessary to mention again the question of theory handling, namely the question of *tabula rasa*. I have already demonstrated in the methodological part, why I worked with the methodology of constructivist GT. This methodology, as in fact its founders, accepts the preparedness from literature. Such knowledge increases theoretical sensitivity, which is required both for data generation and analysis. As it is suggested by the authors of a number of writings resolving this theoretical debate (e.g. Goulding, 1999 or Suddaby, 2006), I did not refuse prior preparation.

Reading the literature continued also during the research process. I would have felt very artificial to have a process in which interesting correlations take shape from the reports of the subjects, but the researcher, although he is interested in it and maybe he does not have enough knowledge, consciously avoids the "dialogue with literature."

In this part, I would like to present the correlation system as the result of the research on the basis of interviews and reading the additional literature. Here, additional literature means the literature that I previously did not see about thoroughly, but the interviews directed my attention to these issues, thus it seemed necessary to get to know them. I am not going to describe these theoretical parts in details here, since I would like to dedicate the pages to the created correlation system. What is important in the groundedness of GT in data is that all the correlations outlined in this part come from the data resulting from interaction with subjects (so I do not bring a model or a model part from literature, not even from the ones read subsequently in order to make a figure more complete, if the correlation does not appear in the text of the interviews).

The figure of the research process (presented in the methodological part, figure 4), the description of the coding process ("Data Analysis" part), and the parts connected to methods included in the annexes (annex 9.2. and 9.3.) helps to better understand the development of the theory described here and its emergence from the data. Schematic picture of the correlation system is shown in figure 5.

Figure 5. Correspondences of main categories constituted in the course of coding



source: own work

The core category appears graphically in the middle of the figure, and its effects on other categories and the important forces affecting it are indicated by arrows. The categories of the decision-making process can be found in the frames with broken lines on the right side of the core category. The most outstanding categories having repercussions on the core category appear on the left-side of the core category and at the top of the figure.

The figure elements are going to be illustrated in the following parts, and I explain the greater part of the correspondences once the core category is discussed.

The answers to my research questions (see the part entitled "Research Questions") can be found in the description of each category. I give answers to block “A” of my research questions in the description of the meta-structure and of the categories framed with broken lines on the right side, while answers to block "B" are given in the description of the core category. For the sake of clarity, I summarize my answers at the end of this chapter while going on the research questions one after the other.

6.1. The emergence of the core category

The entire research is linked with the core category as a story at the top level of the coding process. By the end of the GT process, theoretically there is always a core category that emerges in a natural way in the coding process since most of the phenomena are connected to this category. The effect of the core category can be felt continuously throughout the research, it can always be seen that in the actual point which category is associated with many other codes and categories. In the GT process "the candidate for core category" can change in a natural way during the research. In this part I present briefly how *the meta-structure* seemed gradually more and more significant from the initial research interest *(simplifications)*, while in the end, the *attitude set* emerged as a core category connecting to the meta-structure. I kept simplifications in focus all the time. The emergence of other topics does not entail the changing of the research focus, on the contrary it emphasizes those elements that seem to give answers for the questions to the greatest extent while keeping the research focus as it is.

6.1.1. Simplifications

Heuristics and the question of their double judgment in the mind of the decision-makers known from the literature stood in the focus of my research interest. I was interested in what kinds of simplifications are used by individuals and marginally that if I ask them to evaluate these steps, what they say about them. I have already written about the possible forms of heuristic steps and the judgment thereof in the establishment of the specialized literature. I was curious about the light, concessive, not maximizing decisions, and about what the individual attitude is to the application of these decisions. This first step is actually not the first but the zero. It may not be called initial core category (although it functions similarly, because ideas are organized around it), but rather research interest.

6.1.2. Meta-decisions

My research attitude, the paradigm that I represent and the methodology would have allowed me to inquire about the simplifications concretely, since I would have liked to get to know their structure and nature. Yet I chose another way. I generally inquired about the decision-making processes, and I let simplifications not even appear in the responses. Thus I could minimize my influence as a researcher and I made it possible to negotiate the place and the role of simplifications more naturally and to get to know the attitude of the decision-maker.

By contrast, if I approach to the decision-maker that I immediately inquire about the simplifications, that would have entailed – beside the only one positive effect (concretely more data on simplifications) – several negative impacts in my opinion. Such a negative impact could have been – for example – if I interpret usage as a qualification (since the assumption of simplifications somehow qualifies and supposes the thinking of the decision-maker), or if the topic does not arise in a natural way. Similarly, asymmetry could have been among those who consider it a good tool, and those who observe the assumption of the use of these tools as a negative qualification. I felt that I would have distorted the getting acquainted with the attitude and the background very strongly.

As it can be seen in the figure of the research process (figure 4), at around the fifth or sixth interview, **meta-level of the decisions seemed to evolve** towards the position of the core category. Since it fits my research interest and the simplification of thinking (because fitting the parameters stored at meta-level means a considerable time and resource saving in certain stages of the decision), the emergence of this topic seemed evident. Meta-rationality and meta-rules as concepts were also mentioned in the theoretical background several times, but only marginally. However, during the interviews their presence, impacts and also the potential implied in good meta-structure were felt much more strongly.

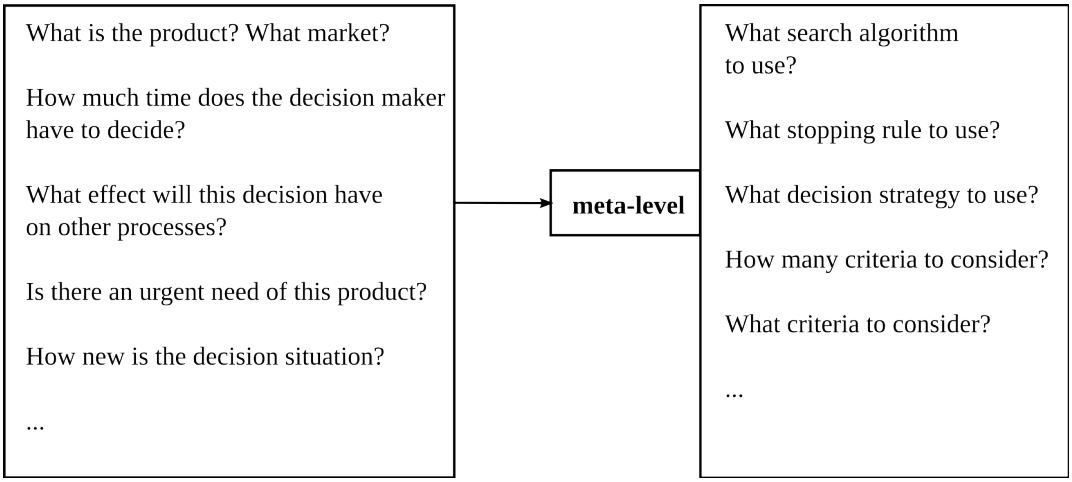
The environment, the contextual factors have an effect on the content and form of the decision-making process. In this context, decision-making process only means working with set of alternatives, evaluation and selection. To the question (in fact this is the main

question of the interviews), that how this thinking process occurs, the first reaction is always *"it depends"*.
On the basis of their reports, decision-makers make the parameters of the cognitive process of the decision (such as the number of alternatives that are to be revealed, the length of the search, the decision-making strategy applied, the amount of resources spent on the decision) dependent on the supplier market, the time available for the decision, the product, the purchase volume and a number of other factors.

It is consistent with the approach of *the adaptive decision making* (Payne et al., 1988; Gigerenzer, 2004). The adaptive decision-maker chooses among his decision methods in accordance with the knowledge of or getting acquainted with the environment, and he copes with the situation in a way that he chooses the most appropriate decision method for the context.

This type of adaptation however raises a question that the aforementioned researchers do not deal with: “how the selection among tools works?”
In the interviews, several examples for the adaptation mechanism can be found, when the interviewees report how much the decision-making process is determined by different factors. These are decisions about decisions (since they are not the steps directly related to collection and evaluation of alternatives, and selection), which is called by the literature (Anderson, 1991) *secondary or meta-decisions.* A meta-decision is for example weighting the criteria on the basis of their importance, or the decision on the number of the alternatives revealed, the selection of the searching and stopping rule, or the selection of the decision-making strategy applied in the decision. I call the developed result of a meta-decision (e.g. at market x in a situation y the identification of alternative z is enough) *a meta-rule*, and I call the set of meta-rules *a meta-structure.*

Figure 6. The role of meta-structure



source: own work

Meta-structure includes those decision rules, stopping rules, rules of thumb that do not prevail in the decision-making process, but define the frames of the decision-making situation adapting to the current situation and contextual factors (figure 6). There are many rules of thumb stored in this structure. I am going to write about the strategies present at meta-level in part about simplification of thinking (together with the decision-making criteria and heuristics), since here I gave reasons only for its central role and because – although they appear at meta-level – I treat strategies as a form of simplification of thinking.

In my research, originally my aim was to study heuristics and the faster decision making that seems to be available by them, but the field of meta-decisions seemed an interesting field strongly intertwined with heuristics, determining the speed of the decision making. As they function as a heuristic tool, I thought they were worth a further research. If in a decision-making situation, the stage of the decisions about decision (i.e. the forming of the decision-making process taking into account the contextual factors) becomes shorter, then the concrete decision-making process is faster. While in a previous situation, a meta-decision was made consciously on the basis of certain criteria, in the next situation through learning a quick *fitting* is possible (this is the concept of the naturalistic decision analysis, its representative for example is Klein (2009)), since it does not have to be thought over much about how and until when it is worth looking for information about the given products in the given situation in the given market, what

kind of strategies we are going to decide with. In fact, it is also a special knowledge, what kind of criteria should be taken into consideration while adapting. The interviewees pointed out several times that when they were inexperienced, making a decision took a long time because they did not even know what aspects they should have considered, how they should have made a decision in the specific situations.

Several theories discuss “fitting” as a central concept in connection with the situation and the environmental pattern (for example the RPD - Recognition primed decision-making (Klein, 2009) or the learning theories of Simon and Langley (1981)). These theories attribute the most important role to the experience. According to for example Simon and Langley, experienced decision-makers do not analyse much, they are better decision-makers because they recognize the characteristics of the situation quickly due to the many patterns stored in their memories, they identify the decision-making processes applicable in the given situation quickly and can judge their utility.

The question of experience has become interesting for me as well due to the meta-decision processes shortening through experience and learning. This led me to further inquire about the decisions made at a younger age, and to contact a very young, inexperienced entrepreneur and also a young entrepreneur but with several years of experience. I was curious about whether the decision making took longer when they were “beginner decision-makers” than now, because on the basis of it we have some ideas of the accelerating effect of meta-decision processes.
Fitting was stressed in almost all interviews. The decision-making processes, the adaptation to the environment are selected in this process, and then comes the revelation-evaluation-selection process of the "real" concrete decision-making. The result of the decision forms the process of fitting.

At this point of the research, I would have liked to get to know the simplifying strategies of the decision-makers. This interest entailed meta-structure, the category of fitting as a very strong simplifying structure promoting the speed of the decision making. It had a transitional core category status.

6.1.3. Attitude set

From the beginning of the research, my plan was to always get to know the mental steps in two input buying processes, and after these are discussed, I put the question on what the subject thinks about that decision-making process. Building on the theoretical background and the specialized literature dilemmas, I thought that the interviewee would speak about his attitude to the entire decision-making process at this time (for example, on a maximization – satisficing scale). I mentioned among the research questions that I was interested in their attitude to the applied simplifications that is why I devoted a question to the opinions of the whole decision-making process.

The subjects, however, shared various attitude elements usually before this question, during the discussion period. By the time I got to the question that I asked the interviewee to share his opinion concerning the whole process and evaluate it, in most cases a picture of a package of attitudes have taken shape. Previously I expected neither the appearance of so many attitudes, nor that the subjects expressed so many attitudes. However, since other phenomena, historical events, former effects, learning (I explain the details at a later stage) were connected to this category and they were closely related to simplifications, it happened that attitude set has become a core category. It could put the meta-structure off from this position as it was gradually revealed that attitude set has a key role in the forming of meta-structure, and more effects can reach the meta-structure through this category. Finally, with the constant comparison of these two categories difficult to be illuminated, it was to be expected that these two categories connect to each other *as a phenomena and a strategy* (i.e. the attitude set takes form and we develop strategies suitable for this set, that are stored in the meta-structure).

It turned out for me more and more about attitude set and meta-structure that these are the two elements of an *adaptive mechanism* in the correspondence system explored together with the interviewees, thus the core category is the two together, but with a stronger emphasis on the attitude set. The role of the attitude in the adaptation lies in that according to its several definitions attitude means a disposition, a positive or negative position, an approach or a readyness to reaction, but in the widest sense (Ajzen, 2001) *attitudes are mental tools that facilitate the adaptation to the environment.*

After the initial research interest (keeping it and also the research questions), and after getting to know the role of meta-structure, by the end of my research, the attitude set became the core category, as the set of positive and negative dispositions to the elements of the decision-making process that is inseparable from meta-structure. This emerged core category is consistent with my research interest (although it made the emphasis change towards block B of my research questions), because it helps to understand the context of simplifications.

6.2. Layers of the attitude set

I put all those text expressing the attitude to any elements of the decision-making process to the category of attitude set. Such an attitude is expressed in a concrete form (such as *"I like it"*, *"I do not sympathize with it"*, and other similar expressions) or it may be inferred from the usage (a lot of analysis are *"entertainment"*, a lot of searching are *"effing"*).

Finally, in a natural way attitudes were formulated in connection with the different steps of the decision-making processes. I note here that the category did not come from these sub-categories, but from the various positive and negative attitudes. This inner classification to “layers” is going to be made on the basis of the elements of the decision-making process subsequently for two aims. First, it makes easier to answer to block B of my research questions (what kind of rationality approach stands nearest to the experienced one). With this classification, my other aim is to highlight the relationship between attitude set and meta-structure.

In Table 4, I demonstrate with examples which aspect of the decision-making process those concern to.

Based on the examples structured in the table I identify which approach of the rationality can describe the behaviour of the decision-makers, and then I am going to write about the attitude set – meta-structure relationship.

Table 4. Classification of the attitude set elements

Element of the decision-making process	Example
acceptance of the result	*„One should accept that sometimes he does not make good decisions. Obviously, it would be good if he made fewer bad ones, but after some time he finds out that he is not perfect, and then it becomes part of the life that he acted badly. At this point we should not be sad, instead we should deal with the next step.(10[12])"*
aspiration level/ maximization-satisficing	*„In this case, if these are fulfilled, simply I do not wish more."(5)* *„If I devoted much time and would like to know from all over the world who supplies such a textile, I would find the super optimal solution with absolute certainty. One may be in Brasilia who would supply the best for me. However, I do not take the trouble to do that."(6)*
searching, the amount of the collected information	*„Essentially I do not like to make a decision on the basis of too much information."(10)* *„ (...) and I want to have a good time, then maybe I look for another 8-10, but with it perhaps I cause a chaotic possibility for myself."(5)*
the length of the decision making	*„ (...) I like deciding quickly, and I do not like to think a lot, because the end is the same."(12)*
analysis, evaluation	*„I do not say that I am genius in mathematics, but the part I can use for my work, that part I enjoy with delight."(6)*
monitoring[13]	*„It does not weigh on my mind so much that I cannot examine all of them, and I do not spend time for it."(8)*
risks	*„Nowadays, I do not make a decision that is even a bit risky, that's for sure."(9)* *„ (…) I usually try to make careful decisions."(8)*
capacity bounds	*„You go to an exhibition, and there are 370 different exhibitors. You do not have a chance to see all of them, but you choose some saying "this is good – I would like to get to know it more closely."(7)*

Source: own compilation

12 The parts in italics are word for word quotations from the interviewees, the number indicates the interviewee.

13 In my interpretation, monitoring is a kind of searching, which means the continuous observation of the other potential suppliers appearing in the market beside an existing supplier relationship. It is not equivalent to the searching that happens when the choosing of a supplier becomes necessary.

6.2.1. The approach to rationality

In the theoretical part I touched the description of the forms of rationality. I did it because the simplifying mechanisms that stood in the focus of my research are usually evaluated and criticized from the side of rationality and they have various roles in the different approaches of rationality. On the basis of the examples implied in the table and many other texts I would have liked to identify that the decisions of the interviewees resemble to which rationality approach.

I used very broad questions while asking the decision-makers on their decision-making processes. When I asked them to evaluate their processes, I acted accordingly. In many situations I did not even have to put the question with the words like *"is this correct"*, *"is this appropriate"*, *"what is your opinion of the process"*. In fact, the expressions *"optimization"* or *"rationality"* were used perhaps twice from my side. I allowed myself to do that in those situations when the things told by the subject exhausted the content of the concept so much that I did not see any problem in using this expression or when previously the subject had already used the expression or the synonym thereof.

Concretely, the question of *"are you adapted to which approach of rationality"* was not asked. I would have liked if from the things told about their attitudes and on the basis of the evaluation of their own decision-making process, we could determine together in the interaction situation of the interview what kind of approach they are working with, and here in this thesis I just would examine which approach of rationality from the literature is equivalent to theirs.

Previously I thought I had to inquire about what their attitudes were to the decision-making process, what they thought about it. I believed I could create ideas on their attitudes only this way. From the first interview, however, I learnt that attitudes related to the decision-making process, its steps or its tools were told spontaneously.

Beside the examples presented in table 4, the applied approaching method can be compared to one of the introduced concepts of rationality on the basis of many other data. The limited information search, the acceptance of impossibility of a perfect analysis, *"simplifying the life"*, calling too much information a *"chaos"*, the appearance of the expression *"good enough"* and its synonyms fully correspond to the theory of bounded rationality. It is not such a surprising result that for the supplier selection

decision-making of the SMEs having limited resources, this approach is the most typical. It can be strengthened, however, that this is the company category, where the heuristic decision-making is of great importance (the article of Busenitz and Barney is an excellent writing about it (1997)). The subjects in most cases refer to the lack of resources, human labour force and time when they describe their own decision-making processes based on an incomplete analysis. Therefore here the optimizing decision making does not seem to be an option due to the limited resources and limited capacity. In this sample the question is more about, which simplifying methods they treat their limitedness with, instead of the question of *"do you simplify in your decisions"*.

In addition to the bounded rationality, yet another rationality approach appears, and this is *meta-rationality*. The decision-making process is formed by the effects of the contextual factors. The decision-maker in a certain situation ideally chooses the most appropriate decision-making process that fits into the situation. Meta-decision is the central concept of the *rational analysis*, a tendency growing out from the theory of bounded rationality (i.e. we stay in the same field) (Anderson, 1991). The image, that comes from the interview transcripts, is far from the meta-optimization described in rational analysis (which according to many – for example Gigerenzer – only complicates the decision making), but it can be said that meta-decisions play a significant role in the decision-making process. This means that decisions are made about decisions. I am going to write about how they occur in part of the thinking simplification and at the category of learning.

6.2.2. The relationship between attitude set and meta-structure

Glaser provided model "six Cs", while Strauss and Corbin provided the so-called "paradigm model" as an assistance for coding (see the methodology part). In the latter one, not only the core category and its consequences are distinguished, but strategies constitute a separate category. If two categories are connected with each other as *phenomenon and strategy*, this relationship describes that if there is a certain existing phenomenon, then with what kind of actions the individual handles it, how he reacts to it.

If the attitude set is the core category, then the phenomenon-strategy relationship illuminates the attitude set – meta-structure connection. I think that meta-level can be treated in a way that these are largely the strategies of the attitudes (i.e. beside the adaptation to environmental clues, the attitude set determines and forms the meta-structure very strongly). All the attitudes mentioned in table 4 have a proper meta-strategy, so attitudes are in a way reflected in meta-structure.

It is easier for the quick, intuitive strategies to get to someone's meta-structure if this individual *believes* that the result of the analytical and the intuitive decision is the same, than to the meta-structure of those who have no such belief or experience. An impatient individual or someone who likes to decide quickly for other reasons will have time limit rules in his meta-structure. Anyone, who does not like to work with a large amount of information, can find that his stopping rules prevail with lower threshold in search.

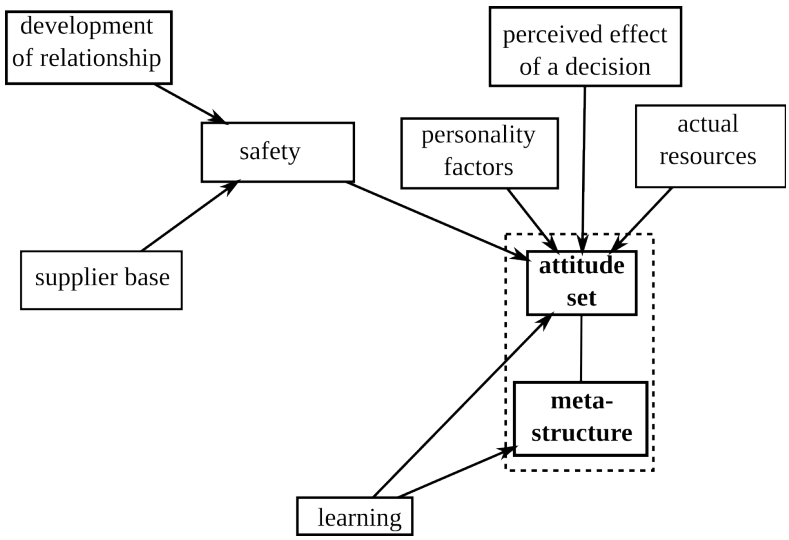
What is interesting in it, is that the picture is not uniform in case of each individual. Naturally, there is a relation among layers presented in table 4. Perhaps the aspiration level has the strongest effect: if an individual reports he is not so ambitious, but more permissive, he decides more flexible or he does not take the trouble to find the theoretical optimum, then all these affect the amount of information obtained, the speed of the decision making, and so on. Such a connection can mean that efforts to reach general satisfaction determine all the others. However, it can be seen that the picture is not so homogeneous, namely, in case of every single individual, not always a generally more permissive or a generally stricter level can be observed.

There are individuals who simplify in the search without fear, or do not monitor better opportunities than the current ones, but enjoy the analysis. There are some individuals who like to decide quickly, do not like to think a lot, but adhere to the order and to the documentations and tools necessary to integrity. It depends on the attitude set, **at which stage** of the decision-making process the decision-maker will simplify and **how he does this**. These rules take shape in the meta-structure. On this basis I think that in meta-structure only those kinds of rules can prevail that the attitude set "allows". Many rules facilitating the adaptation to the contextual factors would be able to be embedded into the meta-structure cognitively, but only those are going to remain here, which correspond to the attitudes.

6.3. Factors affecting the attitude set

In this part I examine those categories that are in a cause and effect relationship with the core category. It can be seen in figure 7 that these categories are the safety, the personality traits, the perceived effect of the decision and the general level of resources. In addition to them, there are contextual factors affecting the attitude set and the entire system of relationships that are mainly placed to categories entitled *macro, resources, time, product, industry, current course of business*. Their effects can be felt for a long period and are fairly stable. Their effects are going to be discussed at each sub-category.

Figure 7. Categories affecting the core category



source: own work

6.3.1. Safety

The feeling of safety, namely the perceived level of safety was taken outside of the attitude set, because it appeared as a very strong category, and it means the starting point of the decision, a general perception, not the attitude to safety or the alternatives.

The definition of **safety** as a category is quite broad, since the category includes the codes in relation to uncertainty and safety, dangers, risks. Trust also belongs here. Although trust is a positive attitude, but the attitude set does not contain it, since it is not about the optimistic attitude related to some parameters of the decision-making process, but the optimistic attitude related to the action of the partner and its positive character.

I interpret feeling of safety as a general purchasing-related feeling of safety in a broad sense, and as a feeling of safety with which the individual makes his next supplier selection decisions in a narrower sense. This does not aim at the new decision-making situation, but at the one where the decision-maker “stands” when the next decision is to make.

In case of the interviewed SMEs most uncertainty arose in connection with the experienceable criteria (please see the part on criteria), such as flexibility, supply performance and reliability. Other risks like those relating to supplier selection decisions were not much discussed, at most in general the uncertainty in the form of macro factors.

Feeling of safety has a considerable role in how the inquired decision-makers behave, what kind of attitudes they have to the elements of the decision-making process. To what extent they are willing to search, how ambitious and maximizing they are. Leaving the effects of the wider contextual factors out of consideration, the impact of two powerful groups of factors can be felt to the feeling of safety.

There is a large increase in the level of feeling of safety from the time when a **supplier base** evolves. As the definition of the category, here is an interpretation from the leader of a medium-sized company:

"(...) On the basis of so many years of experience, currently there are some companies that we are related to. Concretely, we do not have any paper from them, but we can call them, because let’s say we have relationships with them from the past, or experience, they concretely supplied to us and so on. So there are companies so to speak in reserve that we can count on if there happens to be a change of demand."(11)

I also coded the situation when the company buys through already established channels from several suppliers as a supplier base (i.e. it is not necessary to have more suppliers than it is needed actually, but the fixed structure gives feeling of safety). Against it, there is a high degree of uncertainty, if this base is not established yet, for example at the beginning of the business.

The supplier base is an already filtered, tested alternative set outside of which another supplier would be searched only in case of emergency. This situation eliminates the uncertainties described in part about criteria: they have (near) past knowledge about the flexibility and reliability of suppliers and their performances.

After gaining experience for nine months, the youngest entrepreneur reported decreasing stress level and increasing feeling of safety after the first few months when the "base" evolved.

"Well, maybe this is the feeling of safety there. So that a decision on a next supplier, whether I want him or not, is made that you have 2-3-4-5 suppliers for sure. So that in this level, stress and anxiety is lower."(8)

Base also appears as a tool in the search, since the first searches mostly occur here. Relying on a wide supplier base increases unambiguously the feeling of safety. In the following decisions on the widening or the replacement of the base, the uncertainty and the associated stress level is lower than it was before the establishment of the structure.

The decisions of the company and the external factors also directly influence the forming of the base. External factors are for example the closing down of companies, mergers, market expansion. Following the decisions of the companies, the base expands or narrows in a way that companies contact a new supplier (usually after an incident or in order to meet a new demand). In general, the new supplier is tried by a trial supply, and if he is appropriate, they change or from then they work with several suppliers. It was said several times that in case of change, the previous supplier is not excluded. Paradoxically, this way the incidents lead to the increasing feeling of safety: if there is a problem with the current supplier, the company has to get to know another one, but it usually retains the previous one in the long term, thus the known supplier base expands which increases feeling of safety.

The other strong source of the feeling of safety is the category of **relationship development**. Those codes are included in this category such as well-deserved *position*, *human relations1*, *the relationship development* itself, *partnership*.

The relationship development was interpreted as a process where the customer enjoys a partner position and feels appreciation because of the long-term business relationship and continued orders. After a while, the relationship goes together with business benefits and human relationships form in the meantime. Business benefits are typically associated with a better price, but the need to meet special demands also appears:

"So I am not someone coming from the street, thus because of the long-standing business relationship with large amount of money I can say, thank you but this time I would like you to make it within one week instead of three, because it is really very

urgent for me now."(10)

Originally the code group “human relations” was one category. I also coded relationships with friends, family, acquaintances, old colleagues here. I split the code into two pieces in the stage of axial coding, taking into account that human relations are mentioned as a factor strengthening relationships ("human relations1"), or human relations as searching, information gathering way, strategy ("human relations2").

Almost all the interviewees stressed the importance of human relations. The connection does not exist between two abstract companies, but among people. The need for personal discussions and visits came up several times ("(...) *if the communication with somebody through telephone did not work well, so unfortunately, you always need to go to the Netherlands, and make an agreement concretely”(7)*), due to the impossible co-operation because of the person, the importance of the person or the negative perception of changing of the person:

"To me the biggest problem is when at the same company someone else is put to the same position every one or two months. I had a well-established relationship with whom I could reach something, we already knew each other and so on. When I had something I gave a call, and now there is a totally unknown person there so I have to start the building of a more friendly relationship from the very beginning, and if we are to begin achieving the goal, then a new person comes again and so on (...) And even though this is unprecedented yet, I often thought that on the basis of a case like this, a relationship can be absolutely finished."(11)

The development of the relationship has an effect on the attitude. As the confidence strengthens and the offers get better, the feeling of safety increases, searching and checking becomes weaker. The pursuit of satisfaction and sunk costs can also be observed.

"As long as this structure works appropriate, we consider once more whether to throw the 15 years of co-operation out to the window." (9)

Due to these effects, the willingness to change is very low, and the relationship functions until an incident occurs.

The effect of the feeling of safety to the attitude lies in effort and its lessening. Thanks to well-established, functioning relationships, decision-makers do not search, do not worry that among new alternatives better ones may be in the market, absolutely only

satisficing can be observed. In spite of the benefits experienced by relationship development and better prices, it is also reported that if new persons offered better prices, they would be reluctant to change (see also the part about criteria). Thus the effect of feeling of safety is shown in the absence of search and the reduction of stress level.

6.3.2. Effect and importance of the decision

The fact to what extent the decision has to be dealt with, and how the course of business can be further continued well in a way that is satisfactory to the decision-maker, influences the attitude of the decision-maker. It is all about that according to the decision-maker what is the effect and point in dealing with the decision. This is not an attitude, because it does not say that the effect of a decision is good or bad. Instead, the decision has an effect and importance perceived by the decision-maker and this affects how ambitious and searching he is in his decision-making process. This effect also depends on the industry and industry-specific criteria such as contextual factors.

In such cases for example where novelty is a very strong aspect (this is going to be discussed in the part about criteria), constant attention is inevitable. In those situations where the technological parameters and reliability are important, a determination can be observed: there is little room for subjectivity, or a previous decision of the decision-maker (such as the selection of a printing machine) restricts or determines concretely what to buy. The attitude of the decision-maker adapts to such an industrial environment and there will be less intensive searching.

However, there are some interviewees who additionally connect the attitude with the size of the company: *"In such a small company like ours, I think it does not influence the administration process decisively."(4)* If someone judges the importance of the decision like this, its impact on the attitude set seems to be unambiguous.

This category differs from the facts implied in category of learning, because learning is about that the individual learns as a result of his decisions what effects his decision method has. However, in this case, it is all about that market and industry logically requires or supersedes for example constant search.

6.3.3. Personality characteristics

The stage of life and the stage of business coincided with it has an effect on attitudes. There were two subjects (62 and 59 years old), who emphasized several times during the interview that *"they are already packed"*. I cannot determine exactly whether this is another argument for pre-created reserves or an explanation for the decreasing of endeavour, or another factor.
The younger one for example does not plan to finish yet, he only said: *"So I rather sit outside... (fishing, he shows – note from the author). I do not want to get rich, somehow I lost it two or three years ago."* His preferences are shifted, and his idea of the future of the business is probably also different.
For example, these two people finishing business at these ages have attitudes showing less endeavour, but both of them have small businesses, and their children do not wish to continue it. In contrast to it (in order to dimension this category) in case of the company leader, who directs a medium-sized company and it becomes their family business five years ago, this fact cannot be observed. His son is a logistic manager.

Literature also says about life stage and age that not only experience entails simplifying decision making, but also the elderly compensate their frayed information processing ability and other cognitive skills excellent with simplifications built on less information (Mata et al, 2007).

I did not examine male-female differences. There is only one woman in the sample. Since the theoretical sampling did not justify paying attention to it, so I did not. If in case of continuation of the research, a strong suspicion arose in connection with one of the categories that there could be a big difference between men and women, I would bring new female subjects into the research.

The interviews usually began with a description of the decision-making processes. In most cases two decision-making processes were followed to the very end. This is a more mechanical report which, as the interview progressed, gave time to the development of the atmosphere of trust. In general, deeper things, stories turned up *after* that for example because we came to the evaluation of the image created about the decision-making process, or they just came spontaneously.

I am of the opinion that order is very important, because getting to know older stories would have influenced already on the spot how I approach to the said things about the decision-making processes. Naturally, selective perception also prevails subsequently when I code the interviews and however powerful a story was at the end of the interview, it could have an effect in the course of the coding process on what caught my attention more. However, I could handle it with reading back several times, while on the spot directing my opinion would have resulted a different interview.
I think the four cases, that arose, show unambiguous parallel between **past roles** and current decision-making style, attitude set. Three of them came spontaneously, and in accordance with the methodology, when I saw its traces even in the last interview, I concretely inquired about it.

The essence of the effect stands in the following: it seems that the way the decision-maker is attached to his decisions, what his attitudes are to each steps of the decision-making process, can be influenced strongly by his past role in the company or outside of it. Here I do not deal with the effect that choosing the past role could depend on personality traits, i.e. the individual personality trait is the point, not the past role.
I do so for two reasons: every time the subjects of the stories reported that *"they learnt there"* or *"he got stronger there"*, on the other hand, they did not mention personality traits, but their role, so I confine myself to this. Thus, the theoretical link seems obvious, but it did not turn up as a code.
I call the four strong stories as the story of *the mathematics admirer*, *the musician*, *the journalist* and *the police officer*.

The mathematics admirer man told a story spontaneously about how he did not like mathematics and what a huge change was in the university, when they got an excellent, aged professor for the seminar who got them to like this science. Since then, he has made analysis, he has liked thinking, his attitude is positive towards it. He plans the business process in advance with a simple software and enjoys when his forecasts are proved subsequently. In the office of the large sewing room, his university mathematics books were on the shelf above his desk. He is the one whose approach is another possible strategy, *the approximate optimization* next to the satisficing in the theory of bounded rationality of Simon (1972), when the individual, accepting his limitations in a simplified world, optimizes in a narrowed problem field with no endless searching.

The musician is a small entrepreneur, who stressed the power of his role throughout the whole interview constantly bringing examples from his music career. He told how he learnt to decide while managing bands and he derives his decision-making style from here *("Music taught me how to do business, because I got the basics there." (7))*. This role was determining in his motivation as an entrepreneur, he also compares the development in his decision making to his music career at his young age. Mostly the initial high risk taking and daring, and the ability to make decisions developing in a music career appeared.

In case of *the journalist*, rapid decision making and the acceptance of the possibility of making bad decisions can be highlighted. According to his own words, he learnt when he was a journalist that decisions simply have to be made, *"(...) this has to be solved in an hour. If I do not finish the newspaper and tomorrow it does not appear, I will be fired."(10)*. This situation led to the rapid decision making. From abilities, for example extrapolation that he acquired during his being a journalist (conclusion from little information, projection), or the information searching style appeared.

The police officer is a kind of businessman who began to acquire job experiences with five years in police because of his qualification after the compulsory military service. During the interview, he mentioned that he was brought up in accordance with very strict values, and his pharmacist father and the pharmacy itself as the example of cleanliness and order also came up later during the interview. According to the words of the subject what he experienced as a police officer also strengthened his endeavour to order. Not necessarily as a consequence of order and regulations. He told two stories about how certain colleagues being at enemity with each other tried to discredit each other (the “disappearance” of documents, service badges), and this even more drove him towards making all his things properly.

When this subject, at the beginning of the interview, spoke about his procuring and other decisions and later about leadership in general, the claim of order, correctness and honesty appeared very often. It was not about affinity to analysis or resources in the first place here, but about the claim that things go more clearly and in order. The usage in case of these reports and police stories was the same: *"(...) because they cannot catch me this way." (12)* Tenders are announced even if it was not a practice in the past, and

nothing orders it, and a clear system among documents should be required, things should be retrieved, information should be systematized and so on. These things are accompanied by the avoidance of redundant circles, quick and determined decision-making.

Again, it is possible that attitudes related to the elements of the decision-making process are determined by basic personality traits, and the stories just strengthened it. I think the connection is possible, but I did not use the concept, since the interviewees told their stories, personality traits were not considered. This relationship can be an interesting topic in a future research. I am going to write about it in part on the further research directions.

Another code related to the past was the "*old regime*". Those decision-makers, who had spent decades in companies before the change in 1989, reported one after the other that in those time they had procured from few places, indeed from only one, and after the change they had tried to remain there keeping the relations, they had changed slowly. Sometimes it seemed that such decision-makers at that time had changed over to the widened decision-making process in altered market frames with difficulties, and in traces they have preserved to this day the less searching attitude they had acquired in that system. This, however, cannot be generally observed even in such a small sample.

6.3.4. The general level of resources

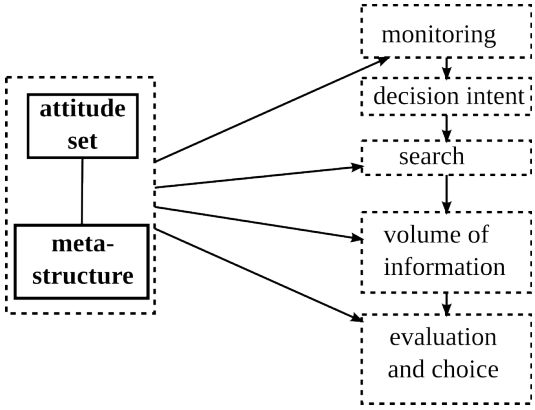
Resources appear as contextual factors, which have influences on processes. The general level of resources affecting the attitude means that on the basis of the company size and the tasks, it can be known steadily and continuously how much the decision making can be dealt with. One example is as follows for this: *"(...) there is not any suitable person for this, to whom I can tell to find things in market. There is no such possibility."(4)* If satisficing is acceptable in the theory of bounded rationality knowing the capacity limit of the human brain, then these attitudes can be accepted here, due to a kind of organizational capacity limit.

6.4. Categories of the decision-making process

Now I would like to come to the right side of our figure. The concrete form of the decision process is, according to the whole figure, the consequence of the adaptive mechanism made up by attitude set and meta-structure and of the influencing environmental factors.

I started the arrows jointly from the core category to the categories (figure 8), because, although both elements of the core category have an effect, but it is different in each category and in case of each person, to which categories and how strong the revealed attitudes and meta-rules aim at.

Figure 8. Effect of the core category



source: own work

6.4.1. Monitoring

"Otherwise, there may be others who are better, only I have not looked for them. Because I do not really have reasons for that, and because I am easy-going, and have already got used to this way. So this is again a kind of situation, that this question about the supplier should be repeated every six months. "(6)

Monitoring was coded as a separate category from the decision-making process. I put those texts on search and information gathering here, that occurred before a supply need

arose. Functioning companies with reliable supplier connections reported several times that in addition to the existing connections, if they can, they also follow other alternatives existing in the market with attention. According to the literature, such a search is one of the basic strategies of maximization.

The category of monitoring also includes the lack of monitoring. Those cases are mentioned here, in which the decision-makers do not spend resources to follow other alternatives with attention, since they have a working alternative and they are satisfied with it. This is a typical behaviour which satisfices. There are some cases, however, where this behaviour is not related to satisfaction. The decision-maker does not follow the other alternatives, because on the basis of his knowledge on the market it would not bring about a better result (so his related attitude is influenced by learning).

Such attention does not always go together with information gathering costs. In a number of industries, the decision-makers of SMEs reported that while in the past they had to look for the suppliers, now it is reversed (this is a question anyway whether it is the development of the business relationships instead of the general change, however this is the perception of the decision-makers), so the suppliers provide them with information. I coded this phenomenon as *supply pressure*. It means that monitoring is also more intense in the early stage of business life, later the information gathering costs decrease, as suppliers provide them with information.

"By myself, not really, but usually we are bombarded with different offers, and if something really looks interesting, then yes. However, I am open to novelties and opportunities, but if the topic is not pushed in front of me, I am not forced to search."(5)

The only question in this case is how much and how often the offers are dealt with.

A satisfied decision-maker, having a broad supplier base and feeling himself secure at the current supplier, approaches monitoring much lazier. He does not feel the need to do that, and he often has reasonable causes for it (for example his position at the current supplier or the costs of the monitoring). Contextual factors also have an effect on this relationship: there are certain products, the prices of which respond very quickly in the market and the product is standard. In those cases, permanent attention is less rewarding.

The supplier base widens as the company gets older, and after the base evolves, there is no need for constant searching due to the supply pressure.

Avoiding the attention to other alternatives can entail increasing psychological well-being as a consequence in the next step, since the decision-maker does not experience dissonance (in case of the quoted subject, the reason for avoiding the search is not this, but the feeling of safety, attitude of trust and the sense of integrity, so he mentions the next sentence only as a consequence): *"Perhaps if I had looked around better... but since I did not look around, I am not aware of that there is a lot cheaper, so I am not bothered by it."(9)*

6.4.2. Decision intent

The category of decision intent includes those circumstances when the decision-maker for some reasons had to enter the decision-making process. Categories leading to this claim for decision are the already discussed *monitoring* and *supply pressure* (if an interesting alternative is noticed), *incident* (usually an emergency), *innovations*, *demand*, "being short of money" (when the business is not going well and therefore we try to improve the supply side).
Innovations, new products and the effect of demand naturally compel the decision-maker to select suppliers. I interpreted “being short of money” as situations when there are not enough orders, the business is not going well, one cannot sit back and as an answer, the decision-maker sets out to the re-evaluation with a more searching attitude.

As for supply pressure, it is quite difference in each situation, how the decision-makers handle the new offers that arrive constantly. When the candidates are tested by trial supply, then its result, comparing it with the current supplier, entails a decisive situation, evaluation and choice whether to extend the range of suppliers or change or send the new one away.

In case of SMEs, the most frequent cause for searching and selecting is *incident*. I coded as incident every such event that was about some breaking, disorder, big change, critical delays. Unambiguously, these are the main reasons for changing a supplier. Decision-making strategies, the attitude to searching and decision-making and efforts to safety

lead to the situation that until something serious happens, the company works with the current supplier.

"And if these things do not work well, there is a reason for me to look for somebody else. As long as I do not have a reason to look for another, I do not do that."(5)

It is an interesting process, if as the result of the incidents the position of a company gets stronger (except for those cases when a single possible supplier falls out, or when it is very difficult to find another). In most cases, after an incident, the company does not distance itself from the future work with the supplier, but it searches another too, because for example the price of the work with the current supplier or his punctuality is not satisfactory. It only excludes the supplier for a very long time, if something really rude happened, such as rip-off. In most cases, this time the supply base widens, which enhances feeling of safety.

6.4.3. Search

Searching means all the phenomena and strategies, which connect to the information gathering after evolving of a claim, the birth of a decision intent. This category contains the *gathering of information*, a *broad search*, *starting from the own supplier*, *human relations 2.* and other similar codes. The attitude set – meta-structure pair has a strong effect on the searching process, because it determines how and until when the searching occurs.

The role of human relations can be pointed out in connection with the searching mode: there are some whose searching strategy is the searching along human relations, while others would like to avoid it because they were disappointed in business relations built on friendly relations or relatives:

"I have done it many different ways, on the basis of friendship, recommendations, old acquaintances, old contacts. They all failed somewhere one after the other. So this kind of searching, which is anonymous because it starts that way, is really much more objective than the others, so for the time being I thought it to be the best."(6)

This subject emphasizes that the one, who does not know him, gives a better offer many times. The place of human relations for this subject is shifted in the decision-making process: he inquires with broad searching, and first he searches his acquaintances with

the known conditions. If they can meet the requirements, he orders from them.
The most frequent searching strategy is primarily the current supplier, then the supply base, and only if something really new, special or quick is necessary, they can look beyond them. It can be ascribed to the feeling of safety and trust.
Stopping and other heuristic rules are to be applied to searching process, which I deal with in parts about points of view, decision-making strategies and meta-rules.

6.4.4. Volume of information

The result of the searching process, monitoring and supply pressure is a volume of information. In case of too much information generally a negative attitude can be observed.
The decision-makers handle the volume of information with various strategies. I call that strategy “freezing”, when after a preliminary filtering the decision-maker puts the information aside and brings it out later when a claim arises.
"(...) I do not throw information out in an absolute mechanical way, but I give a quick look at it and I can decide that I am not interested in it, it goes out. It may be interesting, I keep it. And maybe after several months, I return to it."(5)
Most often, however, the decision-makers limit the incoming volume of information in searching stages with threshold values fixed in meta-structure. On the basis of knowledge on the market and probability estimations and after disclosure some alternatives they stop and decide on few aspects. There are some who explain it with laziness, others with rational arguments, that in the past they observed with a broader sampling that there is no difference, or the product is standard and the price is equalized.
The question of cognitive capacities also belongs to the topic of volume of information. In my thesis, I deal with restrictive factors a lot, such as lack of time or organizational capacity limitations, but in addition to these factors, in the theory of bounded rationality our *cognitive* limitation appearing exactly in this (for example lack of time) context is stressed. It is very interesting, that interviewees did not refer to this so many times as they did to restrictive factors.
There were some comments in several interviews, such as that the decision-maker only looks around in Hungary, because *"it is not possible to see the entire Europe"*, a

treatable number of alternatives appear, and also the problems of memory *(e.g. "it is impossible for you to look through so many").* The results of limitation appear rather as attitudes and meta-rules. For example the subject does not think about that he would feel lost among too much information, but it appears that he *does not like* too much information.

He does not talk about the difficulties of comparison, but calls situations with a lot of alternatives as *chaotic*. It does not come up that analysis is very slow due to information processing capacity, instead the question that what kind of strategy he simplifies with, when lack of time and the need for a quick decision entails it. One of the interviewees for example mentioned that if time does not urge him, he better looks around, compares, but if time urges, he does not.

It can be thought that for example if the subject cannot analyse due to lack of time (but other contextual factor also would be here), because in such a short time the information cannot be processed, but the emphasis is on the lack of time and strategy and on how the subject copes with it. This is the reason why restrictive factors and simplifications applied because of these factors are often included in the analysis, and cognitive limitation does not appear so markedly.

6.4.5. Evaluation and choice

My research affected this category mostly, since I inquired concretely about it. Threshold values, filtering rules, decision-making processes and steps, decision criteria are all mentioned here. Probably these concepts would also have come up in a natural way (several interviews began in a way that to the question “how the decision occurs”, the interviewee started immediately with the listing and explaining of the criteria), but since their emergence is driven by my research questions, I was interested in them concretely that is why I treat them as a special collective category.

Tools, which decision-makers work with in the evaluation process, are decision-making strategies, “classical” heuristics, decision-making points of view.

In this part, we get answer to the question about what kind of simplifications the decision-makers use in the course of decision-making processes. Although restrictive heuristic meta-rules prevail also in searching and information gathering phases, and large-extent filterings occur rather in stages before the choice takes place, yet evaluation

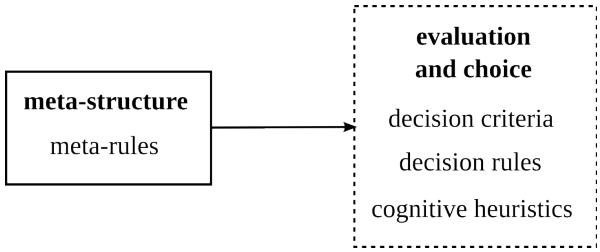
and choice is the classical field of the heuristic strategies. Specific meta-rules are also discussed in this part. Their relation to other decision parameters is shown in figure 8. **Meta-rules** determine what is going to be used in the decision-making process.

It is difficult to separate **heuristics**, **decision-making strategies** and **meta-rules**. There are for example decision-making strategies that also contain search stopping rule (for example, satisficing (SAT) as a strategy), so it has a meta-part, but the majority works with a ready alternative set. The situation is the same with heuristics, but it is true in this case that the majority remains within the evaluation process and it does not have a meta-level.

The meta-structure – heuristics connection also merges. Most part of meta-rules are made up by empirical heuristics (point 2.3.3.), but it cannot be said that "classical" cognitive heuristics do not prevail, especially in their process of taking shape.

So these are the three tools of thinking simplifying that is why I discuss them together in one.

Figure 9. Meta-structure and evaluation process



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6.4.5.1. Decision criteria

By getting to know the decision-making process, compared to the original one, a new image took shape about the handling of criteria. From the reports of the interviewees the following process turned out.

Criteria can be classified into explicitly *known*, such as price, payment conditions, quality, and into other criteria that can only be known through *experience*, such as

supply performance, flexibility. About these latters the decision-makers have only estimates (for example based on information obtained from common partners), so they make their decisions based on the known attributes and these estimates, or with the omission of these criteria. In the world of normative models, white spots like these do not exist.

From the report of the interviewees, a decision-making process is shown, that can be divided into three stages. I would like to present this process here briefly, on the basis of which the order of importance of the criteria can be better understood.

The first stage does not seem to be a real decision making, at least by no means on the basis of its importance shown by the interviewees. Generally, attributes that are easy to get to know are considered, typically in non-compensatory manner. *Geographical distance* and *technological correspondence* regularly appears here, but *quality, reputation,* sometimes *ethical aspects* also emerged as not compensable criteria (such as the use of child labour as an excluding criterion). One cannot compensate the other, so if one of the attributes is not satisfactory, it is not necessary to obtain information on the other.

Such a criterion does not always appear at the beginning of the evaluation process. It can happen, that for example after the evaluation on many attributes, in the course of the negotiations it turns out that an element of the partner's business practices (such as environmental criteria or the above-mentioned child labour) does not satisfy the buyer. In this case, this criterion functions in the same way as a first excluding one, only we can realize after dedicating more resources that we would like to exclude the supplier. As it can be seen in the part about decision-making strategies, sometimes the criterion that cannot be compensated are overwritten, but this is not the general case.

Those suppliers, who get over the first stage, are evaluated on the basis of price and other criteria **in the second stage**, typically in a compensatory manner. In addition to price, which is usually of primarily importance, payment conditions, services, and sometimes quality (if this was not an excluding attribute) most often appear here. On the basis of theses criteria, treating the alternatives in parallel, the best ones are to be chosen.

In the third stage, those criteria come to the front that the customer could only estimate up to this point, since they can be known only by experience, so after all this is not the part of the decision-making process, but the experience of the selected alternative. This includes for example flexibility and reliable performance (as the part of supply

performance). The customer will be satisfied if he sees that his supplier selected in the second stage has a good performance even on the basis of these criteria as well.

All of the interviewees pointed out that the most important criteria are the price, the payment conditions and the quality. Although these are highlighted, there is a consequence of the merely experienceable criteria: low willingness to change. Though price is marked as the most important, the subjects mention several times that they cannot be pushed to change supplier even with a better price. The risk, that the supplier offering a better price will not be as flexible or will not perform as well as the current one, is too high. Sometimes, this uncertainty gives room for maneuver and good position to the suppliers.

In case a change occurred, most interviewees linked it with an incident (such as critical delay) or with too big changes in conditions (such as rise of prices). After an incident the decision-maker has to experience the flexibility and supply performance of another supplier, and after that he can decide between the two. It is often true that the previous supplier is not excluded, but a wider supplier base is built.

The three-stage decision-making process helps to understand the place and role of the concrete criteria, and to interpret correctly the different criteria importance orders.

The first stage does not last long. Grounds of exclusion make rapid filtering possible and function often as rules of thumbs *("we drew a circle of five hundred kilometres radius and searched inside this territory"(2)).* In case of a supplier selection, the second stage and estimations of the third stage consume most of the time and evaluation. Here it is about a parallel evaluation on the basis of several criteria. Conversions also take place here. These are deliberations about how much worse value an excellent value (according to one criterion) does make acceptable in case of another criterion.

The third stage takes place when due to an incident or changing conditions, the decision-maker has to try another supplier, and experiences what the new supplier is like on the basis of the criteria of the third stage. This decision usually is also simple, the options are: changing (leaving the previous one), choosing between two, or keeping both.

With the knowledge of the place and role of criteria, we get to the correct interpretation of criteria orders. Supply performance, price, payment conditions and quality are usually first in order. The fact, that geographical distance does not appear on the top of the list, does not mean that it is not taken in consideration since it is a very strong

exclusion factor. It is rather about that criteria of the first stage are such natural exclusion or qualifying factors and their evaluation is so clear that when decision-makers are inquired about the decision-making process, it seems they do not think this step to be part of the real decision-making process.

I constantly experienced that when I inquired about the decision-making process, subjects spoke about the typical criteria of the second stage, and it turned out only later that *"naturally who have reached some quality"* or *"we search only in a circle of 1200 kilometres, it is worth supplying only for this distance."*

Several contextual factors have an effect on the order of importance of the decision criteria. Industry and product also appears among them. These factors affect in large extent what criteria come to the front, but there are differences even within the same industry and company size. These contextual factors also have an effect on the attitude set, or if you like, have reaction on it. It can be understood better through an example: those decision-makers, who give preference to technological criteria, namely the technological fit is the most important criterion for them, do not search constantly new opportunities. They do not feel it important.

Those, however, who consider the novelty value of the inputs to be purchased as the most important, permanently keep an eye on the market, since this attribute changes as time goes by, thus it requires constant searching. At the market of a special technical article, parameters and prices do not change frequently, but a decorative accessory or just a novelty of the book market as an attribute that changes as time goes by. This is acceptable as an effect of the industry and the product, but there are also differences within them.

For example, there are two similar-sized small printing offices. One leader watches technological parameters absolutely, but the other is sensitive to novelties, he also pays attention to what kind of operation (also operations making it possible to satisfy a so far non-existing demand) can be done with the tool. Such a reaction is closely related to the category of perceived significance of the decision presented before, in fact, it reacts on attitude set through this category.

6.4.5.2. Decision strategies

The most commonly applied decision strategy is a kind of non-compensatory process in

more steps. The strict lexicographic rule appears mainly in emergency situations, for instance, when the only criterion is the delivery time. It is rather a mixture of the strategy of satisficing and the lexicographic rule, since the first, who meets the expectation (aspiration) level on the basis of the criterion, will be chosen (while the lexicographic rule presumes parallel evaluation of several alternatives on the basis of the first point of view). For example: *"There are such special requests, materials, adhesives, nitts, anything. (...) Then people should search market opportunities, whether who can supply such and such matters, in such and such time. Price does not always influence there."(4)*

It is typical that in the steps of the process the decision-maker considers several criteria in each round, and so the process is a mixture of compensatory and non-compensatory strategies. The first filtering is often the technological correspondence, the quality, and depending on the transportability of the product, also the geographical distance. In the next round price, delivery time and payment conditions are usually treated in a compensatory manner, with the most emphasis on price (actually in most cases, the total procurement cost).

If it should be identified with strategies enumerated in the theoretical background, then it can be said that the first round is about a lexicographic rule. In the second round we can usually speak about compensatory and other strategies considering criteria with different emphasis, which is the additive model. Since after the first round, the volume of information to be processed is significantly decreased by this step, we cannot speak about that it would be tiring. The third round is usually about enlargement, not about decision. To sum up, it can be said that large reduction steps do not occur in the stage of the final evaluation, but before, with meta-rules prevailing at searching and in the first, not conscious filtering round.

6.4.5.3. Cognitive heuristics

I call heuristics identified by the representatives of cognitive illusions (Tversky and Kahneman, 1974) as cognitive heuristics. These are not empirical simplifying rules of thumb, but frequently observed cognitive algorithms, which in most cases bring good results, but sometimes lead to mistakes. I called them “classical” heuristics when classifying heuristics.

I found much less concrete examples for such steps. Probably, post-rationalization and data loss prevailed mostly in these cases. As one could expect, the interviewees describe their thinking processes subsequently as more systematic, then they would do in real time, and we do not get to know of many steps at a later stage. The majority of cognitive heuristics are about probability estimation, which is often the result of a non-conscious, non-analytical thinking, thus it can be difficult to report of them.

Representativeness heuristic, for example, is a phenomenon when on the basis of some marks and attributes we come to probability conclusions, ignoring other rules (such as the role of prior probabilities, the conjunction rule). Stereotypes are also the examples of representativeness heuristic, which are also effective, but sometimes can lead to erroneous conclusions. One subject, for example, acquires the following rule over the years: *"If, let's say, he gets out of a brand new BMW and he is suited up, then he is suspicious. Probably I do not do business with him."(6)* (This story is about a customer in the middle of a construction project who thinks the supplier of building materials should not arrive with such car to the negotiation).

The so-called availability heuristic is a phenomenon when we ascribe bigger probability, better qualities to something because it can be easily recalled from our memory. Its typical experimental examples are, when we estimate the city with familiar name larger (Gigerenzer, 2007), or we estimate the probability of an air crash with vivid memories much larger. The example of a plotter (large printing machine) buying can be an example for availability heuristic.

"There are more companies, but I think it was the cheapest there. I was maybe influenced by Roland, because in music I already met this Roland brand. I liked it, this is Roland, they are also Roland, all Roland."(7) The interviewee said that so far he has not checked, whether the instrument-manufacturer company produces the printer, but he does not care about it. He is the "musician".

According to the research program of heuristics and biases, taking *sunk costs* into consideration also belongs to here, since it directs the decision-maker to choose an actual alternative in a decision-making situation. Decision-makers do not change suppliers because they invested time and energy to the current contact. Such an act can only be considered rational if the costs of the change are large. According to formal rationality, in our decisions, only utilities expected in the future matter, and therefore it is irrational to make such a decision because of the sunk costs.

In the interviews, this appears in many places. There are some, where in addition to time spent together, habit, development of human relations and good position, no costs can be found which would have been devoted for example to specialized equipment or common improvements. In my opinion, these are not biases, since better position entails general benefits, and human relation has determining role in the feeling of safety.

Taking into account the confirming information with more emphasis, and ignoring information questioning previous decisions is a *confirmatory bias* that maintains the status quo. Maintaining the status quo means not only the justification of the previous decisions, but saves resources, since there is no need for further evaluations. There are several modes how it appears. One subject reported that he avoids monitoring, in such way he avoids frustration, because perhaps it turns out that there is a better alternative.

This is typically the bias of the status quo when we avoid information questioning the decision and search the confirming ones. Similarly, there are some people who save time in a way that in the annual evaluation they assess the current supplier as the best, because in this way they can avoid efforts caused by the new selection.

Anchoring and adjustment heuristic is a process when we consider new alternatives in comparison with a value, although this anchoring value may be incorrect or irrelevant. This way I can identify that decision-making mode, when there is trouble with the current supplier, and we select the first alternative that seems better than the current supplier, choose it and do not search further. Yet we do not know anything about other alternatives in the market, we only used our supplier as a benchmark and the first alternative, which seems to be a gain compared to this value, is selected. The consideration of this step is ambiguous, since this step makes the decision-maker be in a better position, so this is a quasi-optimal step.

6.4.5.4. Rules in the meta-structure

Those limitations, thresholds, simplifying mechanisms belong here that evolved through experience and provide simple guidelines for stopping the search, evaluation, decision-making method to be applied, in order to avoid unlimited information search and complete analysis. As I mentioned in connection with decision-making strategies, every step that does not endeavour to reveal all alternatives and evaluate them on all criteria, is simplifying, heuristic.

Subjects are not characterized by constant search. Moreover, a regularity can be noticed that unless there is some kind of incident with the current supplier, they do not look for a new one.

"(...), then I would not be able to spend my time for anything but switching, now that one is better, tomorrow the other would be better. And I would always flutter and switch between suppliers which create chaos again."(5)

The interviewees could say concrete numbers concerning for example considered or solicited suppliers. The "minimum three" seems to be a general rule, but most often four or five was mentioned. When I inquired as to why, the most frequent first response was *"I do not know."* Then it turned out that this is the number of the potential suppliers who can perform. Somewhere else, the decision-maker thinks that if the four or five suppliers are in the same interval, the others would be there also, namely he extrapolates on the basis of sampling.

Sometimes the source of this number is unambiguously the bounded rationality strategy of satisficing, for example: *"(...) I would be able to do that I look at eight or ten or say to myself that it is enough for me to identify three or four in connection with whom I find a better opportunity and who meet the aforementioned points of view. So money, time, distance, flexibility and technical things. In case these are accomplished, simply I do not wish any more."* Since among the first three or four alternatives, the subject can usually find better than the current supplier (with whom some problems arose, it altered, or dropped out), he is satisfied with it and does not look for further.

Meta-rules also include the so-called stopping rules, most part of which is information searching rule (see Bouzdine-Chameeva and others, 2006), but in the

interviews representational stability can be observed principally. This means that, for example in case of gathering alternatives we stop if due to the following alternatives, our idea does not develop significantly, which functions also combined with probability estimation: if we believe on the basis of our knowledge, that several alternatives cannot make a change significantly on our opportunities, we stop.

Elsewhere, the number is a probability estimation. *"I invited forty companies, and I tested them, there was no difference among them, really, they moved in the same interval."* Then the interviewee says that later while considering this correspondence as valid he makes probable that it is enough to deal with the offers of 5-8 companies.

There are rules determining time span, such as the subject who after announcing the offer waits for two weeks for the application of the suppliers and then closes the process, because *"... this way one can apply even when he is on holiday. The person, who does not apply in two weeks, is not interested in the business."* (My colleague asked for blind coding called it “waiting heuristic”.)

Subjects report about different strategies for different situations and products, and the considered points of view are different as well depending on the contextual factors. When considering various decision-making processes, for example, tradeoffs are determined typically with resources or saving time *("Now it is not worth spending so much time for the advantage of 4000 HUF").*

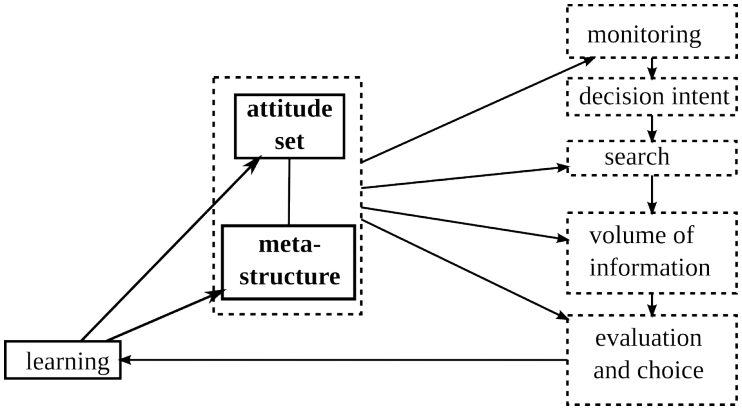
The differentiation of these rules functioning as rules of thumb from the rules that I call cognitive heuristics lies in that here the decision-maker estimates probability on the basis of conclusions or previous experience (that after a two weeks time there will be no interested person to apply, that among forty offers there are no better than among four). These are also probability estimations, so similar to the representativeness heuristic, but these are "problem solving heuristics" discussed in the theoretical part.

They were not born from the automation of the mind, as cognitive heuristics were. In many cases, however, such separation can be made with difficulty because it can be found out with difficulty, what kind of heuristics prevail in the decision made on the application of a rule or a criterion. This, however is the question of heuristics prevailing on the level of decisions made on a decision, but I focused thinking simplifications prevailing on the basic level.

6.5. Learning

I would like to add something before I move on to the connections of category of learning. We only got to the point in settlement around the core category and causal relationship that attitude set and meta-structure results how the decision-making process looks like. Depending on the quality of implementation and the external environment, the process will have some result. The consequence of core category, however, is not merely that a decision-making process gets a concrete frame, form.
The fact, that the decision-making process looks like somehow, has several consequences. This includes those mentioned consequences such as *"simpler life"*, *“more time and resource for other activities”*, *“stress level”*, *“tranquillity”*, *“satisfaction”* and so on. Most of these consequences are the subjective perceptions of certain steps and results of the decision-making process. The output and such effects of the decision-making process and satisfaction play an important role in feedback ensured by learning process.

Figure 10. The role of learning



source: own work

The codes appearing in learning process are *learning, forming in time, enlarging knowledge and experience*. I applied this category for references which were about any kind of enlarging of knowledge, acquiring knowledge in time, development. Forming in time *("it is developed in this way", "I was formed by experiences,*

previous decisions”) is the result of experience, of the previous decisions and of satisfaction. Instead of starting the arrows from the result of the decision to the two major categories of adaptation mechanism, I mark this process as a separate category, because such development appears many times in the text.

In the learning process, the result of the decision and its subjective perception has the strongest reaction on the adaptive mechanism, but as I indicated it in the figure in grey, the experience gained during the entire decision-making process has feedback to here. For example, if in a more leisure period the decision-maker is more thorough in searching and experiences that search has the same result as when he works with few alternatives, then this strengthens through feedback that it is a unnecessary step to search extensively, in meta-structure the threshold of the desirable number of alternatives becomes stronger or even more strict.

The subjective perception of the decision result has an effect on **attitude set**. Increasing satisfaction leads directly to the less searching attitude. Similarly, if the decision-maker experiences from the result of the decision that a faster simplifying algorithm results the same, that leads to an attitude allowing simplifications. It helps to accept mistakes resulted as a consequence of intuitive strategies if the decision-maker learns that even making a mistake, *"the world does not end"*.

Previous experiences have a clear effect on meta-structure: the individual, due to the effect of the result of previous decisions, adjusts (this is the essence of adaptivity) the answer to the "how to decide?” question. An example for this is the process also mentioned elsewhere, when the decision-maker experiences that requesting much more offers does not lead to a better result than if he requests only some. Thus next time he is going to request less. In fact, the threshold of a stopping rule is moving. The same example is the time until which it is worth waiting for the offers. It is also a question how to evaluate in certain situations. This learning process is illustrated by the following text:

"(...) at that time these products and their prices were completely unknown. And also the conditions themselves that suppliers offered, what suppliers should offer in order that it will be suitable and acceptable. And now these I became to know these. So I check even at that time that what supply they offer, what payment conditions they request. Things like that. So they already come basically. Now I know, what I should look at, what I should compare ."(8)

In reports on decision-making processes, dependence of the process on contextual

factors usually appears, and subjects reported about different decision-making parameters (search stopping rule, desirable alternative set, criteria to be taken into account), thus for different situations and different products, different parameters are developed.

This way, meta-structure will be the tool of adaptation, since as something changes, parameters appropriate for the actual situation appear. It is presumable that due it, parameters of often repeated, better known, frequently feedbacked, and therefore more "learnt" decision-making processes are more sophisticated and polished (this is the cognitive level, at the often mentioned material level probably the decisions are made in good position, in safety, taking into account a wider supplier base, these two processes are in parallel).

If the decision-maker experiences continuously that with even various methods he comes to the same or nearly the same conclusions, then theoretically next time it would be good to choose the solution needing less resources.

"Based on these, we have almost made a decision as the experienced jury who had looked at the presentations, the written stuffs, and I do not know what else. (...) So if they expended a thousand hours on it and we expended one hour on it (approximately that could be the rate) and the two results are the same that indicates something. This made a very deep impression on me that we almost established the same result as if… If we translate it to women, this is the category of love at first sight. I am satisfied with the intuitive decision. And I know that it often causes bad outcome, but it will be corrected. "(10)

The last two sentences of the quotation say a lot about the connection between attitude set and meta-level of the adaptive mechanism. The more simplifying decision methods can only build into the meta-structure (i.e. into the level of rules and limits determining next decisions), if they are supported by a corresponding attitude (in this case, for example, the acceptance of uncertainty and the satisficing).

The exact mechanism of the formation process of meta-structure is an interesting question. This may be a conscious process along probability estimation. This is the case of the one who invites fewer ones next time, because he experienced that the result would not be different because of this. This may be a trial and error or the so-called Thorndike effect. This effect means that redundant steps are to be left and those remain that are to be counted on.

Gigerenzer and Gaissmaier (2011) also outline a number of options. Slow evolution,

individual learning, social effect (where one of the methods to acquire heuristics is imitation) and environmental adaptation (individual memory filters on the basis of environmental signals, that which heuristics can be effective in the given environment) appear among the possibilities enumerated by the authors. I identify the latter as the already mentioned fitting. Among the individual learning models, the model of Rieskamp and Otto (2006) is mentioned. According to them, in the learning theory of strategy selection, individuals connect expectations to strategies, and these expectations grow refined on the basis of results. This way, the individual learns how to to choose. More explanations are plausible, the topic is worth further researches.

6.6. Summary of the research results on the basis of the research questions

According to the correspondences explained in the previous parts, I summarize the results of the research structured by the research questions briefly. Here I refer to those parts only briefly which I explained in details in the previous parts.

QA1. What judgement model, what decision rules do the individual use?

In the supplier selection decision processes of SMEs, compensatory and non-compensatory strategies are mixed, the application field of which can also be determined in the process. Non-compensatory rules are applied for excluding criteria, while the application of compensatory rules is determining for the other criteria of the process. In case of emergency or lack of time, the application of non-compensatory rules is typical, decisions can be made even according to one criterion. Usually, excluding on the basis of criteria, lexicographic rule and weighted additive model can be observed.

QA2. What heuristical characteristics (stopping rules, heuristical decision strategies, thresholds etc.) can be identified in the process, and in which stage of the process are they used?

Three kind of heuristical steps can be distinguished: cognitive heuristics, rules in the meta-structure, use of heuristical decision strategies. Heuristical decision strategies are the lexicographic and its related strategies, because resources and time can be saved applying these strategies. Rules affecting decision-making process from the outside prevail on meta-level (for example sufficient number of alternatives, waiting heuristics) which prevent endless searching and evaluation.

Among cognitive heuristics and biases, for example the availability, the representativeness heuristics or the distorting effect of sunk costs can be observed. Simplifications prevail not so much in the evaluation phase of a determined number of alternatives, but in the searching process before making the decision.

By getting to know meta-level and the supporting role of the attitude set, I have learned a lot about strategy selection and its personality dependence. The attitude set formed by several factors is determining in the level of simplifications, their form and tools.

QA3. How can the environment, in which the decision maker uses (or happens not to use) these heuristic steps, be characterised?

Simplifications are applied most frequently because of lack of time and resources. Less searching and narrowing the alternative set courageously is necessary if the product is standard and the market reacts fast. This way one can get the same product and there cannot be big differences in price. In uncertain times, relying on the safety of human relations, searching is preferred in the frame of known suppliers. The actual state of the company influences how much the decision-maker tries to optimize or affords himself to make simplifying steps. Statements like „it cannot be forever", that accept organizational capacity limits and individual limits, are frequent.

In part B of my research questions I was curious about the attitude concerning rationality of the process, which was reworded later and it is not the same as the core category emerged by the end of the research. There are attitudes not linked to rationality or some ideals in that, but to the aspects of the decision-making process. Here, I answer to the original questions.

QB1. How does the individual interpret what the literature calls rationality, rational decision making? How specific is this interpretation?

There are subjects who mentioned several times „the best", „the most adequate" and similar expressions, but these expressions usually mean *the best accepting the limits*. Generally subjects approach their decision-making situations with accepting their limits saying that it can be done better and there might be better alternatives in the market. Sometimes it is difficult to distinguish whether it is *the satisficing* or *approximating optimization* from the two strategies mentioned by Simon. The point is that most precisely the theory of limited rationality describes the decision-making processes of the subjects according to the identifiable elements.

Because of the adaptivity and the different decisions made in different situations and in case of different products, the approach of *rational analysis* may be partly typical, but not the strict version thereof.

QB2. Does the decision maker adhere to any kind of rationality ideal of their own internal interpretation?

A kind of measure does exist in the minds of decision-makers, especially at theoretical level. Some statements show that decision-makers know theoretically how this could or

should be made better, but they do not show any struggle to stick to this, not even those who mentioned it. They adapt their level of expectations to their resources and capacities also in connection with their decisions. If the business operates well, they do not feel the incentive to do it in other ways. It can be generally observed that they try to maximize safety and selection but with efforts to satisfactions.

QB3.: If the individual uses any kind of non-formally rational decision strategy, what is their attitude towards it? Do they consider these to be positive, effective tools or a kind of necessary evil?

Decision-makers approach the application of heuristic steps with a high level of acceptance. I have not observed any negative attitude toward the application of them. Those attitudes belonging to the category of attitude set are much stronger, i.e. the decision-maker for example has a very strong negative attitude toward information overload, and that is why he applies a limit. If he even has an attitude toward the tool (heuristic strategy) itself, there is always a justification he can mention to his defence, and it is difficult to decide in such cases whether the reason is real or it only mitigates the tension stemming from using simplifications.

To the latter two research sub-questions it can be said that the decision-maker does not compare it to some theoretical construction, some ideal, but to the developed attitude set and he reports tension rather if he cannot decide accordingly.

7. Summary

I present here the main findings of my research and further research directions, as the summary of the dissertation.

7.1. Main findings

In my exploratory research I have analysed the supplier selection decisions of SME-s. The focus was on the simplifying strategies and their evaluation. Besides this focus, the applies methodology directed light onto further topics, as attitudes and adaptivity as emerging categories. Several connections have been revealed in the research, upon which further exploratory, or even hypotheses-based research projects could be built. I present the results in this part.

I find the knowledge gained about decision criteria and strategies, mechanism of thinking as useful from the viewpoint of the literature on purchasing. I begin the presentation of results with these.

While analysing the decision criteria and decision strategies it appeared clearly, that **criteria have more or less stable place and function in the decision process**. I have divided the process to three stages, where there are typically used decision strategies. There is a first stage of decision making, which is so fast and natural, that it seems if the decision makers did not even consider this stage as the part of the decision process. After creating a consideration set, they work in the second stage, and there are attributes of the suppliers which can be only experienced (this is the third stage). One can not say that decision makers use solely compensatory or non-compensatory decision strategies, rather both, or a mixed variation. This division of supplier selection decision to three stages helps us in understanding the rankings of supplier selection criteria.

These findings, besides the correct interpretation of criteria, help understanding the special characteristics of SME buying decisions. I find useful also the knowledge about

individual thinking mechanisms, their elements, which fulfill the same task as purchasing manuals and decision support systems at large companies.
Knowing and understanding the decision strategies, the way of handling criteria is important for the suppliers as well, because by knowing this process, their chances are increasing. They can improve in those attributes and competences, which ensure them to stay in the consideration set during filtering.
This topic researched with the applied methodology might have much more to say to the purchasing field, what I will describe in the next part on further research directions.

The next results were also observed in the supplier selection decision processes, but because these are decision elements which we may be labeled as general, they enrich also the field of decision science (independent of the supplier selection example), so this is the way I describe them.

In most cases there are simplifying steps in decision processes. These can be divided into two groups: the **meta-decisions** and the **decision strategies** applied in the process. I had focused on the latter before conducting my research. I have found examples for these strategies – heuristic decision rules and cognitive heuristics – in the reports of the subjects.
Finding cognitive heuristics is hard. I have managed to identify some cases, but these are fast probability judgements, and I think the disadvantages of retrospective protocol analysis have appeared here the most.

The other field in simplifying, the meta-decisions have emerged during the research process. It became evident, that this aspect – so not the decision steps withing a decision, but decisions about decisions – provide possibilities for simplifying. Individuals learn how to fit decisions to the environmental, contextual factors, and the result of it is, that in a repeating task they decide faster. There is no deciding how to decide, only parameters (for example when to stop search, how many alternatives to collect, which criteria to consider) are adapted to the cues of the situation, what is a lot faster process. This learning happens in its fastest pace in the beginning of decision making practice. The **cumulation of situation – parameters pairs support faster decision making**.

I think that in many cases this **fitting** enhance faster decision making more, than heuristic decision strategies applied to the final three or four alternatives. However, it is not easy to distinguish between strategies and meta-decisions. For example a lexicographic rule includes both: weighting the criteria is a meta-decision, the rule of selecting is a decision strategy.

The **meta-structure is a part of an adaptive mechanism**. The other category, that have emerged as being core category, was the **attitude set**, which is strongly connected to the meta-structure. The meta-structure in my interpretation is rather the cognitive level of adaptation, while the attitude set is not only cognitive, because it includes also emotional elements. It seems that in the meta-structure only those meta-rules are included, that are **supported by an attitude**. The attitude set this way moderates the learning – meta-structure relationship: for example a strong analyst and an intuitive decision maker interpret the results in different ways, and different elements are strengthened in the two elements of the core category.

According to these one can see that the adaptation (or its result, the fit) is not solely a cognitive, but also an emotional process. I consider this as important, because there is plenty of literature on emotions in decisions, but in this case the emotions affect the meta level, so the way how we will make our decisions.

The attitude set determines also, in **what way does the decision maker simplify and in what part of the decision process**. One can observe attitudes towards evaluation, search, volume of information, error. These attitudes affect what heuristics will be used in the decision process or on meta level, and what the decision process will look like. The attitude set determines what kind of simplifications will be used and when. This means that the *satisficing* is not general for the whole decision process, but depending on the attitude set in the phase of search, evaluation or choice or elsewhere.

The attitude set is in connection with **personality**. The set is shaped by age, past roles, stories. These have emerged in the interviews, and although there is a strong suspicion that personality traits are behind these, they did not emerge in the interviews. However it seems evident that different attitude sets varying from person to person result in different decision processes. If this is true, then decision makers will handle time pressure and complexity in different ways, they would also need different kinds of

decision support tools.
There are two points we can make here: satisficing strategies are not general in a case of a decision maker, but can be present in different elements of decision making process. The other point is, that the abilities or the readiness to make decisions in a heuristical way varies from person to person.
If there exist decision situations or environments where this kind of decision making seems as wanted, these points are important in delegation, and also in forming groups.

I was also interested in the ideal or construct, using which the decision maker evaluates his decision process. My expectation was that there might be a tension in the individual, if he deviates from some ideal, and he needs to mitigate it. It appears from the results that the ideals are refined through experience and context, and they are stored in the attitude set. When the decision maker can make his decisions according to his attitude set, there is no tension, and vice versa. In case of a decision, they do not compare to an abstract **ideal**, but to the attitude set.

7.2. Further research directions

In grounded theory methodology, the further research directions are shown by the constant comparison of categories, what reveals the new possibilities the same way as in the process. After conducting further research, the substantive theory can be brought to a more general level. In this part I shortly summarize these possible directions.

One evident direction is the analysis of the **practice at large companies**. The results from the SME-s could be different from those at large companies in many ways. It would be interesting to see the relationship between the individual meta-structures and the prescribed purchasing regulations, as an **organizational meta-structure**. Beside these differences it would be interesting to explore, in what ways can the simplifying cognitive processes work in a regulated environment, and the attitudes toward regulations. Busenitz and Barney (1997) come to a conclusion, that there is a significant difference between entrepreneurs and managers at large companies when it comes to the use of heuristics. They claim that heuristics are natural decision tools of entrepreneurs,

but managers are not in need to use them, because they possess the resources and tools. Where do differences appear? What are their reasons? How are purchasing regulations, manuals created? Is there a possibility to get the simplifying rules to these manuals? Is the manual a barrier to individual creativity and intuition? What is the relationship between individual meta-structure and the manual, as organisational meta-structure, and what potential is in this relationship?

The researchers examining the potential in simple heuristics have defined an objective to build simple **decision support tools** on the heuristics that work. An example about a hospital is presented in Gigerenzer (2007), where leaving the complicated diagnostic procedures behind, a simple, three-step decision tree was developed building on the knowledge of the doctors, which allows faster decision making and better percentage of lives saved. What is more, is that doctors like using this simple tool, because they see their own knowledge working in this tool.
It is a knowledge management task, how could heuristics, heuristic decision rules and context-specific meta-rules be built into a decision support tool. The knowledge, experience could cumulate in such tool, and the results of meta-decisions could work as efficient heuristics. This topic is also relevant rather for the large companies.

It is not easy to define the scope of validity of this research. General attitudes have emerged, about which I do not have a reason to assume they work only in supplier selection decisions. It would be fruitful to conduct such exploratory research on other decisions, because the unambiguity of criteria, the speed of feedback, the ease of switch (think about siting decisions, or HR decisions), the strength of dilemmas (for example moral dilemmas) change.

In this research, the most of the attitudes are connected with search and the volume of information. In connection with this, the effect of **age and experience** emerged, the examination of age and capabilities could be also an interesting topic. The aversion towards information overload, labeling too much information as chaos, all these might be weaker in case of a teenager today. Studies on reading sociology refer about the changing reading habits, search and filtering capabilities. A few capabilities are getting weaker (for example the ability to read longer continuous text), other, new capabilities

are stronger. What kind of searchers, decision makers will the members of the generation Z (those born after 1990) be? Herbert Simon described the strategies individuals use to deal with their bounded capacities. How do strategies change with changing capabilities? These changes must be followed by the decision support tools and systems of the future.

I consider the **formation of the attitude set** as a very interesting topic. There are only a few studies trying to find connections between personality traits and satisficing and heuristic decision making, with little success ((Bröder and Newell, 2008, Hilbig, 2008, Schwartz et al, 2002). I give some recommendations at the end of my dissertation for the research on the connection of attitudes and personality traits. Getting deeper knowledge on attitude change, its connection to age and personality traits can enrich the field. I am interested in these topics also as a professor: if different decision modes end with similar results, but there can be proved to be a connection between attitude and psychological well-being (Schwartz, 2004), then I feel a kind of responsibility in my work.

Doing research into meta-decisions is troublesome. Me myself have faced the problem of distinguishing an in-process decision from a meta-decision several times. As meta-decisions could be defined as “how-to-decide” (interview citation) decisions, I see their significant role in faster decision processes. The process, how the meta-part is getting shorter and shorter, or even disappears, and is only present in form of its results, the rules of thumb, is worth studying. In a specific field, time can be saved by sharing the resulting decision ruled, or at least help could be provided to make their development faster. I find this question exciting, because I did not find the answer on how does this process go on in time and what is its precise mechanism. Theories of learning provide some answers to these questions, but following the first months of decision making, the **evolution of the meta-level**, its filling would be exciting.

Some of the interviewees have indicated in some form, that the outlined decision steps are true for more fields in his life. This helps to expand the scope of validity wider, and also poses the question whether the decision attitudes are free of organizational role or not. We can find evidence, that for example we are less ethical, or less risk taking in our organizational roles. Does **the organizational role** filter the attitude set? Or is this set

such a basic structure, that this does not happen?

There are several studies examining the connection between **personality and attitudes** (maximalization or satisficing) (for example Schwartz et al, 2002) and heuristics and personality (Haley and Stumpf, 1989, Bröder and Newell, 2008, Hilbig, 2008). Most studies used the Big Five[14] personality model and did not find significant relationships, except that of neurotism. Haley and Stumpf (1989), however, present a theoretical work where they hypothesize, what Jung-ian personality type does incline to the use of which heuristics, and they test these on a small sample.
I think that if the Jung-ian, or MBTI personality types were used instead of the Big Five, the above mentioned studies could find decent relationships. The attitude level is included in the MBTI dimensions, and according to my results the attitudes are strongly connected to the way of simplifying.

The interviewees supported the statement, that their decision making process is successful, by the existence of their business (what, in this macro situation is a result), by their satisfaction and similar. They also claim that their decision making is faster because of the heuristics, but still: to see the effectiveness or other results of decision making styles, it would be fruitful to explore the connection between decision processes and firm **performance**.

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The research results on heuristic, simplifying decision making processes are interesting for a reader as well as for a researcher. We read these with pleasure, because it is about human thinking processes and this way it is about us. It is interesting from the research side, as it includes many questions that are not yet answered and leading scholars of the field are still searching for answers. Beside the heuristics, the topic of meta-decisions is also full of potential for research. I think that by approaching the example of supplier selection from this perspective I have fulfilled my research objectives.
The knowledge I gained from this research can be evaluated as new in more aspects,

14 The Big Five and the Myers-Briggs Type Indicator are personality types models building on different dimensions.

and it determines further research directions clearly. I feel the motivation to conduct some of these myself, but here I express my hope, that the dissertation or its part can inspire other researchers to do this as well.

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9. Appendices

9.1. The interview string

In grounded theory the string evolves constantly. New questions may emerge or others fall out, as the researcher continues according to *theoretical sampling*. What is very open at the beginning, becomes more focused through *constant comparison*: the researcher asks about seemingly related concepts, enriches the categories, but by the openness of the questions gives freedom to the interviewee. This is why there are more and more precise questions in the last interviews: the groundedness of the GT process lies in the fact, that new questions emerge from previous interviews, from the interactions of the researcher and the researched. I describe this process in more depth in the methodology section. Here I present this idea only because I am showing the string of the first and the last interviews. The process of its evolution is shown on figure 4., and described in its explanation.

The string of **the first interview** was as follows:

(some information about the interview was shared in the invitation letter)

Introduction:
My name is Bálint Esse, I am an assistant professor and PhD candidate at the Corvinus University of Budapest. As I have shared with You, this interview helps me in my PhD thesis.
In my research, I am dealing with the thought processes in supplier selection. I analyze this decision as an example of individual organizational decision.

The questions will be open, we will approach the narrower topics from the wide ones. If there will be additional questions, they will focus on the decision making process. The more You explicate Your thoughts, the better for me.

The interviews are anonymous, Your name, and the names of organizations You mention will not appear in the thesis. If you agree, I shall record this interview to keep Your words unbiased till the analysis.

Do You have any questions before the interview?

Question:

1. If I would not ask anything, and You only know that I am interested in the thinking process during supplier selection, what would You tell me?

2. Could You explain to me as detailed as You can, how do You think in case of buying an input from the emergence of the need till the choice?

(leading questions to keep the interview focused – for example: Could You tell me more about this step? Could You explicate this in more detail?**)**

After describing the process, these questions follow:

3. We have explored what does this decision process look like. What do You think about the way You make these decisions? Characterize this process! What is that You are trying to reach in this process?

Ending

Thank You! I have no further questions. Would You like to tell or ask anyithing before finishing the interview?

I would like to inform You, that I shall type the interview to a transcript and analyze together with the other interviews. The analysis will get into my dissertation, what I will gladly provide to You as well, If You demand.

Thank You for Your time and help!

The questions of the last interview were as follows:
(I do not present the beginning and the ending part here)

Questions:

1. When we look at Your supplier selection decision, it would be good to choose one product or service You are buying, and we could follow the process of selection from the need, ending with the choice.

(this is done through two or more inputs)

2. How do You evaluate this decision making process? How would You characterize this decision and Your attitude?

3. What is it You are trying to reach during this process?

4. Does this decision making process differ from the way You were making decisions when You were a beginner in this field? IF YES: In what do these two processes differ?

5. Is it easier, faster to make decisions now?

6. What has shaped this decision making? Where did You learn decision making, what did You bring in to this process and from where?

(ending)

9.2. Main categories emerging during coding

During the coding process, indicators (chunks of text) are labeled and associated with codes, then codes are contracted or divided. From codes, categories are created, from which the core category emerges. This process could be explained as a pyramid: labels are at the base, the way up categories are created, and from those the core category is at the top. I avoid presenting here all the codes, rather I am showing the mid-level, the most relevant categories. I do not present the pyramid, but the working titles of the codes, related to categories.

attitude set attitude best selfdefining owncompetence objective parallel metaphor satisfied	**meta-structure** howdoIdecide itdepends environcues close threshold	**supplier base** basebuild change stuck poolgrowth suppsize suppminim
relationship_develop. relationshipdevelopment position needs partnership activelyshape	**safety** safety risk longstanding (satisfied) trust	**context/contingency** product time resource macro goeswell new
learning evolutionintimelearning knowledgeexperience parallel		

9.3. Coding example

Indicators in the text:

According to Larossa (2005) these can be called as chunks, text parts or indicators. These are the parts of texts which are labeled in the coding process.

„So, I was a new startup then, and the other did not know anything about me. Now I can show some past."

„First time we got there, the main point was to get someone to talk to us, because you did not know how much flowers you want precisely."

„So then I am not a somebody coming in from the street, but building on the long term and high volume business I can tell him, that thank you, I do not want to get this in three weeks now, but in one, because it is really urgent for me."

The label: *position*

Even this label is an abstraction, because we could label differently the position stemming from good reputation, from the time spent on market, from knowledge, from development of relationship, from order frequency and volume. The methodological articles on GT emphasize not to only rename the concepts, but to abstract from them. This is what I was trying to do, but finding the right level of abstraction is not easy. This is refined in the process of constant comparison, when the scope of categories and the level of abstraction is adjusted. This might be important in the following steps of research.

Related labels: appreciation, relationshipdevelopment, trust, partnership

When we associate a part of text with more labels, it helps in discovering relationships. One part (a few words or entire paragraphs) was labeled with more labels when there were more phenomena identifiable in it, or the distinction was hard.

In this process the label, with its relatives got into the category **relationship development** (what was also one label).

Working definition: a relationship development in time, which brings the feeling of appreciation, safety, evolving human relationships, business advantages to the buyer.

Its connection to other categories:

It strengthens the human relationships, but in the six C-s model this is a covariance, so it comes with the relationship development, but it is also its result and condition. This category enhances the feeling of safety. It creates a state of stuckness, because the buyer stays with the supplier because of the better position and personal human relationships. This can be broken by incidents, which have their effect on covariances also.

Dimensions: the intensity of the relationship, the exclusion (the buyer orders only from this supplier), the perceived position, the safeguards of the relationship (personal relationship, dependence, help provided at the start), time dimensions (the time of development of the relationship, future hopes attached to the relationship, actual state)

9.4. Research quality criteria in the positivist tradition

In this part I shall briefly address the three intertwined concepts of validity, dependability and generalizability. For each of these three quality criteria of the positivist research tradition, I will show the forms applicable within the paradigm of my research activity. This way I can also justify the application of the paradigm's own criteria, as the relationships through which positivist criteria are replaced by different ones, as well as the reasons for such replacements are clearly identifiable.

According to Kvale, in everyday language, the term **validity** is equivalent to a statement being true and correct. For a social scientific definition, he gives the following: „are we measuring what we think we are measuring? Does our method analyse what it ought to? Do the observations reflect the phenomenon we are interested in?" (Kvale, 1994: p. 20)
This is the interpretation narrowed down to measurements and their tools in the positivist tradition. In Maxwell's interpretation, validity is <quote>„the correctness and credibility of a description, conclusion, explanation, interpretation" (Maxwell, 1996: p. 87)
In Maxwell's opinion validity is not a product, but a objective. In the early phase of the positivist paradigm the accepted view was that methods can ensure validity. This, however, is not true for the qualitative research tradition, where it concerns interpretations – such as, for example, the validity of a researcher's conclusion that a particular topic was actually the significant one in an interview (King, 1994).
There are several forms of validity distinguished between in the literature. I will not present all of those forms here, only the ones which can, at least partially, be applied to qualitative research.
Kvale (1994) claims *content validity* (a form of constructive validity) to be the only requirement qualitative researchers can comply with; it is much harder for them to comply with all the other validity criteria, which originate from psychometric research. *Content validity* „relates to the scope, how does the measurement comprehend the measured. For example it would not be valid to test mathematical skills only on addition."(Babbie, 2004: p. 171) An analogy to that can be drawn among the criteria of the constructivist paradigm set up by the qualitative tradition.

Another fact that cannot be ignored is that validity is not a static concept, but a constantly reinterpreted one. Kvale (2005) shows the change in the course of which the concept of validity held by the philosophy of science became detached from that of harmony with an objective reality (due to the concept of reality, the latter would not be applicable to my paradigm anyway). He describes three criteria of the concept of truth distinguished by philosophy: those of *correspondence* (whether a statement corresponds to reality), *coherence* (the coherence and internal logic of a statement), and *pragmaticality* (the link he made between the truth content of a statement and its practical consequences).

The positivist tradition put the emphasis correspondence, which was made possible by the belief in a single objective reality and its observability. In the postmodern era, as the former two were abandoned, the other two criteria of truth came to the foreground. "Validity as a knowledge reflecting reality is replaced by validity as a social construct"(Kvale, 2005: p. 235)

Once correspondence as a base has been abandoned, the emphasis will move to falsification. Then, from this point onwards, it will be reasoning, rhetoric and expertise that matter in an experts' debate. Accordingly, *validity as the quality of expertise* can be interpreted. „The knowledge and credibility of the researcher becomes important. Credibility, based on his previous works, is one of the most important part, based on what other competent researchers consider his work as valid. Validity is not only the function of applied method. In evaluating the created scientific knowledge, his personality, including his moral integrity is of central importance."(Kvale, 2005: p. 237) In this case, validity is interpreted as the defensibility of knowledge (Kvale, 1994).

In qualitative research, validity is phrased not as knowledge that objectively mirrors reality, but as a social construct, and this is how *communicative validity* and *pragmatic validity* gain emphasis.

Communicative validity can be proven by testing the validity of knowledge in discourse. „Valid knowledge arises when conflicting statements meet in discussion: it is decided in this discussion between the participants of discourse, what is valid knowledge." (Kvale, 2005: p. 240) The discourse takes place between the researcher and other actors (subjects, the general public, scientific community).

Pragmatic validity is focused on whether or not the new knowledge and interpretations

lead to changes in behaviour, whether or not the investigations improve the circumstances investigated and make them better. (Kvale, 1994: p. 22) Knowledge is validated by the character of the actions that follow the observations, or the actions subjects are motivated to take by them. „Truth will be the motive which pushes us to an activity which leads to a desired outcome."(Kvale, 2005: 246.o.) Authority and the actors' morality are, in this respect, emphatic aspects.

The validities available for my research are those of content, to some extent, expertise, and primarily communicative validity. The assessment of the validity of expertise goes beyond the limits of the present essay, not to mention that it is not for the researcher to judge their own previous work and person. Communicative validity is to come to effect in the professional discourse that is to take place after the creation and the introduction of the essay. Pragmatic validity cannot be effected within the scope of my topic.

With all these forms of validity being applicable to my research, yet, all of them reaching beyond its limits (except for content validity, which, however, does have an equivalent among the qualitative criterion), I tried to comply with the paradigm-specific criteria of qualitative research.

According to Babbie, **reliability** „is the situation when a process is repeated, it ends with the same result"(Babbie, 2004: p. 162)
Objectivity – in Kirk and Miller's (1986) view – is the implementation of the highest validity and reliability. Reliability means independence from coincidental, random factors, while validity the correct interpretation of the results.
„Reliability and validity are not symmetrical – it is easy to achieve perfect reliability with zero validity: if we have a broken thermometer or we place it to the wrong liquid."(Kirk és Miller, 1986: p. 20) The pair of authors adds on the two concepts that with perfect validity being unattainable, science tends to target perfect reliability. So far as quantitative methods are concerned, a number of tests are carried out to check reliability, but none to check validity. (Kirk and Miller, 1986)
As the research tradition within which I carried my work out rejects the belief in objectivity, neutrality, and, most importantly, constancy, it does not make the kind of reliability that is measured by the repeatability of results a requirement. In

interpretative, constructivist research it is natural for different researchers to arrive at different results.

Lee Cronbach, a prestigious quantitative researcher, having emphasised the importance of qualitative research, went even further in the 1980s: he argued that the social world is constructed and not effected as a result, consequently, all those who expect generalizable conclusions from social scientists are essentially waiting for Godot (Given, 2008).

Generalizability is a synonym of external validity (Given, 2008). Qualitative researchers rarely write on generalizability, and the question whether there is a need for it in the first place also arises. Maxwell differentiates between *external* and *internal* generalizability. Internal generalizability is the generalizability of the conclusions to the group within which the research has been carried out, while external generalizability is generalizability extended beyond the group. Internal generalizability is a requirement.

External generalizability is often not an important criterion in qualitative research. Albeit scarcely, qualitative studies do occasionally have external generalizability. Maxwell (1996) quotes Judith Singer: in many cases, generalizability seems to exist at first sight (face generalizability), that is, there is no obvious reason to presume that results would be invalid on a greater scope. Secondly, with individual cases being examined, the results my be valid for certain other cases as well. Thirdly, there may be signs indicating the possible generalizability of the results: the participants' own assessment of generalizability, similarities in the dynamics and the limits of the situations, the depth of the study, and the like (Maxwell, 1996).

Kvale (1994) asks the following question: why do we generalize? The traditional answer is either that we do so in order to make predictions and to maintain control, or that the purpose of science is general knowledge.

The purpose of the positivist tradition is to establish generalizable rules describing human behaviour. „The search for universal knowledge, and the cult of individual uniqueness was replaced by the emphasis on the heterogenity and contextuality of knowledge in postmodern approaches." (Kvale, 2005: p. 228)

There are three forms of generalization described by Kvale: *naturalistic* generalization (based on personal experience), *statistic* generalization (with correct, random sampling as its crucial point) and *analytic* generalization (applicability to other situations) (Kvale,

2005). As I have already discussed it in the aspect of transferability, the positivist tradition was dominated by statistic generalization, while the qualitative tradition by analytic generalization.

The emergence of the following question also indicates the difference between the paradigms: who should generalize? The researcher, or the reader? *Statistic* generalization, for example, is typically the researcher's task – they make their statements and expand them to a broader scope, as allowed for by their sampling technique. When the adopted form of generalization is the *analytic* one, it will be the reader who can judge whether or not the researcher's conclusions can be valid for their situation. To enable the reader to do so, the researcher has to give as detailed a description of the characteristics of the situation investigated as possible, which the reader can then compare to the characteristics of their situation. It will be the "consumers" of the research who make their judgment on the extent of similarity between the two situations; even in the case of radical differences, the reader can still expand their set of schemas by reading on a large number of cases, and, in doing so, gaining the ability of a higher level, intellectual generalization. (Given, 2008; Kvale, 2005) This is the kind of evaluation in the course of which the criterion of generalizability turns into that of transferability in qualitative paradigms.

It is due to the reasons summarized above that, in the place of the validity-generalizability-reliability trinity, I use criteria better matching the paradigm, namely, validity, dependability, confirmability and transferability.

9.5. Publications of the author in the topic

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