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Strategic Decision Making under Uncertainty: Towards a Theory of Organizational Heuristics

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Synopsis

Introduction

In my dissertation, I develop the concept of organizational heuristics and elaborate upon an empirically grounded understanding of their functioning mechanisms and emergent dynamics. This elaboration of organizational heuristics sheds light on how organizations address strategic decision making under uncertainty. In light of the significant influence of rationalized experiences in strategy processes, this work marks an important contribution, providing an in-depth understanding of how experiences abstracted into organizational heuristics influence organizational action in strategy making. Using my qualitative study and derived theoretical concepts and models, I contribute to the descriptive strategic decision-making debate as well as the strategy as practice stream and extend their research by adding a framework of organizational heuristics.

Strategic decision making under uncertainty plays a crucial role in organizations. Strategic decision making as a core component of strategic processes is an ongoing challenge because strategy is particularly marked by novelty and complexity, unfolding with little prior understanding of the situation at hand (Hendry, 2000; Mintzberg et al., 1976). For this reason, research is highly concerned with the question of how organizations cope with uncertainty in strategy making. Recent debates around that question argue that so called heuristics are rational means to make strategic decisions under uncertainty (Bingham & Eisenhardt, 2011; Eisenhardt et al., 2010). Heuristics are simple rules of thumb abstracted from experience, which are easily remembered and, when applied, foster fast decision making (Eisenhardt & Sull, 2001). However, this view is challenged by scholars arguing that heuristics are biased and, therefore, lead to severe problems. Thus, the descriptive strategic management debate is increasingly concerned with the question of heuristical decision making in strategy processes

(Bingham & Eisenhardt, 2014; Maitland & Sammartino, 2014; Meszaros, 1999, Helfat & Peteraf, 2014; Moldoveanu, 2009).

My dissertation contains three essays that connect to this research interest by asking overall research questions about the nature of organizational heuristics in depth. A sound understanding of organizational heuristics and its underlying dynamics are missing, but understanding this concept is important because organizational heuristics play a crucial role in strategic decision making and affect organizational actions significantly. Adopting a so-called practice lens by focusing on everyday engagement and interaction in the strategic processes of organizations (Whittington, 2006; Jarzabkowski, 2004), this work investigates organizational heuristics, their functioning logic and their emergence. Thus, the results of my dissertation are (1) a theoretical conceptualization of organizational heuristics and (2) a process model of their emergence, as will be shown at length. By elaborating upon this extensive understanding about organizational heuristics, my dissertation contributes to the strategic management literature in five ways: First, it extends our understanding of how organizational heuristics work and emerge in the strategic decision-making processes of organizations. Second, it adds to the strategy as practice debate by showing that organizational heuristics are strategic decision-making practices of organizations. Third, my work uncovers a component of strategic learning by presenting what organizations learn from strategic processes and how it is applied to similar strategic projects. Fourth, this dissertation enhances intuitional theory by revealing the institutionalization of rules abstracted from experiences. Finally, it sheds light on strategic and organizational decision making by showing that prominent and usually separately discussed decision-making models, such as decision making as ‘satisficing’ (Simon, 1955), decision making as ‘simple rules’ (Bingham & Eisenhardt, 2011) and decision making as ‘standard response’ (March, 1988), are indeed interlinked in the emergence of organizational heuristics.

To provide a thorough understanding of my dissertation, my synopsis is structured as follows: First, I provide the theoretical framework that lays the ground for my research questions and provides a comprised understanding of the research field of interest. Based on this chapter, I develop a research agenda, which includes an explanation of my research setting and methods. Finally, I summarize the three essays, outline their synergy and contributions and provide inspiration for future research possibilities.

Theoretical Framework

Ever since Simon (1955) questioned the classical rationality assumptions of the decision-making behavior of individuals and organizations, researchers have attempted to determine how decision making under uncertainty functions. This section outlines the prominent decision-making streams, which are important for understanding the recent debate around heuristics. It starts with prominent decision-making models that provide explanations about how organizational and strategic decision making occurs under uncertainty. Finally, the individual and organizational views of heuristics show the contemporary state of the art of heuristics research; based on which this dissertation expands upon.

Decision Making and Uncertainty

Organizational decision making. In recent decades, Simon (1955; 1986; 1960) famously challenged the rationality assumptions of the homo economicus by introducing his concept of bounded rationality. He argues that, particularly in economics, the decision maker is portrayed as a rational actor, whose decision making is intentional, consequential and optimal (Simon, 1955; Simon, 1986). However, for decision making under uncertainty, these assumptions neglect the inconsistency in behavior (March, 1962; March, 1972), the subjectivity of perception and the impossibility of computing all information (Simon, 1986; Simon, 1978). Therefore, rationality, or the search for all information, is bounded (Simon, 1955). A unique

answer to decision making under uncertainty does not exist, only a satisficing, good enough decision is attainable (Simon, 1955).

In the context of firms, the uncertainty in the decisions of organizations takes additional forms, which makes organizational decision problems even more complex (Cyert et al., 1956). Organizations do not pursue one clear goal and scan the entire environment for all possible alternatives and information (Cyert et al., 1958; March, 1972). Objectives are usually ambiguous because the motives of organizational members differ from one another (March & Olsen, 1979). Causalities between organizational action and the environment are unclear (March & Olsen, 1979), and problems usually do not present themselves as problems in the first place (Cyert et al., 1956). Additionally, problems of strategic value are usually non-repetitive (Cyert et al., 1956), and even if they do occur repeatedly, the interpretation of the past varies among organizational members (March & Olsen, 1979). Alternatives and consequences do not present themselves as given but have to be sought (Cyert et al., 1956). However, the attention of organizational members varies as well as the participation in decision processes over time (March & Olsen, 1979). Altogether, organizations are conflict systems (March, 1962; March, 1991). Conflicts in the collective decision making of organizations arise from (1) individual intentions and actions because not every individual participates in equal measure in decision-making processes in organizations (March & Olsen, 1979; March, 1972). (2) There is no direct link between individual and organizational action because contexts are changing and might lead to unintended organizational action (March & Olsen, 1979; March, 1972). (3) Because the environmental context is also changing, organizational action might be loosely coupled to responses from the environment (March & Olsen, 1979). Finally, (4) what individuals believe about the environment is highly subjective (March & Olsen, 1979). By taking all of these points into account, instead of deciding rationally under uncertainty, organizations have to learn from experience and build up

expertise in the form of rules for good practice to be able to make decisions in a satisficing way (March & Olsen, 1979; Cyert & March, 1963; March, 1991). Following this line of thought, organizations are seen as not only bounded but adaptively rational systems, which develop and rely on industry practices and simple rules to cope with uncertainty in decision making (Cyert & March, 1963). Having this understanding of organizations shifts attention to the processes "by which rules are created and changed" in organizational decision making under uncertainty (March, 1988). These rules encode experience (March, 1988), which reflect the perception and reasoning of an experienced reality by organizational members (March, 1991; March, 1978; Simon, 1986). This calls for a revised understanding of decision making under uncertainty, which captures decision making as processes of reasoning governed by subjective representations, such as rules (Simon, 1986; March, 1972).

Strategic decision making. In the descriptive strategic management stream, the issue of how strategies are formulated and formed is of major importance. To understand strategic processes, the question of strategic decision making under uncertainty plays a crucial role. Strategic problems are special in the sense that, in addition to the above characteristics, they exhibit novelty, complexity and open-endedness (Mintzberg et al., 1976). In that sense, they involve a high degree of uncertainty and ambiguity (Schwenk, 1984, Mintzberg et al., 1976). Organizations have from the beginning a vague understanding of the situation at hand and its possible solutions (Mintzberg et al., 1976). Therefore, similar to the organizational decision-making literature, scholars argue that decisions in strategy processes can only be grasped from a process related perspective (Mintzberg et al., 1976; Langley et al., 1995; Mintzberg, 1978). Mintzberg and colleagues (1976; 1971; 1985) prominently argue that the nature of strategy processes is substantially different from the classical understanding of strategy (Chandler, 1962). Strategy is not explicit; it is neither consciously developed and purposeful nor made in advance (Mintzberg, 1978; Mintzberg, 1971). Rather, strategy evolves as "a pattern in a

stream of decisions" (Mintzberg, 1978: 934) with unpredictable outcomes (Mintzberg, 1978). As a result of this understanding, strategy is seen as a process of decision streams or even issue streams evolving around decision making (Mintzberg, 1978; Langley et al., 1995). Due to ambiguity and uncertainty during the process, strategic decisions might lead to unintended outcomes and consequently evolve in the emergence of an unintended strategy process (Mintzberg & Waters, 1985).

Due to the involvement of dynamism and uncertainty in the strategy process, strategic decision making is unstructured (Mintzberg et al., 1976). Routines for such problems do not exist (Mintzberg et al., 1976). Instead, decision making evolves by satisficing and finding a good enough response (Mintzberg et al., 1976). Mintzberg et al. (1976) indeed find that, instead of analytical analysis, judgment in strategic decision making under uncertainty and dynamism prevails. Judgment is seen as a decision construct where "one individual makes a choice in his own mind with procedures that he does not, perhaps cannot, explain" (Mintzberg et al., 1976: 258). This view brings the individual decision maker to the forefront of the strategy process. Influenced by the single actor, Langley et al. (1995) argue that strategic decision making is not a form of decision making under bounded or adaptive rationality but rather under 'extra rationality'. Extra rationality captures the interplay of judgment and the experience of individuals, which accumulates in a decision process that goes "beyond conscious thought, yet because it may sometimes be far more effective in achieving desired ends, even more rational than conventional rationality" (Langley et al., 1995: 267). By acting extra rationally, the decision maker makes insightful judgements by understanding the deeper meaning of a strategic problem beyond the given facts (Langley et al., 1995). In that sense, organizations do provide meaning for strategic decision making. However, meaning is shaped by the interplay of individual experiences, and action is collectively transmitted through social interaction and evolves during the process with sometimes unintended actions (Langley et al.,

1995; Mintzberg & McHugh, 1985; Mintzberg, 1981). Hence, the process of strategic decision making under uncertainty is driven by judgment.

Heuristics and Uncertainty

Individual view. Judgment in decision making under uncertainty is a highly debated topic in cognitive psychology, which influences the organizational and strategic decision making debate in recent years. The research on heuristics, its performance and manifestation plays a particularly crucial role in the debate (Kahneman & Tversky, 1973; Gigerenzer & Brighton, 2009). Heuristics are seen as decision rules, such as rules of thumb, which concentrate on few cues to derive fast decisions (Gigerenzer & Gaissmaier, 2011). Originating from Simon's (1955) notion of bounded rationality, researchers question such "satisficing" techniques to understand how the mind of the decision maker works (Newell & Broeder, 2008; Hodgekinson et al., 1999). Two contrary views dominate the debate. Kahneman and Tversky (1973; 1972) argue that heuristics are inferior decision constructs, which can lead to severe problems because important information is ignored. In contrast, Gigerenzer and colleagues (2011; 2009; 2007) advocate the positive view on heuristics stating that heuristics allow for fast and frugal decision making under uncertainty.

In an experimental setting, Kahneman and Tversky (1973; 1972) find that, instead of statistical knowledge, participants apply heuristics to judge under uncertainty. For example, respondents were provided with short descriptions of random people and had to infer based on those descriptions the profession of these people (1973). Although respondents were trained scholars in statistical methods and formal analysis, they used heuristics of representativeness and availability to predict the profession (Kahneman & Tversky, 1973; Kahneman & Frederick, 2002). Using stereotypical information from the texts as indictors for the profession, they neglected deriving probabilities from prior known base rates about the distribution of professions in a society (Kahneman & Tversky, 1973). Kahneman and Tversky

(1973; 1972) conclude that individuals use heuristics to decide under uncertainty because they overestimate the subjectively perceived probability of an event. This leads to biased conclusions and severe problems, resembling the limitations of individual cognition (Kahneman & Tversky, 1973).

A more positive line of thought around heuristics is advocated by Gigerenzer and Brighton (2009), who observed basketball players and their game strategy whilst playing and passing the ball. They argue that, particularly under uncertainty, heuristics are rational means to make decisions (Gigerenzer & Brighton, 2009). Uncertainty, in their understanding, is fundamental. That means, searching for all information and computing the probabilities of events to reach to a decision is impossible (Mousavi & Gigerenzer, 2014). Due to their simplicity, heuristics ignore information and provide decisions in a fast way for problems for which more information would not help (Goldstein & Gigerenzer, 2009). By exploiting clues from the context and the environment, heuristics are ecologically rational decision constructs (Goldstein & Gigerenzer, 2002). They consist of single rules, which guide reasoning by neglecting information as well as taking missing knowledge as hints for fast and frugal decision making into account (Gigerenzer & Gaissmaier, 2011). Their selection is usually based on evolution, individual learning or social processes and always triggered by the clues provided from the environment (Gigerenzer & Gaissmaier, 2011). Gigerenzer and Brighton (2009) even show that heuristics outperform analytical measures by avoiding over fitting of given data and by predicting more accurately future scenarios.

Organizational view. In recent years, the debate about heuristics in strategic decision making has increased and is still vividly discussed (Bingham & Eisenhardt, 2011; Vouri & Vouri, 2014; Maitland & Sammartino, 2014; Moldoveanu, 2009; Schwenk, 1984). Building on Gigerenzer's (2008) view of heuristics, Bingham and Eisenhardt (2011) argue that heuristics, which they call simple rules, are a rational strategy for strategic decision making under

uncertainty. Uncertainty in strategic decision making is characterized by dynamism, ambiguity, unpredictability and complexity (Davis et al., 2009). These facets of uncertainty appear in the way opportunities and risks are perceived, change and come up (Davis et al., 2009; Eisenhardt, 1989b). To address such environmental conditions, they argue that firms have to build up capabilities, such as organizational heuristics (Bingham et al., 2007). Organizational heuristics, or simple rules, are rules of thumb, which organizations learn from processing experience (Bingham & Eisenhardt, 2011). These organizational heuristics help organizations to focus their attention on certain clues and to decide quickly in light of uncertainty (Bingham et al., 2007). They argue that organizational heuristics are even rational strategies for capturing and pursuing opportunities (Bingham & Eisenhardt, 2011). While routines are rather "quasi-automatic response[s] to particular problems" (Bingham & Eisenhardt, 2011: 1439), heuristics are distinct, less structured and address decision problems under uncertainty (Bingham & Eisenhardt, 2011: 1448).

However, Vouri and Vouri (2014) challenge this understanding of heuristics in strategic contexts by emphasizing the problem of transferring an individual construct to the organizational level. Despite the shortcoming that heuristics can lead to biased decision outcomes in strategic decision making (Schwenk, 1984), they argue that heuristics cannot be applied to strategy problems. The main pillars – *redundancy*, *stability*, *time frame for decision making* and *user of heuristics* - which allow heuristics to be useful on the individual level, are not met on the strategic, organizational level (Vouri & Vouri, 2014). Redundancy allows for relying on correlations between events; however, for strategic problems, redundancy is rather low. Similarly, the stability of the environment allows for exploitation of clues, but for organizations, the environment changes dynamically. Furthermore, while individuals have to decide within seconds in the context of, e.g., basketball games, in organizations, members have more time to make decisions. In line with this thought, in strategy contexts, more than

one individual is involved in decision making in contrast to the individual decision-making case (Vouri & Vouri, 2014). Therefore, the concept of heuristics, or so-called simple rules, has to be questioned (Vouri & Vouri, 2014).

Research Agenda

The overview of the descriptive organizational and strategic decision-making streams briefly shows how the topic of heuristics in strategic decision making under uncertainty is discussed. On the one hand, the organizational decision-making scholars (Simon, 1978; March & Simon, 1958; March & Heath, 1994; Cyert et al., 1956; March, 1981; March & Olsen, 1976) and Mintzberg's (1971; 1978) research on strategy processes touch on the topic of judgment and heuristics by questioning and employing rationality constructs. On the other hand, research programs around individual heuristics (Kahneman & Tversky, 1973; Kahneman, 2012; Gigerenzer & Gaissmaier, 2011; Gigerenzer & Brighton, 2009) and simple rules (Vouri & Vouri, 2014, Bingham & Eisenhardt, 2011) deal more specifically with the question of heuristics, however from different viewpoints and different underlying assumptions.

Although Kahneman and Tversky (1973) and Gigerenzer and Gaissmaier (2011) at first sight appear to address the same topic, namely individual heuristics, a closer look reveals significant differences in their approaches. For Kahneman and Tversky (1973), the importance of analytical models prevails. Hence, for them, more information always leads to better and rational decisions. In contrast, Gigerenzer and Gaissmaier (2011) advocate Simon's (1960) model of bounded rationality, which means that, in principle, all information is not attainable. In that sense, rational decisions are decisions that are good enough and satisficing. Following these thoughts, the decision problems that both researchers investigate vary significantly. In their experimental settings, Kahneman and Tversky (1973) test discrete decision situations for which right answers already exist. In contrast, Gigerenzer and Brighton

(2009) problematize decision situations for which searching for all information is impossible. This leads to a difference in the understanding of uncertainty. For Kahneman and Tversky (1973), uncertainty can be reduced away by taking more information into account. For Mousavi and Gigerenzer (2014), uncertainty is a more fundamental problem. Uncertainty in their sense cannot be reduced because decision problems unfold under dynamism, complexity and ambiguity.

Similarly, Bingham and Eisenhardt (2011; 2014) and Vouri and Vouri (2014) debate from two different viewpoints. Bingham and Eisenhardt (2011) built explicitly on the insights from Gigerenzer's research program on fast and frugal heuristics. They argue that, for the decision situations they describe, namely strategic decision making under uncertainty in the form of dynamism, complexity and ambiguity, the only way to decide is by satisficing. Therefore, deciding using heuristics is not a choice, it is the only possibility. Vouri and Vouri (2014) argue from a different perspective. They see decision making using heuristics as incommensurable with the strategy context (Vouri & Vouri, 2014). Rightfully, they argue that the strategy context is different from the individual decision context. Thus, the heuristics understanding of Gigerenzer (2008) cannot simply be transferred to the organizational level without hesitation. Additionally and more importantly, Bingham and Eisenhardt (2011) operationalize heuristics as simple rules, which are cognitive shortcuts with a common structure. For instance, they identify four categories of heuristics, i.e., selection heuristics, procedural heuristics, temporal heuristics and priority heuristics. However, these constructs only describe the content of heuristics, not their functioning mechanisms. Thus, they portray heuristics as rather simple constructs, whereas for Gigerenzer (2008), heuristics are complex patterns of rules governed by a construction logic. This leads us to suspect that organizational heuristics are more complex patterns than the simple rules the research program from Bingham and Eisenhardt (2011) suggests.

Instead of investigating the phenomenon of organizational heuristics in strategic decision making with regard to its functioning logic, the recent debates seem to focus increasingly on the question of whether heuristics are inferior or superior decision-making constructs than analytical methods. The question of what heuristics actually are and how they function remains unanswered (Alvesson & Sandberg, 2011). However, the context of interest, namely strategic decision making under uncertainty, leaves no choice but to decide based on heuristics. While Simon (1978) and March (1988) argued decades ago that we have to understand how decision rules such as heuristics in organizations are created and maintained, little research has been devoted to their mechanisms until now. We know that heuristics are simplification processes (Schwenk, 1984; Hogarth, 1981; Kleinmuntz, 1985) and consist of simple rules, which are learned from experience (Bingham & Eisenhardt, 2011; Bingham & Haleblian, 2012). However, beyond that, how they come into being and how they are constructed remains unresolved. This is rather surprising because the way in which decisions are made under uncertainty in strategy processes influences organizational action in a significant way. Therefore, the aim of this dissertation is to answer the following overall question:

How do organizational heuristics function in strategic decision making under uncertainty and how do they emerge in strategy processes?

A promising research approach to develop an understanding of what organizational heuristics are and how they come into being is the strategy as practice stream. For strategy-as-practice scholars, the main focus of investigation to understand organizations and strategy are practices (Nicolini, 2012; Whittington, 2006; Jarzabkowski & Paul Spee, 2009). Practices are structured patterns that unfold over time (Schatzki, 2006), giving meaning to the everyday context of organizations (Nicolini, 2012). Therefore, the focal points of analysis are everyday doings and sayings, while strategizing in organizations to understand how strategy unfolds

and is maintained (Whittington, 2006; Jarzabkowski & Paul Spee, 2009). These shared procedures of thinking and doing shape patterns in strategy making (Grant, 2003) and can undeliberately result in the enactment of influential social practices (Chia & Holt, 2006; Feldman & Orlikowski, 2011). However, strategic decision making as a social practice has been neglected so far (Hendry, 2000). While strategy scholars offer rich insights into strategizing practices, the way that heuristics are practiced during strategy making remains unclear. However, because strategic decision making can be traced in the form of sayings and doings in organizations and because language is a main pillar of social practices (Hendry, 2000), the strategy as practice approach offers a powerful tool to investigate organizational heuristics.

Methods

Research Design

Investigating the way how decision constructs as heuristics work and how they come into being calls for a qualitative research approach (Yin, 2003; Miles & Huberman, 1994; Eisenhardt, 1989a). To ensure an in-depth elaboration of the research agenda I chose to conduct my research in two phases. I started in a first phase with investigating the question how organizations irrespective their industries deal with decision making under uncertainty. This way I wanted to be open to decision constructs organizations use under uncertainty and to see whether heuristics might be more complex constructs than suggested by Bingham and Eisenhardt (2011). In a second phase I choose an ethnographic case study design informed by the strategy-as-practice approach and the process perspective to answer the question how organizational heuristics emerge (Van Maanen, 2011; Jarzabkowski & Paul Spee, 2009; Langley, 1999). Choosing an ethnographic research technique allows to investigate phenomena in more detail and to infer a fine grained understanding of the phenomenon in

question. Ethnography is a social research practice that advocates longitudinal immersion into a field with multiple data sources (Van Maanen, 2011; Barley, 1990). In this capacity, ethnography allows capturing subtle dynamics and patterns that organizational members themselves cannot articulate (Rouleau, 2005). In particular, the longitudinal aspect enables the capturing of recursive patterns (Langley & Abdallah, 2011), which is crucial for elaborating an understanding of organizational heuristics. Taking within the ethnographic phase the strategy-as-practice perspective allows for focusing on the everyday activities in organizations, such as sayings and doings (Jarzabkowski, 2003; Whittington, 2006; Kaplan & Orlikowski, 2013). Adopting in addition a processual lens enables the capturing of sayings and doings over time across the organization (Langley, 1999; Denis et al., 2007). Concretely, my study evolved over a period of eighteen months in two phases.

First phase. Choosing an open approach to investigate how organizational heuristics are used in strategic decision-making processes, I followed a theoretical sampling logic informed by the literature on organizational heuristics (Glaser & Strauss, 1967). Organizational heuristics have been studied primarily by Bingham and Eisenhardt (2011) in the high-tech industry because they argue that organizations embedded in volatile environments execute heuristics. Therefore, I chose ten companies that operate in different but dynamic industries to collect interviews, which allows the interviewee to reflect on their experience with strategy processes (Alvesson, 2003). As interview partners participants were important who were legitimized to make strategic decisions in their organizations. Therefore, I conducted interviews with top managers from the board and partner level at the following organizations: LogTec, FineVest, Style+, LawRder, SoftTec, SocM, MedSow, Brand-1, Sure2b and EntreuX (see Table 1). All of these organizations have the following properties in common: 1) they operate in dynamic environments; 2) they are engaged in strategic projects that participants indicated as being unpredictable; and 3) the failure of such strategic projects would lead to severe problems

within the organization. In this way, I wanted to ensure that the context of decision making is characterized by uncertainty.

Company	Industry	Area of expertise
LogTec	Logistics	Storage systems for containers worldwide
FineVest	Finance	Asset management for companies worldwide with investments in for instance renewable energy, real estate and worldwide construction projects.
Style+	Fashion	Women's clothes worldwide in the midrange price sector
LawRder	Law	Law firm consulting companies and financial institutions worldwide.
SoftTec	IT	Development of office management software for companies worldwide.
SocM	Social Media	Consulting for companies' social media presence
MedSow	Pharma	Distribution of pharmaceuticals
Brand-1	Marketing	Consulting companies on marketing strategies
Sure2b	Insurance	Insurances and hospital management
EntreuX	Internet	Online coupon business worldwide

Table 1: **Overview of company sample.**

Second phase. To answer the question of how organizational heuristics come into being, I chose to dive deeper into EntreuX for the ethnographic part of my study based on a purposeful sampling logic (Patton, 1990). Out of all of the companies in phase one, EntreuX provided an information intensive context to understand how organizational heuristics function and emerge. EntreuX is a mature internet start-up founded in 2010 in Germany. Operating in ten countries worldwide online couponing websites, they seek to become one of the big players in the digital couponing business. With their approximately 60 employees and two years of existence, they are in the process of deliberately and unconsciously forming organizational patterns influenced by their experience. Despite the strategic decision making of the management team, strategy processes occur in their country teams, for example, in the teams covering Italy, Poland, Russia or Columbia. As members of EntreuX state, each team

operating in one country consists of 3-7 employees and has to make strategic decisions regarding market entries, branding and customer relationships. Their everyday engagement in strategic decision making within the meetings allows for a rich data set for investigating how organizational heuristics form over time.

Data Collection

The entire data collection period lasted for over 18 months. In the first phase of my study, I gathered formal interviews, which were semi-structured. The aim was to understand what has been learned from strategic projects and how these learnings in the form of heuristical decision constructs influenced subsequent strategic decisions (Bingham & Eisenhardt, 2011). Therefore, retrospective and reflective interviews provided an important tool to gather these kinds of data (Alvesson, 2003).

During the second phase, I conducted the ethnographic case study at EntreuX. Because it was important to participate in the everyday interactions within the organization (Jarzabkowski, 2004) as an observer, I needed to first get familiar with the culture of EntreuX and establish trust (Kirk & Miller, 1986). Therefore, I started by attending social events and visiting the office space often. Finally I was allowed to work at my own desk in the open office space of EntreuX. After a while, I established access to all relevant meetings at EntreuX for a period of 5 months. These meetings included management as well as country meetings, where participants articulated that strategic actions would be discussed and strategic decisions made (Kwon et al., 2014; Jarzabkowski & Seidl, 2008). During the meetings, I took real-time notes about the sayings and doings of the participants. The observational data are indispensable for understanding the occurrence and emergence of organizational heuristics in situ because participants are often unaware of the ways in which they use insights and abstract from experience. Additionally, I gathered formal as well as informal interviews, while the latter ones were short talks in the kitchen, on the terrace, and during coffee and lunch breaks. I

conducted the formal interviews with a semi-structured design because it was interesting to understand what participants thought were important experiences and heuristics that they reused for similar strategic problems. Furthermore, I participated in one workshop about organizational design at EntreuX and worked with them closely on internal strategic matters. Finally, I gathered documents in the form of presentations, press releases, guidelines and roundups from meetings. Table 2 provides an overview of the data sources of each phase.

Description of data sources		
Data Source	Phase 1	Phase 2
Interviews	13 formal interviews • 17,5 hours, 338 transcribed pages • CFO, CIO, CEO's, Partner, Head of Business Development, Head of Strategic Projects, Founder 19 informal interview • CFO, CIO, CEO's, Partner, Head of Business Development, Head of Strategic Projects, Founder	13 formal interviews • 9 hours, 267 transcribed pages • Founder (CEO), Co-founder (COO), Co-founder (CSO), CFO, Head of Business Development Europe, Head of Business Development RoW, Office Management, Team leader 127 informal interviews • Founder (CEO), Co-founder (COO), Co-founder (CSO), CFO, Head of Business Development Europe, Head of Business Development RoW, Office Management, Team leader, team member • Incubator management
Observation		20 Country Meetings • 11 hours, 150,5 pages field notes 6 Management Meetings • 8 hours, 23,5 pages field notes Everyday interaction in office space • 62 hours, 12 pages field notes Workshop • 2 hours, 1 page field notes Social events • 7 hours, 1 page field notes
Documents	Press releases	Press releases, ppt presentations, business plans, guidelines, roundups, graphics
Main Data Set: 26 formal interviews (26,5 hours, 605 transcribed pages), Observations (90 hours, 188 pages field notes)		

Table 2: Overview of the data collection

Data Analysis

For the data analysis, I used several methods to examine my exhaustive data from different angles. Employing different strategies for data analysis establishes validity as well as generalizability of the derived concepts (Kirk & Miller, 1986; Miles & Huberman, 1994; Yin, 2003). *Coding:* I coded my data with MAXQDA two times inspired by the grounded theory approach (Strauss & Corbin, 1990). Both coding endeavors progressed over several rounds but were inspired by different research questions. Hence, while trying to stay open to the data, the two perspectives automatically evoked by the different research questions allowed for examination of the phenomena from different viewpoints (Tracy, 2010; Gioia et al., 2012). The first rounds were open coding techniques where the informants own terms, sayings and doings were summarized in codes (Strauss & Corbin, 1990). I examined these 1st-order codes for similarities and differences to be able to cluster codes into categories (Gioia et al., 2012). These categories laid the ground for the examination of the relationships that emerged from the data, which explain the phenomenon in question. In doing so, the 2nd-order themes are clustered into aggregate dimensions, which led to the theoretical concepts of my study (Gioia et al., 2012; Miles & Huberman, 1994). *Visual mapping strategy:* To extract the processual characteristics of my data to explain the emergence of organizational heuristics, I adopted strategies of data analysis from the process perspective (Langley, 1999; Langley & Abdallah, 2011). Visualization is a powerful tool to make sense of and grasp the big picture containing rich data (Tracy, 2010). By visually mapping all of my codes across time and related events of their occurrence, I was able to identify patterns and make comparisons between these patterns (Langley, 1999). *Temporal bracketing:* Building on the visual mapping strategy, I focused on the differences and similarities of the codes across time (Langley, 1999). Thus, I was able to cluster the identified patterns from above into phases. These phases are important for my process model of the emergence of organizational heuristics. *Vignettes:* Vignettes are a narrative tool to distill theoretical concepts and link them to the data from the field

(Jarzabkowski & Bednarek, 2014). Vignettes are concise narratives of an event substantiated by rich data. Writing these vignettes allows comparing events on a higher level of abstraction to understand the dynamics beyond the case (Jarzabkowski & Bednarek, 2014). *Member Check:* During the entire process of analysis, I shared and discussed my insights with members from the organization. Thus, I tried to ensure that the concepts I derived were not based on my own interpretation of what occurred in the field (Yin, 2003). *Researcher's voice:* Similarly to the member check, I discussed my data with my colleagues as well as renowned researchers in the field of strategy and qualitative methods. In this way, other possible interpretations and perspectives allowed for the elucidation of a better picture of the phenomenon under investigation (Yin, 2003).

Criteria of Validity

To validate my derived theoretical constructs and for the claim of generalizability, I made sure to meet the validity criteria for qualitative research, such as *construct validity, internal validity, external validity* and *reliability* (Yin, 2003; Patton, 1990). *Construct validity* is particularly important during the data collection phase. To ensure that the phenomenon in question is indeed being studied, it calls for multiple data sources to ensure data triangulation (Yin, 2003). Therefore, I collected different data types using different methods: (1) I gathered semi-structured reflective interviews (Alvesson, 2003; Gioia et al., 2012), (2) I participated as an embedded observer in meetings (Kwon et al., 2014), (3) I spent time as an organizational member in the organization with my own desk and (4) I collected archival data (Yin, 2003). To meet *internal validity,* it is important to handle data and findings using multiple data analysis techniques (Yin, 2003). Using several techniques for data analysis, such as coding, visual mapping, temporal bracketing, member check and researchers voice, I additionally made sure to establish a coherent understanding of the unit of analysis. For generalizability, *external validity* is particularly important (Yin, 2003; Miles & Huberman, 1994). By

establishing and comparing multiple cases of the phenomenon in question substantiated by the data, replication of the identified constructs can be shown (Miles & Huberman, 1994; Eisenhardt, 1989a). For instance, by coding and summarizing several occurrences of the emergence of one heuristic, I could show that the derived theoretical construct was consistent throughout the data. *Reliability* in qualitative research is derived from the documentation of the entire research procedure (Yin, 2003; Eisenhardt, 1989a). To show the consistency of my research, I documented every step I made from data collection to data analysis. The interview protocols and transcripts, graphics and tables show the analytical steps of my research, how I approached the phenomenon of organizational heuristics, and how I derived my theoretical concepts (Eisenhardt, 1989a).

Summary of Essays

Paper 1: Organizational Heuristics: Towards a New Understanding of Organizational Judgment in Strategic Decision Making

This conceptual paper proposes an understanding of the mechanisms of organizational heuristics by drawing upon the organizational, strategic and individual decision-making literature. It builds the case that, across the descriptive decision-making literature on organizations, the research has focused on different kinds of rationality instead of explaining the decision constructs, which are used when rationality assumptions no longer prevail. For Simon (1986), it is the concept of bounded rationality, which explains why organizational members judge, in form of satisficing (good enough) decisions, when coping with uncertainty in decision processes. In their behavioral theory of the firm Cyert and March (1963) extend the notion of bounded rationality to adaptive rationality to explain judgments in organizations. In their understanding, judgment evolves as a process and adapts along the way by relying on

experience (Cyert & March, 1963). The most radical view proposed by the garbage can model advocates that decisions are dependent on social interaction and social interaction arises by chance (Cohen et al., 1972). Thus, decisions in the form of judgments are made based on contextual rationality or no rationality at all (Cohen et al., 1972). In strategic decision making, the notion of extra rationality is discussed by emphasizing the insightful role of the decision maker in strategic decision-making processes (Langley et al., 1995).

Across these important theories on how decision making in organizations occurs, judgment is usually simply seen as a cognitive short cut of a biased mind. Only recently literature on strategic decision making under uncertainty advocates that organizations learn heuristics, such as rules of thumb, to cope with uncertainty (Bingham & Eisenhardt, 2011; Bingham & Eisenhardt, 2014). Heuristics as constructs of judgment allow organizations to foster fast and frugal decision making in their strategy processes. While Bingham and Eisenhardt (Bingham & Eisenhardt, 2011) provide us with valuable insights into organizational judgment, their findings are preliminary insights into the construction logic of heuristics.

This paper aims at closing this gap by drawing upon the prominent literature in cognitive psychology on the mechanisms of individual heuristics and formulates propositions for the conceptualization of organizational heuristics. The notion of judgment using heuristics is discussed prominently in cognitive psychology. While there is a debate about whether heuristics are superior or inferior to more analytical decision models (Kahneman & Tversky, 1973; Kahneman et al., 2011; Gigerenzer, 2008; Gigerenzer, 2007), there is also a research stream showing that heuristics are not just simple constructs as simple rules (Gigerenzer & Todd, 1999). Building on these insights, the conceptualization of organizational heuristics in this paper based on propositions illustrates the reasoning processes involved in decision making by organizational heuristics. Mainly, this paper proposes what kinds of rules constitute a heuristic and how they are selected. This goes beyond disclosing the mere

existence of simple rules. The concept of organizational heuristics contributes to our understanding of organizational and strategic decision making under uncertainty and enriches strategic and organizational research. Furthermore, it enhances our understanding of strategic learning by outlining the complex mechanisms, which organizations learn over time while gaining process experience.

Paper 2: The Complexity of Simple Rules in Strategic Decision Making

This essay establishes an understanding about the mechanisms of organizational heuristics. In strategic processes, organizations have to cope with uncertainty when making decisions (Eisenhardt, 1989b; Eisenhardt & Bourgeois, 1988; Davis et al., 2009). Hence, recent research advocates the importance of concepts such as heuristics and simple rules (Bingham & Eisenhardt, 2011). Simple rules and heuristics are rules of thumb that organizations practice during strategy processes (Bingham & Eisenhardt, 2011; Bingham & Eisenhardt, 2014). Because of their simple structure, the authors argue that by using simple rules and heuristics, firms are able to make decisions quickly in their strategy processes (Bingham & Eisenhardt, 2011; Bingham & Eisenhardt, 2014; Davis et al., 2009). Additionally, simple rules and heuristics are learned from experience and, therefore, are frugal decision techniques for strategic decision making under similar circumstances (Bingham & Eisenhardt, 2011; Bingham & Eisenhardt, 2014). However, despite Bingham and Eisenhardt's (2011; 2014) findings that these constructs are learned from experience, little is known about how they actually function.

Concurrently, the topic of heuristics is heavily debated in cognitive psychology. Researchers argue that, particularly due to uncertainty, heuristics are rational decision methods that lead to the best possible decisions (Gigerenzer & Brighton, 2009). This line of research advocates

that heuristics are complex rule patterns consisting of specific building blocks (Gigerenzer & Gaissmaier, 2011). Therefore, the underlying paper seeks to investigate the mechanisms of organizational heuristics based on the suspicion that heuristics are more complex decision constructs as suggested by the strategic decision-making literature (Gigerenzer & Gaissmaier, 2011; Vouri & Vouri, 2014).

Based on an empirical study, the second paper disentangles the decision constructs researchers usually sum up under the term judgment (Mintzberg et al., 1976). The paper shows that decision rules are indeed not as simple as suggested and that organizations exercise if/then rules, rule patterns and emotional handling when dealing with strategic challenges. If/then rules are rules that are formulated around a threshold. Thresholds can be quantitative as well as qualitative. While this decision construct comes close to the notion of simple rules, in the context of this dissertation, rule patterns are more intriguing. Rule patterns consist of a sequence of single rules: information gathering rules, termination rules and information evaluation rules. These single rules originate from different sources of experience, such as organizational experience, individual experience and industrial experience. However, the linkage and application of these rules within the rule pattern is an organizational activity and results from organizational action. Emotional handling is a category for all kind of decisions made based on a feeling or intuition (Akinci & Sadler-Smith, 2012; Khatri & Ng, 2000).

A closer investigation of rule patterns makes a conceptualization of organizational heuristics possible. As a result, organizational heuristics are rule patterns that consist of several interlinked single rules. These single rules allow for the handling of complex strategic problems and narrow down a problem to a manageable set of alternatives. Due to the influence of several origins of experience and due to the sequential structure, organizational heuristics capture two important organizational factors. First, strategic problems do not have

to be solved in seconds. This is different from the sportsmen in Gigerenzer's studies, who have to decide within seconds where to pass the ball. The involvement of several rules incorporates the opportunity to take time to make a strategic decision. Second, in strategic decision making, several actors are involved and not only one individual. This is particularly incorporated in the organizational heuristic by the influence of different accumulated experiences.

This paper makes three important contributions to strategic decision-making research. First, by introducing the framework of organizational heuristics, it captures the complex reasoning process of organizations. Second, it provides an extended understanding about the strategic learning processes of organizations by offering an understanding of how different experience origins interact in simplification processes. Finally, it advocates for future research that, instead of trying to answer the question of whether heuristics are good or bad, research should focus on the way in which organizational heuristics are constructed.

Paper 3: How Organizational Heuristics Emerge in Strategy Making

Based on the insights from the previous paper about the inner mechanisms of organizational heuristics, this essay seeks to understand how organizational heuristics actually emerge and come into being. A promising avenue to understand this process allows the adoption of the strategy as practice lens. The strategy as practice perspective advocates that for understanding social practices in organizations research has to focus empirically on everyday interactions in organizations (Whittington, 2006; Jarzabkowski & Paul Spee, 2009). That means an ethnographic immersion into the field is necessary to observe strategizing activities, such as sayings and doings evolving around strategy in organizations (Jarzabkowski et al., 2007). Therefore, building on a practice perspective, this paper draws on data from an ethnographic

case study in the internet industry to develop a process model that explains the emergence of organizational heuristics in strategy processes.

The paper develops a process model of the emergence of organizational heuristics. Organizational heuristics come into being going through three phases: Coping, converging and connecting. In the coping phase, participants engage in mainly information gathering activities to make sense how to address a strategic problem at hand. During the converging phase, organizational members find a common understanding by information providing about what worked best and formulate via discussion lessons learned in the form of rule patterns. Finally, in the connecting phase, participants decide to adapt these rule patterns to similar problems. If the rule patterns perform as anticipated, they are repeatedly reused in strategic decision making and, therefore, lead to organizational heuristics. If they fail the expectations of the participants, they serve as input in form of new experiences in the coping phase, and the process iterates. These phases are interlinked by actions, such as observing, transferring and aligning. To move from one phase to the other, the moderators recognition, legitimacy and motivation are of crucial importance because they foster the interlinkage between the phases.

This essay contributes to strategic management research in three important ways: First, it provides a process model about how organizational heuristics emerge and extends our understanding of how decision rules are created, maintained and institutionalized. Second, the model shows that the usually separately discussed decision-making models, such as decision making by ‘satisficing’ (Simon, 1955), decision making by ‘simple rules’ (Bingham & Eisenhardt, 2011) and decision making by ‘standard response’ (March, 1988), all interact during the emergence of organizational heuristics. Third, this study adds to strategy as practice research stream by showing that heuristics are strategy practices. Until now, decision-making practices have only been mentioned but not investigated by the strategy as practice community.

Areas of Synergy and Contribution

My dissertation is comprised of three papers and explores organizational heuristics, their mechanisms and their emergence. Each paper builds on the previous one, allowing for a comprised and multifaceted understanding of organizational heuristics. This dissertation makes five important contributions to the descriptive strategic management stream. First and foremost, this dissertation introduces the concept of organizational heuristics and provides an extensive understanding of their functioning and emergence in strategic decision making. Second, my dissertation enriches the strategy as practice debate by showing that organizational heuristics are prominent decision practices in strategy making of organizations. Third, it adds to the organizational decision-making debate by revealing that the usually separately discussed prominent decision-making models can indeed go hand in hand being interlinked during the process. Fourth, the dissertation highlights and extends the understanding of the strategic learning capabilities of organizations. Finally, in a broader sense, this dissertation contributes to institutional theory by taking a practice perspective on institutionalization processes with regard to the development of decision rules.

(1) As outlined in the sections above and in the first paper of this dissertation, the organizational and strategic decision-making literature is heavily concerned with the question of rationality in decision making. Despite Bingham and Eisenhardt's (2011) study on simple rules, there has not yet been an attempt made in strategic management to explain what kind of decision constructs organizations use to cope with uncertainty and how they function. There are studies in strategic management problematizing heuristics (Schwenk, 1984; Maitland & Sammartino, 2014; Meszaros, 1999), but they focus on individual heuristics managers in strategic processes use. Bingham and Eisenhardt (2011) write about the simple rules of firms, but for them, simple rules are organizational because several organizational members

mentioned them in their study. Beyond that, the organizational component is missing in their explanation of simple rules and more importantly in the structure of simple rules.

By developing an understanding what organizational heuristics are, how they function and how they emerge in strategy making, the dissertation contributes significantly to the descriptive strategic management debate. Because organizational heuristics in strategic decision making have substantial influences on strategy making and, thus, long-term consequences for organizational action, it is important to understand this decision construct and to be sensitize to how it occurs. March (1981) argued that rules predominate organizational decision making and, thus, it is important to understand how they are created and maintained. My dissertation shows that heuristics are not as easily applied and abstracted from experience as Bingham and Eisenhardt (2011) claim. For heuristics to be articulated and used, organizational members have to engage in a process of meaning creation, which is more complex than just formulating rules of thumb.

(2) In recent years, the strategy as practice stream is experiencing an increasing prominence in the field of strategic management. As explained in the sections above, they are concerned with the underlying dynamics of strategy in organizations (Whittington, 2006; Whittington, 2007). Building on the so-called practice turn in the social sciences (Schatzki, 2006), they argue that, to understand strategy, the focal point of research should be the practices involved in strategizing (Jarzabkowski et al., 2007; Geiger, 2009). In that vein, every action involved in strategy making is of importance. Interestingly, despite the mentioning of the existence of decision practices (Schatzki, 2006), strategic decision making per se has not received much attention. This is surprising because strategic decision making is an integral part of strategy processes (Hendry, 2000).

Therefore, this dissertation marks an important contribution to the strategy as practice debate by showing that organizational heuristics are strategy practices organizational members use to

cope with challenges and uncertainty in strategy making. On basis of the ethnography in the third paper, the practice-based perspective of the study allows drawing conclusions from the findings about organizational heuristics and conceptualizing these findings as practices. Following Schatzki's (2006) understanding of practices and his proposed core phenomena of practice, the process of the emergence of organizational heuristics reveals correspondent characteristics. For Schatzki (2006), these practices are social ways of doing, engrained in organizational memory, supervised by more experienced organizational members, disposing over an inherent teleological structure and built on a shared understanding of the problem at hand. As the third paper shows, all of these properties are also inherent to organizational heuristics and can be derived from the process model in the third paper. Furthermore, the process model shows that, not only are organizational heuristics strategy practices, but the way in which organizational heuristics emerge is also governed by decision practices.

(3) The third important contribution to strategic decision making and organizational decision making is the finding that usually separately discussed prominent decision models are interlinked during the process, leading to the emergence of organizational heuristics. This is not only an important but also a surprising finding. These models are the decision making as satisficing perspective of Simon (1955), the decision making as simple rules model of Bingham and Eisenhardt (2011) and March's (1988) notion of standard response decision making. All three perspectives are seen in the literature as idiosyncratic understandings of the ways in which decision making in organizations occur. The view that these models might actually work hand in hand provides a valuable perspective on decision-making processes in organizations.

The third paper shows that, in each phase of the emergence of organizational heuristics, one of the above decision models prevails. In the coping phase, the organizational members engage in satisficing because they try to find a good enough decision for the way in which to

address the challenge at hand. During the converging phase, the organizational members derive lessons learned from experience, which means that they derive simple single rules from processing experience. Finally, in the connecting phase they apply the rule pattern or heuristic as a standard procedure to come to a decision for a similar strategic problem. Thus, all three models interact and take part in the emergence of organizational heuristics.

(4) A more recent stream of research tries to understand how organizations can learn for and from strategic processes (Sirén, 2012). This learning is called strategic learning and is particularly concerned with the way in which insights from strategy processes can influence similar strategy process (Sirén, 2012). We already know from Bingham and Eisenhardt (2011) that organizations learn simple rules and heuristics from experience. However, we do not know how these experiences accumulate in rules.

This dissertation adds to this understanding by taking the suggested experience abstraction of Bingham and Eisenhardt (2011) one step further. Focusing on the conceptualization of organizational heuristics as provided by the second paper, two new insights are of particular importance. First, organizations do not only learn rules from experience, but they also learn their linkage. As the model of the mechanisms of heuristics from the second paper shows, several rules originate from different experiences and are interlinked in the rule pattern, which constitutes the organizational heuristic. Second, rules are abstracted from different sources of experience into one organizational decision practice to use in strategy making.

(5) Finally, the dissertation contributes to institutional theory and the way in which rules in organizations are institutionalized (Meyer & Rowan, 1977). While there exists a conceptual understanding of the way in which intuitions can result in institutionalized constructs (Crossan et al., 1999), an empirical study of this phenomenon is missing with regard to the emergence of rules. Because institutionalization is a mostly unconscious process, which, the

further it advances, the less reversible it is (Phillips et al., 2004), it is important to understand how it proceeds and in what way simple doings and sayings guide the process.

Despite the similarities to the process formulated by Crossan et al. (1999), the internal dynamics within each phase provide a deeper understanding of how institutionalization occurs. The accumulation of ideas and suggestions into one heuristic is governed by step-by-step actions, such as information gathering, information providing and decision making. These actions play a crucial and changing role over time during the process. In the coping phase, information gathering characterizes the discussions of organizational members. This provides participants with the opportunity to generate a shared understanding. In the converging phase, discussions are mainly characterized by information providing. Here participants articulate shared understandings in the form of lessons learned. In the connecting phase, decision making dominates in form of the application of a heuristic.

The model also reveals different sustaining moderators of the process as suggested by the literature. Crossan et al. (1999) argue that context, recognition and members are the key components influencing institutionalization. However, my study shows that rather recognition, motivation and legitimacy are the important moderators for the emergence of heuristics. First, recognition of the situation at hand and recognition of similarities to previously experienced or discussed themes allows for passing from one phase to the other. Second, motivation is a key factor for organizational members to participate actively in these phases and beyond. For organizational heuristics to emerge across the organization, motivation is crucial. Thus, organizational members exchange experiences and insights across the organization beyond strategy meetings. Third, legitimacy based on expertise or hierarchy allows for summarizing insights into rules so that, at some point in time, they are not challenged anymore. This leads to the possibility of their reapplication.

Future Research

By enriching the strategic decision making and strategy as practice literature with the concepts and the model of how organizational heuristics function and emerge, this dissertation marks an important path for promising future research.

First, based on the first and second paper, the importance of experience and the interplay of different experience origins are highlighted. The question of when which experience plays what role within the rule pattern of the organizational heuristics would be interesting to investigate. For instance, are individual experiences or industrial experiences more important for information gathering and information evaluation rules? Are the first iterations of information gathering and termination rules important for industrial experiences? Does the influence of an individual experience grow as the problem becomes narrower?

Second, the dissertation focused on the construct of the organizational heuristic. A next step would be to understand in what way and how the content of organizational heuristics either allows for a wealth of organizational actions or closes the window of opportunities. In the latter case, organizational heuristics would lead to path dependency in organizations.

Third, the process of how organizational heuristics emerge gives a first hint regarding the conscious and undeliberate action within the emergence of organizational heuristics. This would be an interesting avenue to investigate in depth. The data suggest that the first and second phase, coping and connecting, are highly undeliberate actions; in that sense, organizational members do not consciously abstract rules from experience. However, the application of these rules in the form of an organizational heuristic is highly deliberate. Thus, the question would be during which phase does each way of engagement prevail? In addition, why is the engagement the way it is and is this kind of engagement crucial for the emergence of organizational heuristics?

Fourth, building on the contribution that organizational heuristics are practices, it would be an interesting endeavor to investigate the role of this practice in strategizing. That is, does the practice of organizational heuristics have a dominating or less dominating role in the strategy process with regard to several dimensions? For instance, does this practice demand a lot of time or resources and members? Are the outcomes of this practice significant or insignificant for future action? Alternatively, under which conditions do organizational heuristics influence the strategy process?

Fifth, an interesting perspective would be to investigate in what way organizational heuristics influence organizational routines. Are organizational heuristics the first microstructures of organizational routines? How can organizational heuristics result in organizational routines? Moreover, if they do, are they still efficient in that sense that they lead to fast decision making? What is the consequence of the loss of their simplicity?

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First Dissertation Paper

Organizational Heuristics: Towards a New Understanding of Organizational Judgment in Strategic Decision Making

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Abstract

Recent literature on strategic decision making advocates that organizations learn simple rules such as rules of thumb to cope with uncertainty. Although simple rules provide an impression of how judgment in organizations occurs and although judgment gains importance in strategic and organizational research, an in-depth understanding of organizational judgment and its facet such as heuristics remains missing. This paper aims at closing this gap by drawing upon prominent literature in cognitive psychology about the mechanisms of individual heuristics and formulates propositions for conceptualizing organizational heuristics. This conceptualization illustrates the reasoning processes behind organizational heuristics and goes beyond disclosing the mere existence of simple rules. The concept of organizational heuristics contributes to our understanding of organizational and strategic decision making under uncertainty and enriches strategic and organizational research. Furthermore, it enhances our understanding of strategic learning by outlining the complex mechanisms which organizations learn over time while gaining process experience.

Keywords: strategic decision making, judgment, organizational heuristics, simple rules

Introduction

Strategic decision making is a central and critical process for organizations, which has received significant attention in organizational and management research (Mintzberg, 1978; Schwenk, 1995; Eisenhardt & Bourgeois, 1988; Hendry, 2000; Gary et al., 2012; Andersen & Nielsen, 2009; Wall & Greiling, 2011). The descriptive research on this topic seeks to explain how firms handle the problem of uncertainty in decision making under revised rationality assumptions (March & Heath, 1994; Simon, 1945; Simon, 1960). These streams widely accept the limitations of traditional rationality and constantly modify the rationality assumptions resulting in bounded, adaptive and extra rationality premises (March, 1978; Langley et al., 1995; Mantere & Ketokivi, 2013). Building on this development I argue that when rationality assumptions no longer prevail and alternative concepts of reasoning gain increasing importance (Mantere, 2005; Cornelissen & Clarke, 2010), organizational judgment should be taken more seriously in the organizational and strategic decision making debate. Judgment, which comprises heuristics for instance, is usually simply seen as a cognitive limitation of a biased mind, however the question of how organizations exercise judgment and how organizations learn to make fast und frugal decisions stays mostly unanswered. Just recently the concept of simple rules was introduced by Bingham and Eisenhardt (2011; 2007) to provide preliminary insight into how organizations learn to exercise judgment. Based on their empirical studies in high-tech industries, Bingham and Eisenhardt (2011) are able to show that firms cope with dynamics and uncertainty by using so-called simple rules that originate from processing experience (Bingham & Eisenhardt, 2011). These simple rules are fast and frugal decision constructs such as rules of thumb, which firms apply to cope with uncertainty particularly in highly dynamic markets (Bingham & Eisenhardt, 2011).

These studies provide valuable insights into organizational judgment; however, a fine grained understanding of organizational judgment and its inner mechanisms stays missing. This paper

aims at closing this gap on two levels. First, I seek to underline the increasing importance of organizational judgment by drawing upon prominent organizational and strategic decisions making debates (e.g. Cyert & March, 1963; March, 1981; Cohen et al., 1972; Langley et al., 1995; Eisenhardt & Zbaracki, 1992; Bingham & Eisenhardt, 2011). Second, since heuristics are usually also referred to as rules of thumb, I refer to the cognitive psychology debate which explores individual heuristics and its inherent mechanisms (e.g. Gigerenzer & Gaissmaier, 2011; Kahneman, 1991). Building on these insights I propose a concept of organizational heuristics, by formulating propositions which particularly stress the organizational aspect of heuristics.

My study contributes to organizational and strategy research in three ways. First, this study distills the importance of organizational judgment in strategic decision making. Second, it highlights judgment as a primary component of strategic processes. In this vein I provide a theoretical framework for organizational heuristics and propose an elaborate understanding of its inner mechanisms which goes beyond the notion of simple rules. Third, it proposes an explanation of the complex inner mechanisms of organizational heuristics which shed new light on the question of what firms actually learn when they gain strategic process experience.

This paper is organized into three main sections. First, I introduce literature on organizational and strategic decision making to distill judgment as a primary component of decision making process in organizations. Second, I introduce the framework of individual heuristics based on insights from cognitive psychology. Here, I especially built on the work of Gigerenzer et al. (2009; 2011), who explore the inner mechanisms of heuristics. In the final section, I use insights from cognitive psychology as an inspiration for developing preliminary propositions about the process and mechanisms that might underpin organizational heuristics. The discussion shows that organizational heuristics is a complex process which is far more sophisticated than just exercising simple rules.

Decision Making and the Ambiguity of Rationality

The question of how strategies in organizations are formulated and decisions are made serves scholars for many years as a fascinating field of research (Cyert & March, 1963, Lindblom, 1959, March & Heath, 1994, March & Olsen, 1986, Ungson et al., 1981, March & Simon, 1958, March, 1988). Ever since Simon (1955) pioneered in challenging the assumptions of rational choice, there has been a rise of descriptive research seeking to understand how organizational and strategic decisions are actually conducted (e.g. Eisenhardt & Bourgeois, 1988; Eisenhardt et al., 2010; Bingham & Eisenhardt, 2011; Jarzabkowski, 2008; Langley et al., 1995; Mintzberg & Waters, 1990). This chapter aims to unfold the underpinnings of decision making research to highlight judgment as a central but mainly unexplored decision making construct.

Organizational Decision Making and Bounded Choice

In his pioneering work Simon (1955; 1956; 1978) established a fundamental critique of the traditional economic model based on the assumptions of rational choice. He argues focusing on the interdependencies of individuals, the environment and organizations that individuals and organizations have to reduce the complexity of the context they are operating in order to make decisions (Simon, 1955). The complexity of decisions is particularly unmanageable by rational mean, because of the inaccessibility of relevant information and their underlying subjective understanding due to differing perceptions and conflicts of interest. Reducing the complexity means simplification of the context at hand. This is particularly achieved by tackling the complexity by applying judgment. For Simon (1955) judgment takes place in a constrained choice space, where the set of information is manageable due to the inherent boundaries. Within this choice set one is able to judge rationally in such a way that a "good enough" decision is made (Simon, 1955; Cyert et al., 1956; Simon, 1978). Whereas full or omnisciently rationality would entail the capability of accessing all information and

computing on this basis a “best” decision, Simon (1955), Cyert and March (1963) argue that this kind of rationality is not accomplishable. Attainable rationality is only achievable by satisfycing instead of maximizing in a simplified search space. Even though the optimal solution might exist, one will never be able to find it deliberately, because one would never know about its optimality since the knowledge about all possible alternatives is not attainable (Simon, 1978). Hence, decision making takes place under bounded or limited rationality (Simon, 1955; Cyert et al., 1956; Eisenhardt & Zbaracki, 1992; March, 1978), bringing judgment to the fore of the debate. Building on a study of business decisions Cyert, March and colleagues (1956; 1963) go one step further by arguing first that decisions are an outcome of decision processes. Secondly, they postulate that even in case of adequate information, the ambiguity within these organizational decision processes is too severe to be manageable by bounded rationality (March, 1978). Attribution, attention, interpretation of information, rule following instead of preference following and limited time increase the ambiguity of organizational decision processes substantially, which goes beyond the ambiguity of information or preferences. Particularly strategic problems do not follow a given pattern, lack concreteness and have to be detected first (Cyert et al., 1956). Consequently organizational decision making is not only bounded by constraints but also highly interdependent with these constraints within it occurs. Hence Cyert and March (1963) stress that we have to understand organizations no longer as omnisciently rational systems, but as adaptively rational systems (Cyert & March, 1963: 102). They subsequently claim that instead of long run planning, organizations tend to rely on different kind of rules and search procedures (e.g. simple rules, SOP’s, industry practices) to avoid as much uncertainty as possible in adaptive decision making processes (Cyert & March, 1963). Therefore decision making takes a form of judgment, by relying heavily on experience, which are stored in the memory base of the organization (March, 1978). However, casting doubt on the ability of our minds to distill optimal decisions, Simon (1955), Cyert and March (1963) start from the premise that

individual search in decision making follows a deliberate, consequential understanding of choice. Yet, later studies reveal the inaptitude of this assumption and call for a revised understanding of this perception of choice (March, 1988; March, 1991; Cohen et al., 1972; March & Olsen, 1979).

Organizational Decision Making and Ambiguity

Building on the multifacetedness of ambiguity, March and Olsen (1979) stress that organizational decision making procedures exhibit even more unintentional characteristics then the premises of bounded and adaptive rationality might suggest. Organizational and individual decision making is not only lacking computational capacities for deciding, but it is also confronted by complex degrees of ambiguity in choice processes preceding decisions (March & Olsen, 1979; March, 1991; March, 1978). Particularly for organizational decision making these ambiguities materialize in the intentions behind motives and objectives, in the understanding of technologies, in the interpretations of the past, in the variation of attention and preferences as well as in the understanding of causal connections and relevance (March & Olsen, 1979; March, 1988; Cohen et al., 1972; March, 1972). Additionally participants often lack a clear understanding about the aim of decision processes in organizations (March & Olsen, 1979; March, 1962; Cyert et al., 1958; March, 1972; Eisenhardt & Zbaracki, 1992). The decision making process reveals a more systematic than calculated intelligence, meaning that during the process knowledge accumulates over time and across people and organizations without a clear understanding of its past (March, 1978). Moreover, the decision making process is influenced by the allocation of attention, arising conflicts within the organization and by rules participants follow automatically without conscious scrutinizing (Cyert & March, 1963; March & Olsen, 1979, Cyert et al., 1958; March, 1962; March, 1978; March, 1988; March, 1991). These influences and multifaceted kinds of ambiguities imply that decision making processes not necessarily result in a decision or an action (March & Olsen, 1979;

Mintzberg & Waters, 1990). Additionally, external effects might force decisions which not even resemble internal organizational preferences at all (March & Olsen, 1979). Taken together, the context of decision processes is changing over time and might trigger different responses from individuals, the organization and/or the environment and are therefore embedded in the complexity of social interactions allowing at best for contextual rationality (March, 1978; March & Olsen, 1979). Here judgment promises to be sensible, since it is sensitive to cognitive relations and social interactions, which are only revealed in process and not a priori (March, 1978). Since such complex decision situations are common in firms, Cohen, March and Olsen (1972: 2) argue that in organizations "decision opportunities are fundamentally ambiguous stimuli". This perception leads to the garbage can model of organizational decision making (Cohen et al., 1972). Here decisions are seen as outcomes or interpretations of a messy process of interactions between problems, solutions, participants and choices which are created and combined by chance (Cohen et al., 1972). As a result, at its extreme, the garbage can model does not assume any kind of rationality at all but emphasizes an anarchical process of social interaction and judgment in decision making processes (Langley et al., 1995).

Strategic Decision Making and Intuition

Similarly to the classical organizational decision making debate, research on strategic decision making seeks to understand which role decisions play in strategic processes and more importantly, how these are conducted. Particularly research by Mintzberg et al. (1985) explores strategic decision making in organizations, especially on the collective managerial level. Decisions in a strategic decision process are seen as the commitment to action (Mintzberg, 1978) and take place within complex organizational structures (Mintzberg & Waters, 1985). Moreover decision processes can materialize as interrelated patterns of action, exhibiting an erratic nature and occurring mostly in the absence of observable intentions.

(Mintzberg & Waters, 1990; Langley et al., 1995). Therefore strategy processes might arise from one single decision or from non-detectable decisions at all (Mintzberg, 1985). Consequently decisions preceding actions in strategic processes cannot always be retrospectively reconstructed (Mintzberg, 1985; Langley et al., 1995; Mintzberg, 1981). Moreover, Mintzberg et al. (1976: 250) stress that strategic decision processes exhibit characteristics such as "[…] novelty, complexity and open-endedness […]" and make it therefore impossible to follow prior plans. Consequently, Mintzberg et al. (1976: 258) emphasize the importance of judgment, which arises when "one individual makes a choice in his own mind with procedures that he perhaps cannot explain". Since judgment is a rapid and convenient decision technique, Mintzberg et al. (1976) argue that it provides an adequate way of decision making in such complex decision processes. Langley, Mintzberg and colleagues (1995) advance this idea by pointing at the impact of individuals influencing strategic decision making, because the root of strategic decisions lies within the individual. Building on their argument decision making processes are substantially driven by several manifestations of intuition and insight, which create a form of extra rationality "achieving desired ends, even more rational than conventional rationality" (Langley et al., 1995: 267). As a result they propose a strategic decision making model as insightful and driven by inspiration, converging into one trajectory over time (Langley et al., 1995).

Strategic Decision Making and Simple Rules

A more recent approach on strategic decision making and judgment is concerned with decision capabilities firms learn over time (Eisenhardt and Bourgeois 1988; Eisenhardt et al. 2010; Eisenhardt and Sull 2001; Eisenhardt and Zbaracki 1992; Bingham and Eisenhardt 2011; Bingham et al. 2007; Brown and Eisenhardt 1997; Davis et al., 2009; Eisenhardt and Zbaracki 1992). This stream advocates that the debate around rationality in decision making has to move forward from Simon's (1955) bounded rationality and March and Olsen's (1972)

garbage can model because these models are almost as realistic as the assumption of perfect rationality (Eisenhardt & Zbaracki, 1992). Instead, decision maker would neither have as primitive cognitive capacities as assumed in the garbage can model, nor would they dispose over unlimited cognitive capacities to make decisions with full clarity about its consequences (Eisenhardt & Zbaracki, 1992). Hence new research should deal with the cognition of the decision maker (Eisenhardt & Zbaracki, 1992) and therefore judgment should be taken more seriously. Consequently Eisenhardt and Sull (2001) are interested in the question how organizations decide to cope with strategic decision making processes, especially in highly unpredictable environments. According to Eisenhardt and Martin (2000: 1106), detailed decision-making routines and procedures only apply to strategic decisions in moderately dynamic environments, whereas in highly dynamic environments firms have to rely on simple, experiential, unstable decision-making processes that "[…] rely on quickly created new knowledge and iterative execution to produce adaptive, but unpredictable outcomes". Building on their findings they propose that under uncertainty firms rely on a simple-rule strategy for decision making. The core of simple rules consists of heuristics, here understood as cognitive short cuts, which are used when information, time, and processing capacity are limited (Bingham & Eisenhardt, 2011; Bingham & Haleblian, 2012). Instead of seeing simple rules as inferior tools to avoid uncertainty (Cyert & March, 1963), they stress that this kind of judgment constitutes an effective and even rational decision making premises to deal with unpredictability (Bingham & Eisenhardt, 2011; Eisenhardt & Zbaracki, 1992; Bingham & Haleblian, 2012). They argue that relying on simple rules is essential for performance and therefore constitutes a rational, superior way of making strategic decisions in organizations (Bingham & Eisenhardt, 2011).

The Role of Judgment

As summarized in Table 1, the descriptive research on organizational decision making points to the often unpredictable and emergent nature of organizational and strategic decisions, which are based mainly on experience instead of deep analytical procedures. Uncertainty, ambiguity, internal complexity and history are central elements of organizational and strategic decisions. Despite the complexity of ambiguity individuals seem to deal with it in the best way they can by conducting judgment. Since the role of rationality is shifting towards a more cognitive understanding of reasoning (see Table 2), judgment increasingly plays a crucial role in decision making processes.

Insert Table 1 about here

Insert Table 2 about here

Nevertheless, although the explanatory model of rationality no longer prevails and the role of judgment gains importance, the literature lacks a deeper understanding about judgment and its inner mechanisms. Judgment is often seen as a residual category for decision making processes which cannot be explained by rational means. Instead I argue that judgment might underlie far more sophisticated inherent reasoning mechanisms than ascribed by prominent organizational and strategic decision making streams. A first impression of such mechanisms might be "simple rules" observed by Bingham et al. (2011) and Eisenhardt et al. (2001). But despite this observation a sound theoretical underpinning of simple rules is missing. An idea about how judgment might be exercised provides the prominent literature on cognitive psychology (e.g. Kahneman & Tversky, 1973; Kahneman, 2012; Gigerenzer & Gaissmaier, 2011). Here judgment and the biased mind are discussed intensively and might inspire that way an in-depth understanding of organizational judgment.

A Cognitive Approach to Judgment

In recent years, the debate on decision making and its underlying rationality assumptions has gained significant momentum within the field of cognitive psychology. Whilst ambiguity plays a crucial role in the organizational decision making the cognitive psychology approach rather focuses on the ability of individuals to make 'right' decisions.

Heuristics as a Cognitive 'Short-Cut'

Inspired by the concept of bounded rationality, Kahneman and Tversky (1972; 1973; Kahneman 1991) explored the actual judgment and prediction behavior of individuals facing a decision situation. In several experiments they tested the judgment ability of students and experts (Kahneman & Tversky, 1973; Kahneman & Tversky, 1972). The participants were presented with job descriptions or questions to which answers existed but were difficult to guess grounded on judgment alone. Based on this research, Kahneman and Tversky (1973) propose that the prediction behavior of people is affected by constructs such as representativeness and availability rather than by statistics, probability and the calculus of chance. Representativeness and availability are seen as heuristics, which "[…] sometimes yield reasonable judgment and sometimes lead to severe and systematic errors" (Kahneman & Tversky, 1973: 237). The results of the studies show that intuitive judgment is used to order evidence based on its representativeness, whereas considering prior probabilities and base rates would have yielded different solutions (Kahneman & Tversky, 1973). Heuristics can be rapidly and automatically applied without any further consideration of statistical knowledge. In their studies Kahneman and Tversky (1973: 239) show that participants ignore information that is important for statistical prediction, including (1) prior or background information (e.g., base rates), (2) specific evidence concerning the individual case and (3) the expected accuracy of the prediction. As a result, the researchers come to the conclusion that despite their statistical education, people fail to use statistical knowledge and instead are overconfident

with regard to their own judgment. Kahneman and Tversky (1973) argue that the disinclination to use prior probabilities in particular makes this type of decision making significantly different from statistical methods which will lead to correct decisions if used accurately and are thus the best tools to make decisions under uncertainty. They conclude that statistical inference would have been the right way to address the problems in question given the lack of knowledge.

In Kahneman et al's (2002; 2011; 2012) more recent work, the cognitive mind is separated into two systems. Whereas system 1 works intuitively and thus provides us with quick judgment responses to our environment, system 2 responds in a more reflective way by using deduction. System 1 can generate errors and requires the control of system 2 to correct those errors using rational rules (Kahneman & Frederick, 2002). Hence, as in his and Tversky's earlier studies, Kahneman et al. (1971; 2011) suggest that overconfidence in judgment should be distrusted and that a reflective computational mode of reasoning is preferable. They argue that decision processes should be validated using repeated reflective run-throughs to eliminate possible errors resulting from the ill-considered rapid judgments that can be induced by cognitive short cuts or heuristics (Kahneman et al., 2011).

Heuristics as a 'Rational' Strategy

Gigerenzer (2007) approaches the topic of heuristics from a different and more radical point of view, particularly in terms of his understanding of limited rationality. He argues that limited rationality is not something that occurs in controlled experimental settings in which participants fail to use statistical knowledge due to lack of knowledge about base rates (Gigerenzer & Gaissmaier, 2011). Rather, this lack of knowledge is inevitable and cannot be eliminated by generating more information because the assumptions that underpin the classical decision-making paradigm are generally invalid (Gigerenzer & Gaissmaier, 2011; 1989). The real world – or the *large world*, as Gigerenzer et al. put it (2011: 453) – is

characterized by situations in which relevant information is not accessible and in which the future is uncertain. According to Gigerenzer et al. (2009) and Simon (1955), the goal is not to find the optimal solution, which could be found if the person could process all of the necessary information. Instead, the goal is to identify a satisfying solution by exploiting experience. Thus, the aim is not to *maximize* the quality of the result, as in computational settings, but to *satisfice* the individual needs in a real world setting (Gigerenzer & Brighton, 2009). A heuristic, defined by Gigerenzer et al. (2011: 454) as a "[…] strategy that ignores part of the information, with the goal of making decisions more quickly, frugally, and/or accurately than more complex methods", makes the search for a satisfying solution rapid and effective (Gigerenzer & Gaissmaier, 2011; Gigerenzer & Todd, 1999).

Gigerenzer et al. (2009; 2011; 1999) stress the importance of the environmental context in which heuristics are used by referring to the notion of *ecological rationality*. Ecological rationality involves the identification of suitable heuristics in relation to the environmental context in question (Gigerenzer & Gaissmaier, 2011: 456). Characteristics such as (1) uncertainty: how well a criterion can be predicted; (2) redundancy: the correlation between cues; (3) sample size: the number of observations relative to the number of cues and finally; (4) variability in weights: the distribution of cue weights (Todd et al., 2011), increase the likelihood that the use of heuristics will be preferable to the use of computational models (Gigerenzer & Gaissmaier, 2011; Gigerenzer & Brighton, 2009; Goldstein & Gigerenzer, 2002). The more uncertain the environment is, the more interdependencies there are between the elements in question, the less available information there is and the lower the number of known cue weights, the more effective making decisions using heuristics instead of complex computational models will be (Gigerenzer & Brighton, 2009).

This provocative claim, which challenges the fundamentals of a variety of fields within prediction research, is theoretically and empirically substantiated by Gigerenzer et al. (2009).

Conducting empirical studies and looking more closely at the total error of prediction provided in various statistics textbooks, Gigerenzer et al. (2009) offer the following explanation regarding the superiority of heuristics to computational methods. Because the prediction error for an algorithm is defined as the total error= $(\text{bias})^2$ + variance + noise, it seems important to analyze the error and to more closely examine what these components actually entail. The total error of the function is generated by one underlying sample, whereas the bias is defined as the difference between the underlying function and the mean function generated from all other possible samples (Gigerenzer & Brighton, 2009). Obviously, there is zero bias if the mean function and the underlying sample function are identical. On the other hand, the variance is the sum squared difference between the mean function and each individual function of each sample. The overall goal of predictive algorithms is to minimize the *bias-variance dilemma*. To underpin his argument, he tested several computational models against several types of heuristics and verified that for small sample sizes with high interdependencies and unclear cue weights, heuristics generate more accurate predictions than complex models such as for example regression (Gigerenzer & Brighton, 2009). Consequently, heuristics are much more than cognitive short cuts (see Table 3).

Insert Table 3 about here

Taking the apparent empirical importance of heuristics into account, Gigerenzer et al. (1999; 2009; 2011) conducted several empirical studies on the functioning of heuristics and subsequently proposed that our minds resemble what they call an *adaptive toolbox*. This adaptive toolbox contains a variety of specific cognitive processes and mechanisms that are deeply engrained in our minds and that assist us in making inferences in specific situations (Gigerenzer & Todd, 1999). The components of this toolbox are cognitive heuristics, their building blocks and the core capacities that they exploit (Gigerenzer & Gaissmaier, 2011). These building blocks play a central role in the construction of heuristics and allow the

reduction of a large number of heuristics to a smaller number of components. The combination of these building blocks allows for the creation of heuristics, which can be adapted to new environments (Gigerenzer, 2008). The components can also "[…] be combined into a variety of decision mechanisms for choice, categorization, estimation, and other tasks" (Todd & Gigerenzer, 2000: 728). Gigerenzer and Todd (2000; 2009; 2011) suggest that the organizing principles of heuristics can be split into three building blocks: (1) search rules, (2) stopping rules and (3) decision rules (see Figure 1). Each of these types of rules serves an essential function in the rapid and effective use of cognitive heuristics. The search rule predetermines the search direction for cues and substantially limits the relevant search space. For example, one search rule lowers the aspiration level for a possible solution when the distance to the final search horizon is shorter. Thus, a decision can be reached before it is too late (Dudey & Todd, 2001: 212). Stopping rules are used to halt the search after 'enough' information has been generated. For example, one simple stopping rule requires a decision to be made as soon as the first cue that favors one option (i.e., the first reason for choosing that option) is identified. Furthermore, there is no need to compute an optimal cost-benefit trade-off analysis as the optimization models would suggest. Finally, the decision rule specifies how a final selection or decision is achieved. After a search rule has been used to find the appropriate alternatives or information and then has been halted, a final set of heuristic principles are used to make the decision based on the search results.

Insert Figure 1 about here

This set of building blocks is recomposed in each situation based on the environmental context and structure and thus produces a variety of different cognitive heuristics (see Table 4). A proposed set of heuristics from the adaptive toolbox is presented in Table 4.

Insert Table 4 about here

The selection of heuristics mainly occurs unconsciously (Gigerenzer & Brighton, 2009). Nevertheless, there seem to be three primary modes of selection: (1) the memory principle, (2) the feedback principle and (3) the environmental structure principle (Gigerenzer & Brighton, 2009: 129). The memory limits the choice of heuristics due to forgetting and facilitates the selection of heuristics that have previously been applied to similar situations (Gigerenzer & Brighton, 2009). According to the feedback principle, heuristics or rules that have been applied in the past will be passively applied to the same problems in the same way. Thus, the individual will always choose the familiar strategy from a set of strategies without any further consideration (Gigerenzer & Brighton, 2009). Finally, the environmental structure principle encourages individuals to recall previously applied heuristics and determine whether they should be used in the specific situation at hand (Gigerenzer & Brighton, 2009). The active attempt to understand the characteristics of the environment and their influence is important here.

Gigerenzer versus Kahneman: Understanding the Difference

Kahneman et al. (e.g. 1972) and Gigerenzer et al. (e.g. Gigerenzer & Gaissmaier, 2011) might seem to explore the same field of individual judgment in relation to heuristics. A closer look, however, reveals that both research streams address the concept of heuristics but they do so in fundamentally different settings. Interestingly enough, the two research camps differ substantially with regard to their understanding of the concept of bounded rationality and, consequently, their problem formulation. Kahneman and colleagues see bounded rationally as a cognitive limitation, a failure to use computational models over pure judgment via heuristics to address problems that have proper solutions. Furthermore, for Kahneman et al. (1973) uncertainty results from a lack of knowledge when the knowledge needed to solve the problem is accessible in principle. From this perspective, it is at least retrospectively always possible to determine the correct decision. A closer look at the settings of these studies reveals

that solutions to the problems preexist but are usually wrongly identified using judgment based on the evidence at hand instead of statistical knowledge. Obviously, in such settings, it makes sense to take time to reflect on one's own decisions and presumably to use statistical knowledge to arrive at a final decision.

Compared to Kahneman et al. (Kahneman & Tversky, 1973), Gigerenzer et al. (Gigerenzer & Gaissmaier, 2011) have a more ultimate understanding of the concept of bounded rationality. According to their thinking the environment is due to its complexity never fully understandable in principle, and it is therefore impossible to access all of the information that one would require to reach an optimal decision. From this perspective, the idea that optimal decisions and solutions exist is vastly misleading because this idea presumes that the relevant information is available in principle. Particularly in environmental settings such as the ones discussed above, heuristics are meant to provide a better way to determine a satisfactory solution without wasting too much time looking for an optimal solution that simply anyway does not exist. Uncertainty in this sense is the general inability to monitor and access all of the information that one would need to arrive at an optimal solution. Because of this uncertainty, it is also retrospectively impossible to decide whether the preceding decision process and the resulting conclusions are optimal.

Thus, both Kahneman et al. (Kahneman & Tversky, 1973) and Gigerenzer et al. (Gigerenzer & Gaissmaier, 2011) are interested in cognitive judgmental processes, but the actual decision problems that they study differ significantly. In Kahneman et al's case, heuristics lead to inferior decisions because individuals do not take all of the relevant information that might be available into account. Gigerenzer et al., on the other hand, discuss decision problems in which uncertainty is a fundamental characteristic. In these decisions, it is theoretically and practically impossible to acquire all of the information that is necessary to arrive at 'rational'

solutions. Basing decisions on heuristics is therefore the only remaining, 'rational' alternative in such circumstances.

Additionally, Gigerenzer et al. (2011: 459) conclude that competing decision-making models should be utilized not because of their compatibility with previously known data but because of their predictive nature. According to Gigerenzer et al. (2011: 459), organizations in particular provide the proper conditions for the use of heuristics because they are frequently required to make quick decisions under conditions of uncertainty. Hence, Gigerenzer et al. (2011: 460) suggest that the heuristic model of individual decision making and its building blocks can potentially be applied to organizational strategic decision making as well.

Towards a Concept of Organizational Heuristics

Organizations make strategic decisions under a high degree of uncertainty (Eisenhardt & Bourgeois, 1988). Environmental dimensions such as complexity, dynamism, ambiguity and unpredictability pose a particular challenge for organizations that must attempt to be both efficient and flexible (Davis et al., 2009; Dess & Beard, 1984). Complexity is often defined as the 'structure' of the environment. The level of environmental homogeneity or heterogeneity influences the degree to which opportunities and threats are detected and handled (Dess & Beard, 1984; Davis et al., 2009). Opportunities and threats can be complex in themselves and can be difficult to manage strategically under insufficient information (Davis et al., 2009). Dynamism is defined as the rate of environmental change, particularly unpredictable change. The speed at which opportunities and threats emerge and disappear is a significant element of dynamism (Davis et al., 2009; Dess & Beard, 1984). Obviously, the greater the environmental dynamism, the more rapidly strategic decisions must be made. Opportunities and threats do not present themselves as what they are; rather, they tend to be ambiguous and difficult to

interpret. As a result, environmental ambiguity is an important environmental factor: it poses the difficulty of understanding and isolating opportunities and threats from generalized noise (Davis et al., 2009). Last but not least, environmental unpredictability poses a challenge to strategic decision making because the environment does not follow consistent patterns (Davis et al., 2009). These four environmental dimensions generate a high degree of uncertainty in the process of analyzing and processing strategic decisions. Mintzberg et al. (1976: 250) suggest, "[…] a strategic decision process is characterized by novelty, complexity, and open-endedness, by the fact that the organization usually begins with little understanding of the decision situation it faces or the route to its solution, and only a vague idea of what that solution might be and how it will be evaluated when it is developed." The context of strategic decisions according to Davis et al. (Davis et al., 2009) is therefore substantially characterized by uncertainty, interdependencies and little information. This is exactly the environment Gigerenzer et al. (2011) is aiming at in his studies on individual heuristics. In contrast to Kahneman et al. (1973), who are exploring decision problems with existing solutions, the decision context of Gigerenzer et al. (2011) conforms with the research context of simple rules. Given the characteristics of strategic decisions and the properties of individual heuristics as outlined by Gigerenzer et al. (2009), it seems worthwhile to explore whether and how the concept of heuristics may be used to formulate propositions about organizational judgment (Gigerenzer & Gaissmaier, 2011). More concretely, Gigerenzer et al.'s (2009) framework helps us to better understand the inner mechanisms and functioning logic of organizational heuristics.

Further, according to Gigerenzer et al. (2009: 129), individuals use heuristics based on experience (the memory principle), they learn over time to select from a pool of heuristics (the feedback principle) and exploit their capacity to understand the context at hand (the environmental structure principle). This knowledge is stored in the individual's adaptive

toolbox (which consists of building blocks). As Eisenhardt and Bingham (2011) have explored, organizations learn heuristics as they gain process experience. As Gigerenzer et al. (2009) have indicated, heuristics are based on experiences that individuals gain over time. Like individuals, organizations also have the capacity to remember experiences and store knowledge in their organizational memory (Duncan & Weiss, 1979). As research on organizational knowledge has consistently shown, organizations are able to generate and store knowledge that is not simply the aggregate of individual knowledge (Gherardi, 2001). Organizations store knowledge in their procedures, practices and routines as well as in their norms, values and underlying culture (Schein, 1980). Organizational knowledge can range from explicit, codified knowledge that is stored in company handbooks, manuals and checklists (Zollo & Winter, 2002) to more anecdotal knowledge that is transferred through narratives and reflects the norms and values of particular communities (Geiger & Antonacopoulou, 2009; Orr, 1990). Hence, organizational knowledge resides in and is generated by organizational practices, and therefore, practices are often described as having an epistemic-normative nature (Brown & Duguid, 2000b; Gherardi, 2006): On the one hand, knowledge is generated in and transferred through organizational practices which reflects their epistemic nature. On the other hand, practices also implicitly regulate and define what knowledge is acceptable or not acceptable due to their normative nature. Thus, practices generate knowledge while also implicitly defining what knowledge is true or false (Geiger, 2009). Organizational practices thereby regulate what is and what is not part of an organizational knowledge base. It is important in this context to note that organizational practices are not mere aggregates of individual routines; instead, they reflect collective modes of doing things (Lave, 1990). Organizational practices emerge over time; they are historically contingent and reflect the experiences of a practicing community.

Thus, organizations have the capability to base their decisions on collective experience. Furthermore, organizational practices serve as a memory principle, recording past decisions and thereby also implicitly guiding future choices. Organizational practices sustain organizational memory, guiding the range of options that will be considered in future choices. Organizations develop practices related to decision making based on criteria that have been established from past decisions (Schoeneborn, 2011: 673). Relying on established decision making practices is therefore indispensable because it reduces the almost infinite number of potential options to a limited set of options, thereby transforming undecidable decisions into decidable ones. In this way, past decisions become the premise for future decisions (Luhmann, 2011). This allows formulating the following proposition:

> *Proposition 1a. Organizations have the capability and need to remember how they have made strategic decisions in the past (the memory principle).*

Additionally, like individuals, organizations receive and perceive environmental feedback and act upon it, both implicitly by continuously adapting their practices (Gherardi & Nicolini, 2002) and explicitly in double-loop learning (Argyris, 1976). In implicit learning, which is based on experience and trial-and error processes, organizations tend to reuse past strategies and apply them to future problems (Miller, 1990). This learning process leads to the constant refinement of organizational practices (March & Sproull, 1990). Building on their everyday experiences, practitioners ensure that particular practices continue to be practiced while simultaneously adapting to contextual circumstances (Geiger, 2009). Organizational practices can therefore be characterized as follows. First, they are recognizable patterns of action (Gherardi, 2006). Second, organizational practices imply implicit normative judgments regarding what is seen as good, true and beautiful (Strati, 1992; Gherardi, 2009). Third, organizational practices reflect the prior experiences and knowledge of a practicing

community (Brown & Duguid, 2000a). This makes it possible to derive the following proposition:

> *Proposition 1b. Organizations make judgments using recurrent decision patterns that are based on prior experiences (the feedback principle).*

However, organizations also have the capacity to learn in a more reflexive way through double-loop learning. As Argyris and Schön (1978) have noted, organizations have the ability to reflect upon the underlying premises of their actions and to modify them accordingly. This type of learning process entails a switch from practicing to an argumentative mode of reflection (Geiger, 2009: 139). This reflection enables organizations to actively assess if the action premises that are in use still apply within a changing environment. Hence, organizations can determine whether previous applied practices are still valid or whether they have to be reconsidered in light of new developments (Schreyögg & Geiger, 2007). Although organizational decisions are contingent in nature and are undecidable in principle von Foerster, 1992, organizations have the capacity to reflect on the way they encountered past decisions and observe their own judgments using second order observation (Luhmann, 2011). Organizations are therefore able to reflect upon the appropriateness of their decision making practices in light of the context in which each decision was made. This process should, however, not be confused with Kahneman's (2012) concept of system 2, in which we can make rational calculations. A second-order observer is again confronted with contingencies and his own blind spots and limitations. This observer is able to evaluate the actual decision premise but is blind to his own. Therefore, the possibility of reflecting upon decision premises does not turn judgments into rational, fully informed decisions. Instead, it enables organizations to reflexively choose between alternatives that are neither complete nor optimal. Reflecting upon decision premises may allow organizations to learn reflexively from past

decisions and apply past knowledge to novel situations in a non-intuitive way. Therefore follows the proposition 1c:

> *Proposition 1c. Organizations are able to judge reflexively based on the context at hand (the environmental structure principle).*

In summary, this brief section has shown that although the concept of heuristics has its origins in cognitive psychology, organizations resemble three fundamental characteristics: experience, memory and the ability to process feedback and treat it non-reflexively and reflexively.

Consistent with the above insights, Bingham and Eisenhardt (2011) show empirically that firms not only learn rules by experience but also select rules for novel situations. According to their study, firms possess a portfolio of different types of rules that they use to capture opportunities (Bingham & Eisenhardt, 2011; Bingham et al., 2007). For instance, Bingham et al. (2007) were able to identify rules that were used to guide search for information. Firms used selection rules to target fields of interest and to focus on presumably relevant information (Bingham et al., 2007). Selection rules "[…] narrow the range of opportunity choices by specifying which to pursue and which to ignore" (Bingham et al., 2007: 32). In other words, "[…] selection heuristics [are defined] as deliberate rules of thumb for guiding which sets of product or market opportunities to pursue (and which to ignore)" (Bingham & Eisenhardt, 2011: 1448). Obviously, these rules generate boundary conditions, limiting the search space for information in strategic decision processes. Hence, Eisenhardt and Sull (2001: 110) sometimes call these rules 'boundary rules': "[these] delineate boundary conditions that help managers sort through many opportunities quickly. The rules might center on customers, geography, or technologies. For example, when Cisco first moved to an acquisitions-led strategy, its boundary rule was that it could acquire companies with at most

75 employees, 75% of whom were engineers". As outlined by Gigerenzer et al. (2009), such search rules are central to the rapid and effective use of heuristics and thus constitute the first building block of individual heuristics. Hence, proposition 3a is formulated as following:

> *Proposition 2a. Organizations use rules to guide the search for how and where to acquire information (search rules).*

Moreover, organizations learn and execute priority rules, which assign priority rankings to the pieces of information that are acquired (Bingham et al., 2007). In this way, firms seem to follow rules about when to stop looking for further information while ranking at the same time the information at hand based on certain cues. Firms use these priority rules to determine when to halt the search for information – i.e., to decide when satisfying information is obtained. Satisfaction in this context was achieved by ranking the information according to cues during the search process: "Priority heuristics are defined as rules that specify the ranking of opportunities […]. Specifically, they involve the identification of a firm's most important opportunities within the limits proscribed by its selection heuristics." (Bingham et al., 2007: 33). More generally, priority rules rank acceptable pieces of information (Bingham & Eisenhardt, 2011). In the context of this paper, these findings point to the ability of firms to learn rules from experience that are similar to what Gigerenzer et al. (2009; 2011) call stopping rules. Taken together, this information allows stating the following proposition:

> *Proposition 2b. Organizations use rules to determine when to stop searching for further information (stopping rules).*

This second building block of individual heuristics provides firms with the ability to stop a search process after satisfying information has been generated (Gigerenzer & Brighton, 2009). Gigerenzer and Brighton (2009) also show that stopping rules rely on cue rankings.

Finally, the studies of Bingham et al. (2007; 2011) reveal that organizations go one step further in applying rules after satisfying information has been generated. Apparently, the next problem that firms have to address is the question of how to process the acquired information and how to execute the subsequent steps. This challenge requires '*procedural rules'* and '*temporal rules*' (Bingham et al., 2007; Bingham & Eisenhardt, 2011). Procedural rules prescribe ways of handling the selected information, referred to here as opportunities (Bingham et al., 2007). Obviously, decisions are made based on the search results, which provide "[…] more efficient guidance for actions regarding what to do (and not to do) while attempting to capture the selected opportunities" (Bingham et al., 2007: 32). This process provides the basis for decision rules that are used to structure action and regulate problem solving (Bingham et al., 2007). According to Bingham and colleagues (2007: 32), such rules include, for example: "…'hold[ing] weekly meetings between engineers and marketers' in a product development process (Brown & Eisenhardt, 1997) and to 'do no exclusive deals' in an alliance process (Rindova & Kotha, 2001)". Temporal rules are also decision rules that synchronize the action that has been determined by the procedural rules (Bingham et al., 2007). The few examples identified by Bingham et al. show that organizations indeed apply decision rules to search results, which are highly dependent on their own experiences: "Procedural heuristics focus attention on how to capture selected opportunities, and reflect learning on the part of firm members about past actions and their efficacy for process execution" (Bingham et al., 2007: 32). Thus the last proposition is:

> *Proposition 2c. Organizations use rules that indicate how to judge efficiently based on acquired information (decision rules).*

Similarly, Gigerenzer et al. (2009) suggest that the third building block of individual heuristics is the decision rule that is used after search and stopping rules have been executed.

These decision rules are based on the information that is generated and enable an individual to draw efficient conclusions (Gigerenzer & Brighton, 2009; Gigerenzer & Todd, 1999).

Insert Figure 2 about here

Figure 2 is a graphical representation of my understanding of organizational heuristics. It juxtaposes the individual heuristics concept developed by Gigerenzer with a proposed concept of organizational heuristics. Insights from organizational decision making and organizational learning and knowing, as well as from the emerging concept of simple rules, allow proposing organizational heuristics as a form of organizational judgment. As the discussion has shown, organizations generally have to pursue decisions that are, in principle, undecidable, irrespective of their environmental dynamics. Inevitably, exercising judgment is the only remaining option for organizations when rational decision making is impossible. Building on theories of organizational knowledge generation and learning, it delineates that organizational judgment is based on the experience that organizations acquire over time (prop. 1a), on processing feedback that is acquired through single loop learning (prop. 1b) and on the ability of organizations to reflect on the decision context at hand (prop. 1c). Borrowing from Bingham and Eisenhardt and their understanding of simple rules enables specifying in more detail the rules from which judgment derives. Firms use search rules to guide information gathering (prop. 2a), they use stopping rules to terminate the search for relevant information (prop. 2b) and they use decision rules to draw fast and efficient conclusions from the search process (prop. 2c). Overall, as the discussion of cognitive psychology shows, if these constructs exist in organizations as they have been proposed, then it is appropriate to see organizations have at their disposal organizational heuristics, building blocks and the capacity to apply these in strategic decision making. This conclusion is summarized in Figure B.2.

Conclusion and Future Research

This paper seeks to shed light on the importance of organizational judgment by looking closer at decision contexts where rationality assumptions no longer prevail. Further this paper tries to elaborate a better understanding of organizational judgment by building on insights from cognitive psychology. Because strategic decisions underlie characteristics that are similar to those decision problems as proposed by Gigerenzer et al. (2009; 2011), a similar conceptualization of organizational heuristics seems to be promising. Like individuals, organizations have the capability to accumulate experiences and practices that were used in past decisions and to memorize the principles behind them. Thus, I propose that organizations learn heuristics which are based on organizational memory (the memory principle), they are able to learn through feedback mechanisms how past choices can influence future choices (the feedback principle) and, therefore, they are able to select the appropriate heuristics based on the decision context in question (the environmental structure principle). A finer-grained understanding of organizational judgment as conceptualized in this paper thus enriches the strategic management debate because it provides insight into the functioning of these 'simple rules' and reveals that these rules are far more complex than previous research has assumed. The appropriate memorization, development and selection of heuristics may be essential for firms. A better understanding of the mechanisms of organizational heuristics helps in entangling what and how firms actually learn how to arrive at strategic decisions. These insights also add to the strategic learning debate, as the literature suggests that learning is one of the main drivers of heuristics. Reducing multifaceted strategic problems to simple rules is a highly complex action that requires extensive experience (Miller, 1993). These insights clarify that organizational heuristics are more than simple rules; rather, they are complexity-reducing structures.

Future studies should explore whether organizational heuristics, like individual heuristics, also operate based on the identified building blocks (search rules, stop rules and decision rules). Although previous studies showed that organizations have a distinct knowledge base and are capable of learning from past experiences, the question of how organizational heuristics are structured has not been explored until now. To identify possible building blocks of organizational heuristics, qualitative explorative studies of decision making practices in firms would be required. It would be interesting to explore how organizational heuristics are actually learned and how they operate in detail. To explore organizational mechanisms, these studies should not look for individual judgments; rather they should look for organizational rules that govern how decisions are actually made. Therefore, the functioning logic of these decision-making practices and the question of how organizations actually reduce complexity to exercise decisions rapidly and effectively are promising areas for future research. The framework provided by this paper makes it possible to ask novel questions in organizational and strategic decision research, which should serve as an impetus for future studies (Foss, 2009; Whittington, 2004; Wilson & Jarzabkowski, 2004). The concept of building blocks provides a promising avenue that will allow researchers to explore further and better understand how organizations exercise judgment. This research will hopefully shed new light on the concept of organizational heuristics (Eisenhardt, 1989).

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Appendix

Table 3: The understanding of decision making in prominent organizational decision making literature.

Author, Year	Context	Characteristics of Decision Problem	Set of Decisions	Locus of Decision	Understanding of Rationality	Notion of rationality	Overall understanding of decisions
Simon (1955)	Interrelation of individual and environment and organization and environment	Inaccessibility of information; Subjective understanding because of missing transparency and perception	Individual and organizational decisions	Individual and collective/organizational level	Decisions are made under bounded rationality; optimal solution exists, but is undetectable	Bounded Rationality	We can only determine satisfycing decisions, because we decide within a limited search space; it is still consequential decision making
Cyert, March (1963)	Organizational and individual decision making and choice processes	Ambiguity in the organizational decision process due to lack of time, differing interpretations, attention and attribution	Assumptions about business decisions, model about specific decisions; decisions in decision process	Organizational/ collective level	Neither rationality nor bounded rationality possible due to high degree of ambiguity. It exists only an adaptive understanding of decision processes	Adaptive Rationality	Decisions are an outcome of decision processes involving search procedures and rule based handling; it is still consequential decision making
Cohen, March, Olsen (1972)	Organizational decision making	Ambiguity during search and decision processes, unclear problems, complex organizations,	All decisions in organizations	Individual decisions and organizational decisions	Only a step-by-step deciding is possible, meaning that time reveals within each step the accumulation of factors leading to decisions	Contextual Rationality/ Neglected Rationality	Ambiguity, conflicts, attention, rules, decision opportunities make organizational decision making fundamentally ambiguous
Mintzberg, Langley (1999)	Strategic decision making	Dynamic and complex environment, complex inner organizational structure	Decisions made within the strategy process	Managerial decision making (collective decision making on managerial level), patterns realized despite or in the absence of intentions	Planning impossible, intentions not always apparent, therefore decisions exhibit an intuitive rationality	Extra Rationality	Decision process is driven by insight, converging to decisions
Bingham, Eisenhardt (2011)	Highly dynamic Environments and strategy as simple rules	Dynamic and unpredictable environments force for fast decision making	Especially strategic decisions	Decision makers in strategic decision processes of organizations	Heuristics as realistic rationality	Rational Heuristics	Decision making should be fast and adaptive to the environment, which is fulfilled by simple rules and heuristics

Author	Role of Rationality (cf. March, 1978)	Role of Judgment
Simon (1955)	Bounded rationality *Rational behavior is behavior within constraints*	Judgment as satisficing *Due to limited information processing capacity and limited memory capacity, satisficing is a sensible decision procedure*
Cyert, March (1963)	Adaptive rationality *Rational behavior is the efficient management of considerable experiential information*	Judgment as experiential deciding *Experiential deciding is sensible because it is based on stored information from the past*
Cohen, March, Olsen (1972)	Contextual rationality/ neglected rationality *Rational behavior depends on context of social interaction instead of a prefixed plan/ At its extreme social interaction is non rational, but based on chance*	Judgment as contextual handling *Contextual handling is sensible because it adapts the trajectory of social interaction and cognitive relations*
Mintzberg, Langley (1999)	Extra rationality *Rational behavior is intuitive and insightful, because it is based on individual cognition capacities*	Judgment as intuition and insight *Judgment takes form of intuition and insight*
Bingham, Eisenhardt (2011)	Rational heuristics *Rational behavior by using cognitive shortcuts to overcome the lacking of time and information*	Judgment as simple rules *Judgment as simple rules, heuristics and cognitive shortcuts*

Table 2: Role of rationality and judgment in literature review.

Six common misconceptions	Clarifications
1. Heuristics produce second-best results; optimization is always better.	In many situations, optimization is impossible (e.g., computationally intractable) or less accurate because of estimation errors (i.e., less robust; see investment example).
2. Our minds rely on heuristics only because of our cognitive limitations.	Characteristics of the environment (e.g., computational intractability) and of the mind make us rely on heuristics.
3. People rely on heuristics only in routine decisions of little importance.	People rely on heuristics for decisions of both low and high importance. See investment and organ donation examples.
4. People with higher cognitive capacities employ complex weighting and integration of information; those with lesser capacities use simple heuristics (related to Misconception 1).	Not supported by experimental evidence (e.g., Bröder, 2003). Cognitive capacities seem to be linked to the adaptive selection of heuristics and seem less linked to the execution of a heuristic. See also the Markowitz example in this article.
5. Affect, availability, causality, and representativeness are models of heuristics.	These terms are mere labels, not formal models of heuristics. A model makes precise predictions and can be tested, such as in computer simulations.
6. More information and computation is always better.	Good decisions in a partly uncertain world require ignoring part of the available information (e.g., to foster robustness). See the investment example in this article.

Table 3: Six common but erroneous beliefs about heuristics (Gigerenzer, 2008: 21).

Heuristic	Definition*	Ecologically rational if:	Bold predictions
Recognition heuristic (Goldstein & Gigerenzer, 2002).	If one of two alternatives is recognized, infer that it has the higher value on the criterion.	Recognition validity >.5	Contradicting information about recognized object is ignored, less-is-more effect if $\alpha>\beta$, forgetting is beneficial.
Fluency heuristic (Schooler & Hertwig, 2005)	If one alternative is recognized faster than another, infer that it has the higher value on the criterion.	Fluency validity >.5	Less-is-more effect, forgetting is beneficial.
Take the best (Gigerenzer & Goldstein, 1996)	Infer which of two alternatives has the higher value by (a) searching through cues in order of validity, (b) stopping the search as soon as a cue discriminates, (c) choosing the alternative this cue favors.	Cue validities vary highly, moderate to high redundancy, scarce information (Hogarth & Karelaia, 2005, 2006; Martignon & Hoffrage, 1999, 2002).	Can predict as accurately as or more than multiple regression (Czerlinski et al. 1999), neural networks, exemplar models, and classification and regression trees (Brighton, 2006).
Tallying (unit-weight linear model; Dawes, 1979)	To estimate a criterion, do not estimate weights but simply count the number of favoring cues.	Cue validities vary little, low redundancy (Hogarth & Karelaia, 2005, 2006).	Can predict as accurately as or more than multiple regression.
Satisficing (Simon, 1955; Todd & Miller, 1999)	Search through alternatives, and choose the first one that exceeds your aspiration level.	Decreasing populations, such as those in seasonal mating pools (Dudey & Todd, 2002).	Unknown
1/N; equality heuristic (DeMiguel et al., 2006)	Allocate resources equally to each of N alternatives.	High unpredictability, small learning sample, large N.	Can outperform optimal asset allocation models.
Default heuristic (Johnson & Goldstein, 2003)	If there is a default, do nothing about it.	Values of those who set defaults match with those of decision maker, consequences of choice hard to predict.	Can predict behavior when trait and preference theories fail.
Tit-for-tat (Axelrod, 1984)	Cooperate first, keep a memory of Size 1, and then imitate your partner's last behavior.	If other players also play tit-for-tat; if the rules of the game allow only defection or cooperation, but not divorce.	Can earn more money than optimization (backward induction).
Imitate the majority (Boyd & Richerson, 2005)	Look at a majority of people in your peer group, and imitate their behavior.	Environment is not or only slowly changing, info search is costly or time-consuming.	Mass phenomena, cultural evolution.
Imitate the successful (Boyd & Richerson, 2005)	Look for the most successful person and imitate his or her behavior.	Individual learning slow, info search costly and time-consuming.	Cultural evolution.
Hiatus heuristic (Wübben & Wangenheim, 2008)	Assume that customers who have not purchased in a fixed period of time are inactive	Not investigated	Performed as well as the Pareto/NBD model
Persistence of best customers (Wübben & Wangenheim, 2008)	Assume that the best X% of customers in the past will be the best X% of customers in the future	Spare	Performed as well as the Pareto/NBD and BG/NBD models
Center-of-the-circle heuristic (Snook, Zito, Bennell, & Taylor, 2005)	Predict that the criminal lives at the midpoint of the two farthest apart crimes	Number of crimes in sequence less than 9	Made better forecasts of location than 10 complex models

Note. The two last columns are illustrative, not exhaustive.
*For formal definitions, see references.

Table 4: Cognitive heuristics that are likely in the adaptive toolbox (cf. Gigerenzer, 2008: 24; Gigerenzer & Brighton, 2009: 764).

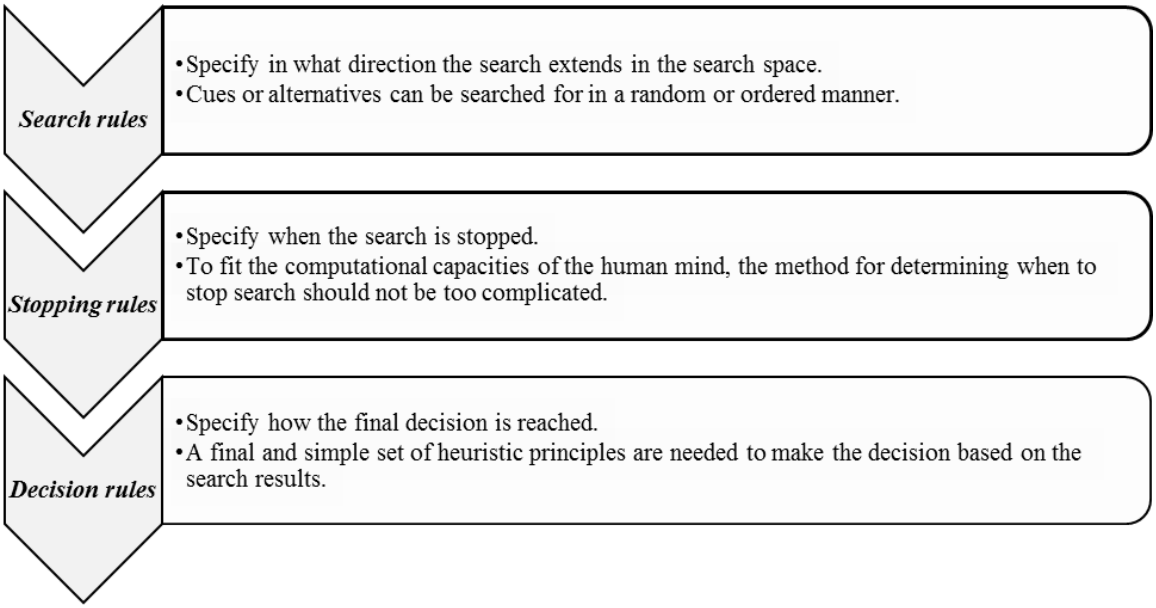

Figure 1: Building blocks of heuristics (cf. Gigerenzer & Gaissmaier, 2011; Gigerenzer & Brighton, 2009).

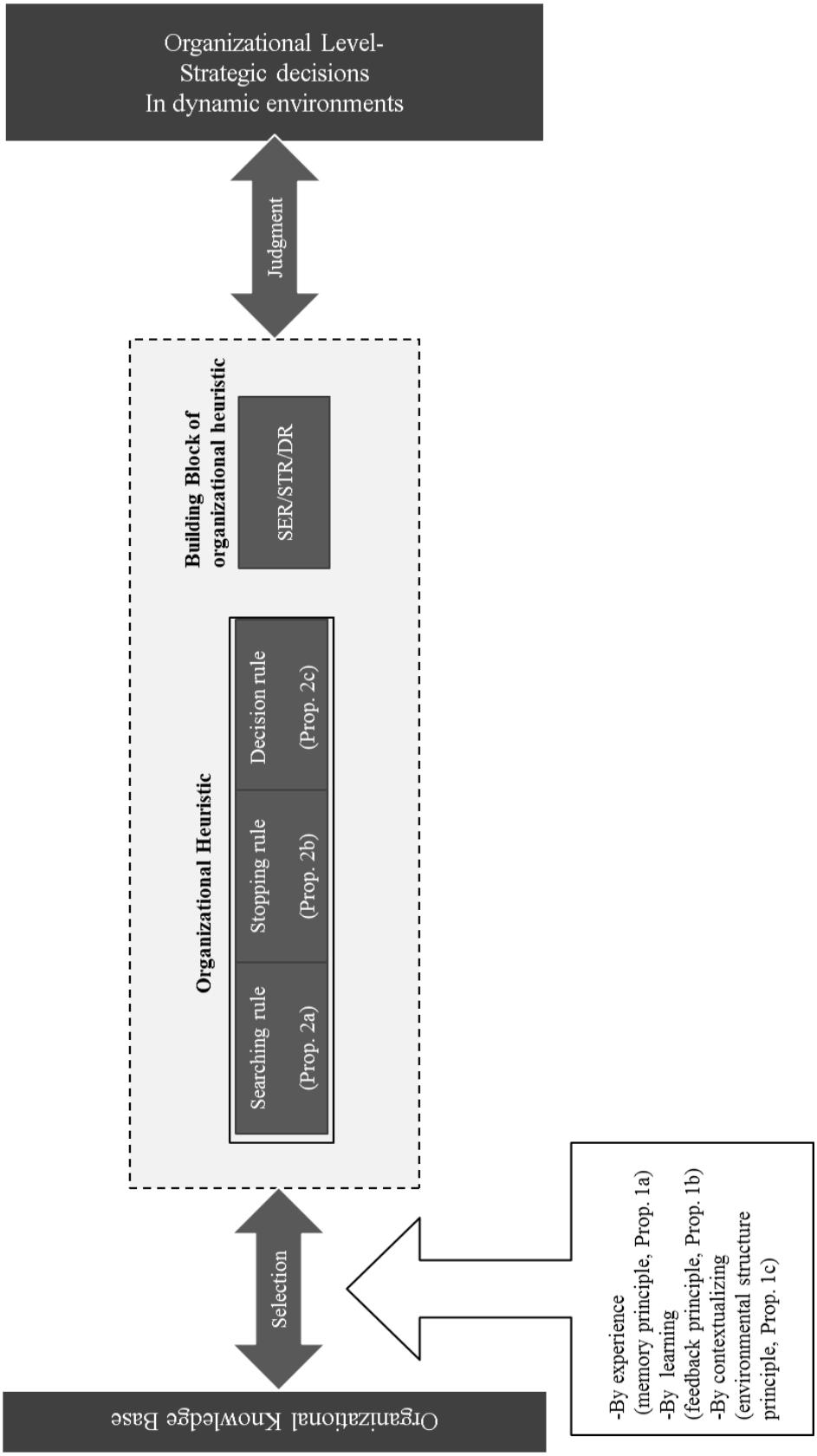

Figure 2: Organizational heuristic model.

Second Dissertation Paper

The Complexity of Simple Rules in Strategic Decision Making

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Abstract

The way organizations cope with uncertainty in strategic decision making is prominently discussed in strategic decision making. Therefore, concepts such as heuristics and simple rules firms learn are gaining increasing attention in strategic management research. However, despite their importance, little is known how they actually function. Our qualitative study reveals that, first, strategic decisions consist of three basic elements: if/then rules, rule patterns and emotional handling. Second, we find that firms develop generalizable rule patterns which follow a sequential order of inter-linked rules. Based on the findings we introduce the concept of organizational heuristics which contributes to the strategic management and strategic learning literature.

Keywords: strategic decision-making, organizational heuristics, simple rules, experience, strategic learning, rule pattern, strategy-as-practice, emotion, judgment, reasoning

Executive Summary

The paper enhances our understanding how firms arrive at strategic decisions. Our study explores how firms develop and learn so called organizational heuristics which are used in strategic decision making in highly dynamic environments. It is based on interviews with senior executives in various industries, exploring on how they arrive at strategic decisions and an ethnographic case studying the decision making practices of a SME in the fast changing internet industry. As our study reveals, relying on organizational heuristics is indispensable for making fast and frugal decisions. From our analysis we show that these organizational heuristics are complex patterns of specific rules firms learn over time which are used in different decision situations. They consist of information gathering rules which provide cues where to search for the necessary information. These information gathering rules are followed by termination rules which are stop rules for terminating the information search process. Termination rules specify when a satisficing level of information is reached. The decision making process is terminated by so called information evaluation rules which describe common strategies for making sense out of the information and to arrive at a fast and frugal decision. The paper shows that these idiosyncratic rules originate from individual, organizational and industry experience. Furthermore the paper argues that – opposed to common understanding - relying on organizational heuristics in strategic decision making is neither superior nor inferior for performance. Instead it depends on the type of heuristic if they lead to blind spots and potential path dependence or if they broaden the scope of options and alternatives considered.

Introduction

Strategic decision making is a central and critical process for organizations (Mintzberg, 1978; Schwenk, 1995; Eisenhardt & Bourgeois, 1988b; Hendry, 2000; Gary et al., 2012). Starting from Simon's (1955; 1960) famous notion of bounded rationality, scholars aim at teasing out how decisions under uncertainty are made (Mintzberg et al., 1976; Langley et al., 1995; Mintzberg, 1971; March, 1981; March, 1988; March, 1994; March, 1978; Langley, 2013; Bingham & Eisenhardt, 2011; Eisenhardt & Sull, 2001; Eisenhardt et al., 2010; Eisenhardt & Zbaracki, 1992). In this regard the construct of heuristics are often introduced to refer to non-rational behavior (Mintzberg et al., 1976).

Recent studies exploring strategic decision making under uncertainty suggest that firms learn so called 'simple rules' by gaining process experience whilst strategizing (Bingham & Eisenhardt, 2011; Bingham & Haleblian, 2012; Bingham & Eisenhardt, 2014; Maitland & Sammartino, 2014). Moreover, it is argued that their fast and frugal applicability renders simple rules as superior processes of decision making since they allow for a spontaneous adaptation to novel circumstances in strategic processes (Davis et al., 2009a). The core of these simple rules consists of heuristics, here understood as cognitive short cuts, which are used when information, time, and processing capacity are limited (Bingham & Eisenhardt, 2011; Bingham & Haleblian, 2012). According to Eisenhardt et al. (2001) the use of simple rules is of particular importance in highly dynamic environments. Relying on a simple-rule strategy of a few heuristics for strategic decision making is considered to be essential for performance in such environments (Eisenhardt & Sull, 2001; Bingham & Eisenhardt, 2011). Here, heuristics are provide a rational, superior way of strategic decision making (Bingham & Eisenhardt, 2011).

However, whilst Bingham et al. (2011) point to an important phenomenon in strategic decision making, their empirical studies lack a more in-depth understanding of the

functioning mechanisms of simple rules. Studies in cognitive psychology provide, however, some insight into the performance of heuristics. On the one hand Kahneman and Tversky (1973; 1972) show in experimental settings that heuristics guide individual behavior, leading to inferior decisions as compared to decisions based on statistical reasoning. On the other hand Gigerenzer and colleagues (2009; 2011; 1999) argue that heuristics lead to superior decisions in highly dynamic settings such as sports. These insights from cognitive psychology into the functioning mechanisms of individual heuristics raise the question how heuristics on an organizational level operate and inform strategic decision making (Gigerenzer & Gaissmaier, 2011). Addressing these questions is important as it enhances our understanding of how heuristics operate in strategic decision making.

Based on a qualitative study analyzing the strategic decision making processes of firms operating in high dynamic markets, we contribute to the strategic decision making debate by uncovering key components of organizational judgment: *if/then rules, rule patterns* and *emotional handling*. Building on these insights a central contribution of this study is an emergent theoretical framework of organizational heuristics. These organizational heuristics are sophisticated constructs consisting of different rules which are consecutively ordered and processed in strategic decision making. Such rule patterns allow for complexity reduction by slicing down the decision-problem at hand into a manageable set of alternatives. Revealing the mechanisms of these heuristics and their emergence also shows that heuristics are neither good nor bad in decision-making; they are simply without alternative, but do not necessarily lead to superior decisions, as it has been argued. Furthermore we contribute to the organizational learning literature by unfolding what organizations actually learn by gaining process experience. Organizations seem to learn not only the content of rules, but also ways to link such rules into sophisticated rule patterns for possible applications in similar situations drawing upon different sources of prior experience.

Our paper is organized into four main sections: First we discuss literature on strategic decision making as well as studies in cognitive psychology on the functioning of individual heuristics. In the following section we introduce our qualitative study and the methods of data collection and analysis. The fourth section presents the findings from our qualitative study. In the last section we discuss our findings and develop our concept of organizational heuristics.

Strategic Decision Making under Uncertainty

Research focusing on the question how firms exercise judgment and arrive at strategic decisions has a long history in strategic management and organizational studies. Building on Simon's (1955) famous notion of bounded rationality, research is interested in understanding how managers and firms make strategic decisions whilst facing limited information processing capacity (Simon, 1955), ambiguous information (Cyert & March, 1963), and uncertainty about environmental circumstances (Eisenhardt & Bourgeois, 1988a). All these studies have in common that they depart from the classical conceptualization of rational decision making which implies choosing amongst alternatives in order to select the optimal solution under conditions of full information and certainty or risk.

In a similar vein, strategic management research shares the interest in understanding better how strategic decisions are actually made. Strategic decisions are conceptualized as processes exhibiting characteristics such as: "…novelty, complexity and open-endedness … and therefore make it fundamentally impossible to follow presumptions and prior plans" (Mintzberg et al., 1976: 250). Langley et al. (1995) build on this idea by arguing that strategic decision making processes are substantially driven by intuition and are fundamentally interwoven with other processes of the organization (Langley et al., 1995). Recent developments in strategy research point to processual, idiosyncratic and erratic nature of strategy-making, and explore how strategy evolves in and from practice (Jarzabkowski &

Paul Spee, 2009; Jarzabkowski, 2003; Whittington, 2011). Understanding strategy-as-practice implies shifting the focus towards the erratic, embedded and biased nature of decision making.

The most recent perspective on strategic decision making has been proposed by Bingham and Eisenhardt et al. (2011; 2007; 1997; 2009a; 1988a; 2010; 2001; 1992; 2014). Eisenhardt et al. (2001) argue that firms operating in highly dynamic markets which are characterized by a high degree of uncertainty, ambiguity and velocity, come to strategic decisions by relying on so called simple rules. According to Eisenhardt et al. simple rules are not inferior tools for dealing with uncertainty (Cyert & March, 1963), but instead constitute rational and superior decision making premises for dealing with unpredictable environments (Bingham & Eisenhardt, 2011; Eisenhardt & Zbaracki, 1992; Bingham & Haleblian, 2012). According to Eisenhardt and Martin (2000: 1106), detailed decision-making routines and procedures only apply to strategic decisions in moderately dynamic environments, whereas in highly dynamic environments firms have to "…rely on quickly created new knowledge and iterative execution to produce adaptive, but unpredictable outcomes". The core of these simple rules consists of heuristics, here understood as cognitive short cuts, which are used when information, time, and processing capacity are limited (Bingham & Eisenhardt, 2011; Bingham & Haleblian, 2012). Heuristics are not seen as cognitive limitations but as effective proxies for dealing with complexity, little information, interdependencies and time restrictions. In contrast to information intensive and analytically complex methods, they require less effort by providing surprisingly greater accuracy and therefore constitute rational strategic decision making.

In parallel to the discussion of the importance of heuristics in strategic decision making, the concept of heuristics has a long standing tradition in cognitive psychology where the debate centers around the renowned research of Kahneman (e.g. 1973; 1972; 2011; 2012) and Gigerenzer (e.g. 1999; 2009; 2011). On the one hand Kahneman and Tversky (1973; 1972) show in experimental settings that heuristics lead to inferior decisions as compared to

decisions based on statistical reasoning. On the other hand Gigerenzer and colleagues (2009; 2011; 1999) argue that heuristics lead to superior decisions in highly dynamic settings such as sports. Gigerenzer and colleagues (2008; 2009; 2011) show that individual heuristics provide a robust and legitimate way of judgment which even outperforms complicated rational models and allow for *ecologically rational* decisions (Todd et al., 2011). Ecological rationality means that within complex environmental structures the application of 'right' heuristics depends on the context in question (Gigerenzer, 2008; Gigerenzer & Brighton, 2009; Gigerenzer & Gaissmaier, 2011; Todd et al., 2011). Under such complex circumstances the accuracy-effort trade-off gets substituted by the less-is-more effect. This is explained by the variance of predictability algorithms, which increases substantially with more added variables estimated from a small interdependent sample (Gigerenzer & Brighton, 2009). As a result such models do fit perfectly to past data, but perform poorly for future scenarios (Gigerenzer & Brighton, 2009; Gigerenzer & Gaissmaier, 2011).

All these research streams point to the importance of heuristics in decision making. However, as most research stresses the importance of heuristics, little is known so far how heuristics actually function in organizations (Bingham & Eisenhardt, 2011; Bingham et al., 2007). In addition, Eisenhardt et al., who claim the superiority of simple rules in strategic decision making simply justify their argument by referring to Gigerenzer's studies. Strategic decisions, however, show very different characteristics as the individual decisions studied by Gigerenzer (Vouri & Vouri, 2014): Whilst Gigerenzer studied individual decisions, strategic decisions are usually decisions taken by groups and more than one actor is involved in the decision-making process. Second, strategic decisions have a very different time horizon: whilst the decision in sports games Gigerenzer had studied, participants had to decide within fractions of seconds. Strategic decisions usually do not have to be taken within seconds but allow for more time for information gathering and evaluation. And third, strategic decisions are organizational decisions which means they are based on individual and very idiosyncratic organization

experience, norms and values which are often only party explicit and understood. As a result, an exploration of the way how strategic decisions are actually made in an real life organizational context is of utmost importance (Balogun et al., 2003; Jarzabkowski et al., 2007; Jarzabkowski & Paul Spee, 2009; Whittington, 2006; Whittington, 2007). From an organizational perspective it is therefore interesting to gain a better and finer grained understanding of the functioning mechanisms of simple rules and the way they are used in strategic decision making. Since heuristics are learned over time and are based on experiences the question arises how heuristics get established, and, even more importantly, how they are altered and changed over time. As a result the interesting question arises how such complexity reducing rules operate, how they are learned and altered over time.

Methods

To examine heuristics within their real life context we conducted a longitudinal, qualitative case study (Yin, 2003; Marshall & Rossman, 2011; Eisenhardt, 1989). Given the general lack of research on organizational heuristics and simple rules we combined theory elaboration (Lee, 1999) and theory generation (Eisenhardt, 1989; Eisenhardt & Graebner, 2007) in our analysis. Building on an interpretive research approach, we tried to distill how decision making under uncertainty in organizations operates by investigating the practices of the people involved in strategic decision making (Van Maanen, 1979, Gioia et al., 2012). Our study comprised two phases, which combined several sources of data (Yin, 2003). The first phase of our study draws on the collection of interview data, whereas the second phase of the study is an ethnographic case study with multiple sources of data (Van de Ven & Huber, 1990). Combined, the two phases provide a rich perspective from different angles on the phenomenon of strategic decision making under uncertainty (Yin, 2003).

Data Collection

First Phase, Pre-Study. In the first phase of our study we were first of all interested to learn if heuristics play an important role in strategic decision making at all. We chose to approach ten companies, which we sampled according to the following characteristics (Patton, 1990): (1) Industries the companies are engaging in are generally believed to be dynamic and fast changing, (2) each company operates in a distinct industry and (3) main strategic actors within each company should be accessible for interviews. Characteristic (3) should ensure that our interviewees would be formally able to make strategic decisions. Table 1 gives an overview of the companies chosen, which were LogTec, FineVest, Style+, LawRder, SoftTec, SocM, MedSow, Brand-1, Sure2b and EntreuX.

Insert Table 1 about here

The first author interviewed 16 key strategic actors of these firms in order to understand how they arrived at strategic decisions (Bingham et al., 2011). The interviews lasted between 60 and 90 minutes and were conducted in a semi structured way (Marshall & Rossman, 2011). Although the interviews were semi-structured, they have been controlled in three ways: First, we asked our respondents to focus on decisions they identified as being strategic. Second, in the interviews we tried to how these strategic decisions were made by asking follow up questions such as *"what did you learn from the strategic project, what would you do same way and what differently"* and *"is this the way of doing things in the organization and do more people than you engage similar with decisions regarding the same topic"*. And third, in the interviews we teased out on what kind of experience the decision makers draw upon by asking questions as *"how did you learn to do this that way"* and *"would you say other employees do it the same way as you do it here?".*

Second Phase, Ethnographic Case Study. In the second and main phase of our study we conducted an ethnographic case study with embedded units of analysis (Yin, 2003;

Eisenhardt, 1989; Langley, 2007; Langley et al., 2011). The aim was to follow real-life decision-making processes and not to rely exclusively on the retrospective accounts of key informants. Following a theoretical sampling logic (Glaser et al., 1967) we chose the firm EntreuX in order to gain deeper insights into its strategic decision processes (Bingham et al., 2011). Based in Europe it operates digital voucher discounting portals in a variety of countries such as Brazil, Spain or Russia. Founded in the 2010s, backed up by several venture rounds it follows the vision to become a leading international player in the coupon market. EntreuX promises an information-intensive context for the purpose of theory generation on strategic decision making mainly for two reasons (Patton, 1990): (1) EntreuX operates in the highly dynamic internet market (Bingham et al., 2011). (2) EntreuX is on the verge from a start-up towards a more structured organization employing already more than 60 people. This implies that there already exists an organizational memory base on which employees can draw upon. (Bingham et al., 2011). Since the firm is rapidly growing several strategic processes happen simultaneously which could be traced in real time.

During the ethnographic phase of our study the first author participated in all relevant activities of the firm as an embedded observer on a regular basis for 6 month. She was allowed to spend around 3 days per week at the company for four months and worked at an own desk in the open office space of EntreuX. Within this time informal interviews with employees were conducted. Most importantly, we had access to and participated in strategy meetings during which employees discussed strategic projects and important decisions were made. Strategy meetings were of particular interest since (1) all projects happened under time pressure, with little prior information cues available and actors faced high degrees of uncertainty. (Miles & Huberman, 1994) and (2) the strategic processes took place within the same context, which provided a rich criteria overlap and allowed for a comparison of decision streams (Miles & Huberman, 1994). In total we observed 26 meetings. In addition to real time participant observation we conducted retrospective as well as real time interviews with the

participants of the strategy meetings (Yin, 2003; Eisenhardt, 1989; Marshall et al., 2011; Langley et al., 2011). In the semi-structured interviews interviewees were asked about their experiences in making strategic decisions in a similar vein as during the first phase of data collection. In total, first phase and second phase summed up to 25 formal interviews ranging from 35-90 minutes. For an overview of the collected data see Table 2.

Insert Table 2 about here

Data Analysis

Our data analysis comprised four main steps: First, we started with an open first-order coding of the interview transcripts and observation field notes (Van Maanen, 1979,Glaser & Strauss, 1967). Coding unfolded in two ways. First we aimed at identifying the strategic challenges the respective firms were facing (see table 3 for an overview).

Insert Table 3 about here

Subsequently, we were interested how our respondents dealt with those challenges. The way they would describe decision making in their organization, whether explicitly or implicitly, was the key focus of analysis of the interview transcripts. For the observational data, however, we heavily relied as close as possible on the own language of the informants in order to derive our first order codes. A phrase from an interview or an observation was coded as a rule, if (1) informants referred to the construct as a common way of doing things (in other projects, in the organization, in the industry), (2) informants referred to the construct as learned from experience, (3) participants seemed to apply learned content from experience or (4) the discussions revealed that the construct corresponded with common ways of doing things (in other projects, in the organization, in the industry).

Third, we proceeded with a second-order analysis to cluster the first-order codes with regard to their similarities and differences (Glaser & Strauss, 1967; Gioia et al., 2012). Table 4 shows an extract of the entire coding scheme.

Insert Table 4 about here

Throughout the coding process we tried to identify were the rules observed were grounded in. We coded for *individual experience* if informants explicitly referred to their own experience from outside the firm. Codes of *organizational experience* were assigned in case two or more informants independently describing the same rule. We also coded for *organizational experience* if informants described rules as organizational procedures, or if teams jointly developed a rule during a meeting. Finally, we coded for *industry experience*, when informants referred to common standards of an industry, such as for instance to industry practices or recipes (Spender, 1989). Table 5 illustrates of the coding scheme whereas Figure 1 summarizes the process of data analysis.

Insert Table 5 about here

Insert Figure 1 about here

Findings

Disentangling Decision-Making

Analyzing our data revealed that three distinct construct played a central role in strategic decision making processes: These three emerging pillars are: (1) if/then rules, (2) rule patterns and (3) emotional handling.

If/then Rules. The analysis of our data shows that similarly to the findings of Bingham et al. (2011; 2012), idiosyncratic rules, particularly if/then rules, play an important role in strategy

making under uncertainty. For example Laura (Executive) works at FineVest, a company which operates in the financial service industry and has just started an important rebranding project. When asked about what information she is considering, she expresses, due to her and her teams' experiences with past projects that they learned one important lesson:

"One never relies on what [information] is already present in-house." Laura (Executive)

This means that no matter how big the challenge and how high the time pressure is, they will make sure not to rely exclusively on the information already known within the company. In another example, Executive John also formulates an if/then rule. He works at Style+, a firm operating in the retail-fashion industry, where the pace of changing trends, customer needs and competitors is extremely rapid. According to his opinion, one important lesson for their firm is that if they want to be successful, their concept needs to be *"Europe qualified".* This standalone rule allows Style+ to decide if and when their retail strategy needs to be aligned towards European customer needs. An example for an if/then rule with a quantitative threshold can be found for example at EntreuX. From their experience customer needs significantly differ across countries and therefore different strategies have to be applied to deal with that challenge. Therefore they came up with the following rule: *"If you built up a service in a new country, have at least two native speakers within that team"*. The quantitative threshold the rule evolves around are the two native speakers. That way EntreuX ensures that there are at least some people within the team who understand the market.

These examples, as well as the additional examples provided in Table 4 and Table 5, show that these rules evolve around thresholds and are standalone constructs providing direction for decision making. In that sense they reduce complexity and ensure that important cues are included or excluded in the decision making process. However, although these rules appear to be simple in their execution, they are based on significant experience which has been learned over time.

Rule Pattern. When dealing with uncertainty in strategy making, decision makers not only learn *if/then rules* but also more complex patterns, i.e. combinations of rules. When asking Laura more about the rebranding project she is working on, she comes up with a pattern her team is commonly employing in similar situations:

"We have to know: what does actually constitute a brand?[…] What are the notions, we have to work with? As, this is the brand value, this is the positioning, this is the claim and this is the brand name. […] Well. Then we have now the general structure. And as soon as we have these four big points, we can start to say: Okay, what are the contents of these four big points? What do we have to do further, what do we have to investigate, what are the results and which action must we derive from it - that is how it goes." Laura (Executive)

Thus, whilst it is obvious for her team not to rely on internal information only, she also describes a more complex pattern they use in her firm to elaborate the information needed and to deduce a decision. Similar, John of Style+ explains that in order to master the challenge of customer needs, adequate distribution channels are of utmost importance. In this vein he refers to a rule pattern when he points out that at first their product should be placed in specific department stores, which their target customers visit often. Further, the point of sale must be representable for the brand and having a solid assortment. And last but not least the assortment must be priced with a strong price-performance ratio. That way, he is cutting the decision process into different steps. Also at EntreuX rule patterns were observable. Being new to the Italian market, EntreuX is confronted with the challenge of acquiring partner networks, which are important entities, because each network represents a big group of retailers and provides offers as well as commissions. However, networks provide offers only if EntreuX can offer slots on their website with high customer visibility in return, such as sliders. Sliders are big parts of a website, located at the top and therefore seen fast by customers. Since sliders require much space on websites only a limited number can be placed in a website which makes these slots highly attractive. Widgets on the other hand are usually located at the site of a webpage showing three offers in a small manner at once. Julia and Linda discussed the use of sliders in the following way:

[…]
Julia: "Yes, we need five sliders and keeping them as negotiation power, it's worth it…"
Linda: "Ok, some offers […] for Easter, for instance Expedia [are] only for 72 hours, quick offers…"
Julia: "We can upload this fast into widgets, […] for these quick coupons widget is best. And also push it in Facebook. What is the commission we [get]?"
Linda: "Don't know."
Julia: "Check that."
[…]
Julia: "[…] because we have to see whether it's worth it to push it in Facebook with a certain budget. [For now] we start with a small budget […]."

As this example shows several rules were applied to tackle the problem. There is a rule of thumb of how many sliders should be used to sustain negotiation power over partners. Implicitly they decide on basis of how long an offer is valid, in which way it should be promoted. For short offers the rule of thumb explicates that either the offer will be promoted in a widget or on Facebook or in both distribution channels at the same time. To decide which option is the most favorable, a rule of thumb is applied which putts the revenue in relation to the budget.

In difference to the above specified if/then rules, such rule patterns not only provide a direction but they describe a process in the sense of what to do next. These rule patterns are again derived from experiences, but show a higher degree of complexity than if/then rules. As the additional examples in Table 6 shows, whilst if/then rules are standalone constructs giving a hint where to go or to look or what actions to undertake, rule patterns provide additional guidance of how to slice down problems into a manageable set of options.

Insert Table 6 about here

Seen this way decision makers not only learn if/then rules but also more complex rule patterns which allow them to structure the decision making process. However the process is not based on an established guideline, rather it is a process of reasoning how to decide fast in a particular context by applying learned content from previous experience which makes sense.

Emotional Handling. Finally our analysis suggests a third pillar of decision making, one that is closer to the original understanding of judgment as a sort of feeling or intuition (Akinci & Sadler-Smith, 2012). In case of emotional handling the decision is not based on a rule but on feeling, more precisely gut feeling. FineVest is also dealing with the challenge of hiring capable employees who can sell their services in the best possible way. In light of this challenge Jim, an Executive, says that when it comes to the question of staffing and recruiting for projects he has never erred before, because he developed the right feeling about who would be the best person for a certain job. He expressed that over time he even learned to make better use of this feeling, which usually outplayed guidelines for staffing. In LawRder, an international law firm, the core strategic projects evolve around negotiating the best possible deals for their clients. In that vein, Rick, a partner, recollected a challenging situation, where he decided based on his feeling:

"[…] And there are people and consultants, they gain a lot by exchanging facts again and again and this forth and back can go on and on and be very time consuming. I am actually relatively result-driven and have in my opinion a quite good feeling about what works in the situation at hand […]." Rick (Partner)

In both examples, decision makers are referring to their feeling in order to explain their decision making procedures. Also in the strategy meetings of EntreuX instances during which decisions have been legitimized based on a feeling rather than a more reasonable explanation could be observed. For example, in a country meeting of the German team Julia argues that *"[…] by clicking through the website I got the feeling that no shop had any text and that has to change."* She argues later that by relying on her feeling she knew that there was something wrong without necessarily having clicked through each single shop. In another strategy meeting of the Columbian team Marie notifies that *"[…] my perception right now is to focus on the website and upload the [products]."* Following this feeling she structured her work and concentrated on what she believed was the most urgent matter. As the additional examples in Table 7 show, opposed to the rules identified above, in those cases no generalizable rule could

be derived. Instead respondents consistently pointed out that they are not able to specify further what actually led them to decide in the described way.

Insert Table 7 about here

Taken together it seems fair to conclude that all of the three identified constructs have in common that they build on and are derived from experience. Furthermore, proponents could not provide any 'rational' explanation – if understood in the traditional sense (Kahneman & Tversky, 1972; Kahneman & Tversky, 1973; Simon, 1955) - for why they were making use of these constructs in their decision making process. But, in consistence with the studies of Bingham and Eisenhardt (2011) we could identify rules and rule patterns as effective means for guiding strategic decision making. The executives themselves refer to such rules and rule patterns as appropriate for guiding their strategic decisions. Our findings, however, do not suggest that decision-makers either rely on if/then rules, rule patterns or gut feeling in their decisions: rather, all these constructs overlap in the actual decision making process (see Figure 2).

Insert Figure 2 about here

Whilst a rule might be a sub rule in the rule pattern, emotional handling might be a component of a rule pattern as well. Although these constructs overlap in the decision making process they are still at least analytically and conceptually distinct. Whilst all are based on experience, they result in different decision patterns and guide the decision making process in different ways (see Table 5, 6 and 7). This is particularly interesting with regards to learning since it shows that different insights are learned and abstracted from experience in decision making. Whilst if/then rules require at least some degree of reflexive abstraction from the original experience, rule patterns are rather complex constructs which are effortfully abstracted from experience. Opposed to this emotional handling is a rather tacit component of decision making which usually cannot be further reflected.

Organizational Rule Patterns

Our data analysis illustrates that rule patterns consist of single rules which are coupled into distinct sequences. Particularly three distinct rules played a major role as part of more complex rule patterns: *information gathering rules, termination rules* and *information evaluation rules.* Following our data analysis each of these rules played a different role in the strategic decision making process. For instance, one of EntreuX's challenges is to decide which new markets should be penetrated. Lisa illustrates such a decision process for country entries:

"[…] We have to know how deep the internet penetration is. Is it still in the early stage or is it in the middle maturity or is it like in the late mature stage? […] Then if you have an affiliate network it is easier for you to enter the market […]. Are there any requirements from the governments themselves? […] Another thing is regarding the language. […] Plus the search engine as well. So if it's Google or if it's not Google also can alter. Apart from it we also check on the infrastructure of the e-commerce. […] And based on those research then we classify which countries we should enter and which one we should not enter."

As Lisa explains that the decision to enter a country or not depends on specific information cues. As the example reveals she uses specific rules to guide her search for information. Hence we code this type of rule as *information gathering rule*. Using these rules significantly speeds up the information gathering phase since the search range is already set. As soon as they had the information on the maturity of the market, they stopped the search based on this information. At that point they had not only enough information to work with, but also the information they considered to be relevant. Hence she terminated a first round of information gathering procedure. Consequently, we coded these rules as so called *termination rules* since they provide decision makers with guidance when sufficient information has been gathered. Termination rules stop the search process and thereby again speed up the decision making process. On the basis of these search results, she further stated that they checked whether there already were some active partner networks in the market. As the statement illustrates, they are now started to search for new information again, but this time more focused, based on the already elaborated information. Thus she actually described an additional information

gathering rule. The termination rule employed at the beginning of the decision making process is hence followed by a new, but more focused information gathering rule. Again the information gathering procedure terminated as soon as it was clear whether there were partners or not. Next, she questions if "*are there any requirements from the governments themselves?"*, and which is the native language of the country. The latter information gathering rule is important since for English speaking countries the architecture of the websites already exists, therefore a country roll out is more easy to accomplish. In addition she questions if a country uses more than one native tongue, then *"so, instead of you probably need only one site with one language and maybe three resources to maintain the site, you have to have three languages and it's maybe nine resources."* So, based on these insights search terminates and provides ground for a next information gathering procedure searching for the main search engine used in the respective country. Search terminates after they work out that a sufficient amount of internet penetration is processed by Google: "*If it is Google […]"* Based on these results she is again describing a new information gathering rule: "*we also check on the infrastructure of the e-commerce […]".* Finally, as soon as all necessary information seems to be aggregated, she and her team evaluate the results of the information gathering procedure and decide: "*And based on this research we then classify which countries we should enter and which one we should not enter."* This statement marks a final step in the decision making process: She and her team make sense out of the information they have gathered and outline what possible decision might result from this. We therefore decided to code this rule as a so called *information evaluation rule.* Information evaluation rules help decision makers to make sense out of the information gathered which may ultimately result in a decision to be taken. Again, information evaluation rules speed up the decision making process and rely on experience.

Interesting to note is that we not only could identify different types of rules (information gathering rule, termination rule, information evaluation rule) but also that these rules follow a

specific order or sequence. The stringing together of information gathering rules and termination rules leads to a narrower focus and reduces the amount of perceived complexity and makes strategic problems "processable". The observed rule pattern therefore describes a processual treatment of the strategic problem the firm is facing. Our data reveals that the components are always executed in a similar order: It starts with information gathering rules which are then succeeded by termination rules. After this additional information gathering and termination loops might follow, but the process always concludes with information evaluation rules. Seen this way, rule patterns do not only provide decision makers with a specific guidance what to do, but moreover, they also specify a certain processual order. It is not only learned what rules are to be employed, but also the order in which certain rules are processed is an outcome of a learning process. Rule patterns seem to be not just mirrors of experiences, but seem to reduce experiences of complex situations into some sort of manageable procedure for handling similar situations. Thus in contrast to if/then rules, rule patterns do more than just providing directions. Table 8 provides further examples of these rule patterns and Figure 3 is a graphical representation of three possible patterns.

Insert Table 8 about here

Insert Figure 3 about here

Experience Abstraction. Our data analysis reveals that decision makers relied, either explicitly or implicitly, on different sources from which they actually learned rule patterns. We could identify three different origins of experiences: *individual experience, organizational experience and industrial experience*.

For instance Matt, a partner from LawRder, describes a common rule pattern lawyers within the industry as well as within LawRder practice:

"Well we … as lawyers are not allowed to say: I now raise the purchasing price or I do XYZ, instead I think that, where we make decisions, many small decisions, is within individual negations, in individual situations, hence a lot situational handling, yes? Hence the question:

Do I play it out? How do I react to e-mails? In which way do I react to e-mails? There are maybe situations in which it is necessary, and I mean, such a project […] can take years and there are always situations in which it is essential to communicate things earlier or eventually later […]." Matt, (Partner)

This common understanding stems from industry experience, because as Matt explicates, all lawyers have to evaluate negotiation situations very fast in order to perform well. Rick, also a partner at LawRder, is explaining hiring decisions which he refers to as being one of the most important decisions to make in their law firm:

"We [at LawRder] are looking generally for four categories of employees: Either partner, resort chiefs, paralegals and secretaries […] The first conversation is certainly always with someone out of the corresponding category. […] And nobody else due to confidentiality reasons. Then it is the way that we have usually mixed interviews. And for me it is always important to have at least one member of the target group- lawyer for a lawyer, paralegal for a paralegal […] accompanying the interviews. […] [This way of doing this step I didn't decide formally], because such things aren't decided formally. But I think that everybody somehow joined this process with pleasure. Because it is the most successful one. Yes, it is now the organizational culture. […] Let's take a lawyer with midrange seniority. We would check at first what his professional skills are. This is answered a little bit by his grades and the office he is from. We check whether the office does the same things as we do. Do they do a good job?[…] Can we imagine him in our team? […] What are his salary and carrier perceptions? If this does not fit with us we cannot take him. […] Every partner, no matter the seniority, has the same vote. […] We decide in our devision only quaquaversal, hence we consult as long as it takes until we all decide whether we do it or not. […] This is the culture in our organization." Rick, (Partner)

In this example it is first of all possible to see which information gathering rules and which evaluation rules are based on organizational experience and which are based on the individual experience of Rick. Second his statement also indicates that the single rule he started the recruiting process with (the par match) has now become an organizational rule. Thus it seems that individual rule components might transform into organizational rule components over time. At EntreuX, where the Columbian team is struggling to make sense of the market, we could witness the following episode:

Lisa: "Did you guys also check Apple for the Columbian site?[…] What about [network Y], do they have good [offers]?"
Marie: "Yea, not yet so good for Columbia, but still, but expensive to ship, It's outside of Columbia"
Lisa: "Are there any new [networks] which come to Columbia?"
Marie: "Checked, but only one from Brazil I think"

Julia: "Also when we decided how to cooperate with new shops…or we can in future work with [networks] together and try to get the shops together […]. [Network Y] is also in Germany, maybe on the higher level we can work with them together…"
Lisa: "Maybe check also Brazilian Networks"
Marie: "Yes, and we really should work on Columbian local level"
[…]

In this episode we see how Lisa and Julia exploit the experiences from other projects in order to search for relevant information. But in the last information gathering rule Marias individual experience about the Columbian market streams into the rule pattern. Table 9 provides additional examples for the different origins of decision making rules.

Insert Table 9 about here

Summarizing our findings shows that organizational rule patterns draw upon multiple sources of experiences. These are abstracted into rules, which again are accumulated into rule patterns.

Discussion: Towards an Understanding of Organizational Heuristics

As our findings have shown, strategic decision making processes rely on multiple rules and patterns of rules, each playing its distinct role in the decision making process. Our research is therefore an attempt to advance theories of strategic decision making and addresses the question how decision-makers and organizations come to strategic decision when coping with uncertainty. The emergent model reveals that the process of strategic decision making is far more complex than the notion of simple rules suggests (Bingham & Eisenhardt, 2011; Eisenhardt & Sull, 2001; Bingham et al., 2007). Instead we can show that decision making under uncertainty basically consists of three main categories: If/then rules as standalone rules which provide a direction into unmarked terrain, rule patterns as organizational heuristics and emotional handling as a more intuitive way to deal with the situation at hand. Our findings

reveal that in the absence of certainty organizational heuristics were without alternative in decision making; as a result they do not necessarily lead to superior performance, as previous research has suggested. Instead, heuristics are not good or bad when it comes to decision making: they can lead to good and bad decisions, a category which anyway can only be evaluated ex-post. In untangling complex rule patterns our study also contributes to literature on strategic learning: following our insights, strategic learning refers to the process and capability of firm to abstract rule patterns from experience.

Rules, Rule Pattern and Emotion

Our study of strategic decision making first of all reveals that decisions consists of three main parts, each having different characteristics: First of all the singe rules we identified are similar to the findings from Bingham et al. (2011). Such rules could be applied in different situations and helped in making a fast decision. The content of the rule and the kind of guidance they offer, however, may vary substantially: for instance they can help in narrowing the search space for information, or they can entail if then rules, specifying what to do and/or what not do in ex-ante defined cases. These rules have in common that they are expressible in a short and handy way and therefore appear to be simple in their actual application. Organizations usually operate with a set of such if/then rules they have learned over time when making process experience (Bingham & Haleblian, 2012; Bingham & Eisenhardt, 2011). However, from our data analysis we identified so called rule patterns which consist of different rules. Each rule pattern progresses towards a decision through a step-by-step sequence of logically ordered rules. The sequential application of rules allows slicing the decision problem into pieces; the application of each rule reduces the complexity of the problem at hand. In contrast to if/then rules, rule patterns seem to be transferable to different contexts; i.e. different strategic problems can be processed by similar sequences. Third, consistent with prior research, with emotional handling a more intuitive form of decision making could be identified (Akinci & Sadler-Smith, 2012). This emotional handling of situation is basically

affectual and is best explained by system 1 of the so called dual-process theory (Evans, 2003). Whilst system 2 refers to the analytical part of our brain, system 1 describes context dependent, intuitive behavior which is unconscious, automatic and fast (Stanovich & West, 2000). This is coherent to our findings, which confirm that intuitive behavior cannot be explained retrospectively in words and rather represents a gut feeling (Barnard, 1938; Epstein, 2008; Akinci & Sadler-Smith, 2012; Sinclair & Ashkanasy, 2005). Hence, this kind of decision making is different compared to if/then rules and rule patterns. Whilst intuitive behavior is situated and impossible to reconstruct due to its largely tacit nature (Sinclair & Ashkanasy, 2005), if/then rules and rule patterns can be distilled from experiences and offer some kind of reasoning process.

Rule Pattern as Organizational Heuristics

Following our insights into strategic decision making, the concept of rule pattern is far richer than previous studies building on simple rules have suggested. Furthermore, we can identify three categories of such c rules within the observed rule patterns: *information gathering rules, termination rules* and *information evaluation rules.* Information gathering rules are rules which guide the search for information; here, the rule indicates the search space for relevant information. These rules provide an understanding how to gather and process the appropriate context specific information. As a result these rules reduce the complexity of the task at hand, in particular the complexity caused by information overload and the lack of knowledge about which information might be important. Whilst on the one hand information gathering rules help in reducing uncertainty, they might also create uncertainty, because of the underlying selection principle (Luhmann, 1995). When choosing fast where to look at, one choses also to ignore other potentially relevant information spaces and therefore might miss important factors and developments (Luhmann, 1995). As a result, selecting information on the bases of information gathering rules speeds up the decision making process but also makes it vulnerable to potential blind spots (Geiger & Antonacopoulou, 2009) Nevertheless these rules

save time and effort, which are scarce resource when dealing with strategic challenges (Eisenhardt & Bourgeois, 1988b; Davis et al., 2009b). This information gathering process is terminated after a sufficient, satisfactory level of information is available, which is also accomplished by a rule, the termination rule. What a satisfactory level of information is, is therefore again determined by a specific rule which is fast and frugal to apply. A termination rule is causally linked to an information gathering rule; it follows right after. Thus, the termination rule implies that a satisfactory level of information is generated to further work with and to derive action from it (Simon, 1955). What is perceived as being satisfactory is again an idiosyncratic and subjective level which cannot be optimized. In the presence of uncertainty, optimal solutions do not exist. As a result, terminating the search for information at an idiosyncratic levels on the on hand helps in speeding up decision making processes but on the other hand implies the inevitable risk of ignorance. Following the termination rule, the acquired information has to be made sense of in order to derive appropriate actions from it (Weick, 1995). This is again accomplished by a rule, the so called information evaluation rule. Hence, information evaluation rules frame how to deal with the collected information. At this point the strategic problem is processed into a manageable set of alternatives and/or action suggestions.

To sum up, these three types of rules form a rule pattern which is inevitable to arrive at decisions once facing uncertainty and helps on reducing complexity. Interestingly research in cognitive psychology and Gigerenzer et al. (2008; 2011) in particular observed quite similar rule patterns in the context of individual decision making they called *individual heuristics.* For Gigerenzer et al. (2009; 2011) *individual heuristics* are rule patterns which are applied in uncertainty and complex situations. Individuals usually use these rule patterns unconsciously in situations of incomplete information or for dealing in a fast and frugal way with information overload (Gigerenzer, 2007; Gigerenzer & Gaissmaier, 2011). Following Gigerenzer et al.'s (2009: 113) insights, these *individual heuristics* are consisting of three

building blocks: *Searching rule, stopping rule and decision rule.* The first building block, the searching rule, frames where to look for information and which information might be important (Gigerenzer & Brighton, 2009). Stopping rules are rules which determine when to stop the search (Gigerenzer & Brighton, 2009). These rules are usually triggered as soon as the information search process comes across certain clues and hints, which built the content of the stopping rule (Gigerenzer & Brighton, 2009). Finally, the decision rule leads to a decision on basis of the generated information (Gigerenzer & Brighton, 2009). These building blocks are rules which are processed in a predetermined order and hence built a sequence of specific kind of rules. For Gigerenzer et al. (2011; 2009; 2008) individual heuristics over perform analytically more sophisticated methods in situations where time pressure, information overload and a high interdependency between clues exists. Thus, Gigerenzer et al. (2009: 114) state that individual heuristics are highly dependent on the environmental state they are performed in and are hence *ecologically rational*.

Interestingly, our analysis of organizational rule patterns reveals striking similarities to Gigerenzer's concept of individual heuristics. In principle, we could identify a quite similar set of rules, information gathering rules, termination rules and information evaluation rules. However, whilst Gigerenzer studied the use of individual heuristics mainly in experimental and therefore quite artificial settings and basically focused on individual decision making behavior in situations where time was extremely critical (e.g. basketball players) our findings point to more complex constructs. Strategic decisions are more complex as compared to the decision-scenarios Gigerenzer has in mind (Vouri & Vouri, 2014): There is more than one actor involved, the amount of possibly available information is higher, there are multiple sources of experiences decision-makers are drawing on (individual, organizational and industry experience), the magnitude of the decision is high since wrong decisions might have fatal consequences for the survival of the organization and last but not least, whilst time is critical it is not a matter of seconds or less, but the decisions can be processed with a higher

degree of reflexivity. This higher degree of complexity is reflected in our findings since multiple loops of information gathering and termination rules could be run through until the final evaluation rule is executed. Particularly the search phase is therefore more time consuming and allows for processing a much higher degree of information. Also the nature and origin of these rules differs vastly since, apart from individual experiences, the idiosyncratic experience an organization accumulates over time significantly influences the nature of these decision rules. To account for the similarities as well as differences to Gigerenzer's concept we therefore suggest speaking of *organizational heuristics*. Organizational heuristics are (1) rule patterns which consist of multiple loops of information gathering and termination rules, (2) finalized by an evaluation rule. Organizational heuristics build to a large extend on (3) organizational experience and are therefore idiosyncratic to particular organizations (and not individuals) and are used and processed by multiple actors (see Figure 3). Furthermore, organizational heuristics are employed in situations where due to the (4) complexity of the problem, the need to decide in a relatively short time, the problem of incomplete information and the dynamics of the situation the specification of an optimal solution is practically and theoretically impossible to reach. In those situations organizations have no choice but to make use of organizational heuristics in order to come to strategic decisions.

Strategic Learning: The Origin of Organizational Heuristics

Furthermore, our emerging findings confirm insights from Bingham et al. (2012; 2011; 2007) which show that firms learn rules how to cope with dynamic environments. Our findings, however, extend the insights from Bingham et al. since we can show that firms not only learn simple rules for copying with highly dynamic environments, but more complex rule patterns which help in processing and evaluating information in strategic decision making. Following our insights, firms learn very complex patterns of decision-making which can be generalized to the extent that they can be applied in different situations at different points in time. These

more general patterns for a fast and frugal processing and evaluation of information in the absence of full information are therefore not just learning capabilities of firms but seem to constitute a significant aspect of strategic learning (Sirén, 2012; Beer et al., 2005). Organizational heuristics are therefore more than a dynamic capability enabling firms to reconfigure their resources in dynamic environments (Zollo & Winter, 2002; Eisenhardt & Martin, 2000); organizational heuristics as complex processes for decision making are the outcome of strategic learning mechanisms of firms. According to our insights, these complex patterns originate from individual, organizational and industrial experience which is condensed into patterns of, thereby constituting a sophisticated learning process. Organizational heuristics incorporate experience from the individual decision maker, from the industry at large (Spender, 1989) and from the idiosyncratic experience firms accumulate over time (Luhmann, 1995). But organizational heuristics are more than just the learned content of individuals, industry recipes or organizational frames: Instead it constitutes a separate and very specific learning process to distill these complex rules patterns from the experiences made. Seen this way strategic learning entails at least two distinct learning mechanisms: one is the already well known and often studied accumulation of experiences, the other is the capability to distill generalizable rule patterns out of these experiences. Strategic learning therefore refers to both, a process and a content. It points to the process of how to distill complex rule patterns from experiences and it constitutes a content of learning since precisely these rule patterns are applied in strategic decision making across different contexts. Since organizations have the ability to learn experiences and to reflect on them (Argyris & Schoen, 1978; Argyris, 1976), strategic learning entails both. Particularly the combination of rules into rule patterns exhibiting a sequential order for a stepwise processing of strategic decisions constitutes a very important form of strategic learning that did not receive sufficient attention.

Conclusion and Implications

Our model of strategic decision making contributes to strategy research in three important ways: We depart from recent literature on strategic decision making in arguing that decision making is more than exercising simple rules or gut feelings. Second, we are able to conceptualize *organizational heuristic* and discuss their mechanisms. Whilst the concept of heuristics has been frequently mentioned in decision research our study provides new insight into the way organizational heuristics are learned and how they actually operate. This helps in understanding that organizational heuristics are neither good nor bad in strategic decision making. Confronted with uncertainty organizations have to reduce complexity by relying on organizational heuristics. These heuristics on the one hand speed up the decision making process, on the other hand do they generate potential blind spots and my trigger path dependence (Koch et al., 2009). Third, we suggest that learning organizational heuristics and learning how to combining rules into rule patterns can be conceptualized as a strategic learning process.

Certainly such a study is not without limitations: An important limitation of our study is that we did not yet analyze the dynamic process behind the integration of rule patterns into organizational heuristics. Moreover, whilst it is always difficult to generalize from cases, it would be interesting to study the emergence and characteristics of organizational heuristics in different environments exhibiting differing degrees of uncertainty and dynamism.

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Appendix

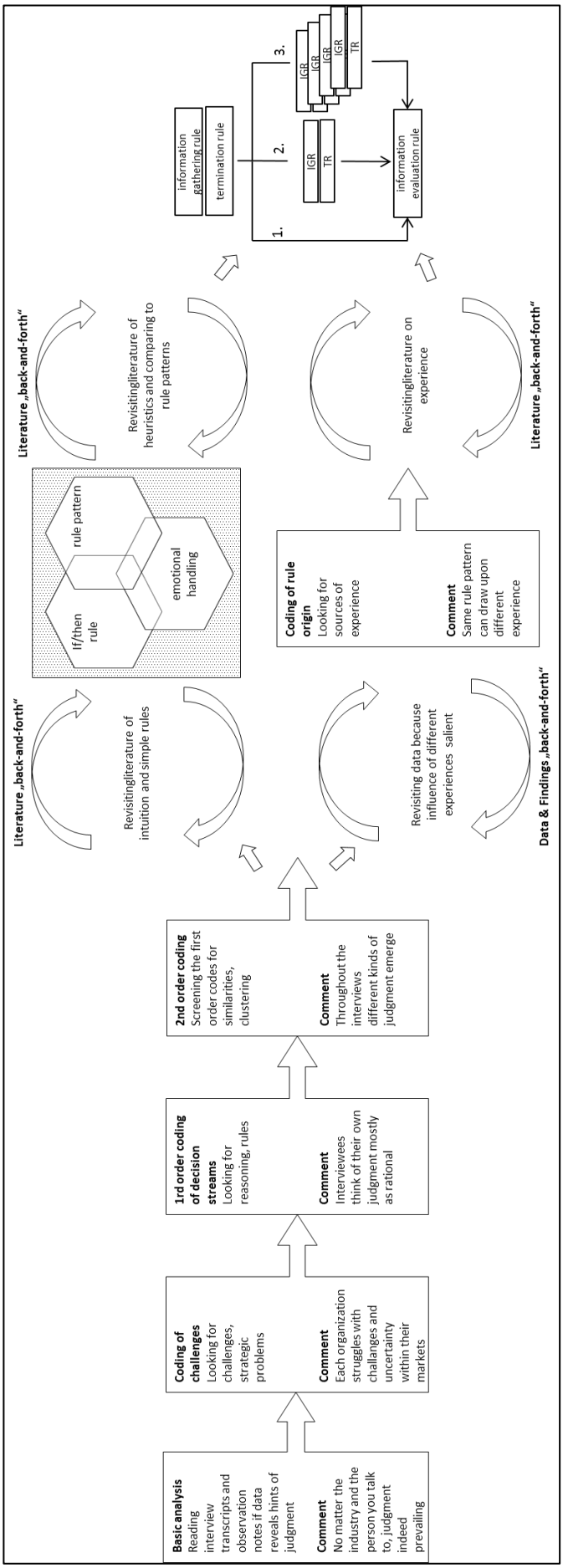

Figure 1: Illustration of data analysis procedure.

Description of data sources		
Data source	#	min
Formal interviews	25	1479 (~25h)
Informal interviews	127	1428 (~24h)
Observation meetings	26	1120 (~19h)
Observation at sight	16 (times)	3695 (~62h)

Table 1: Description of data sources

Interview Data Company	Industry	Empirical Examples	First order attributes	Strategic Challenges (2nd order aggregation)
LogTec	Logistics	„The [complexes] have been old and we wanted to built new ones." „There are new database systems [...] and therefore we have to make at some point a decision if we install these, if we make a change. But, we talk here about very long time frames." „The process took even longer. The background is certainly the situation that you do not only have the system but also a n existing team and an existing management team and that way not a greenfield project. If you want to change something, you therefore need to invest much more work to convince people." „Something which is less calculable is the development of the wages, a [system A], manned means personnel intensive, [...], so at least double of the number of employees compared to an automated [system B]. And here you start building assumptions on the development of wages."	New investment in systems New investment in software Convincing people to change Development of wages	Being ready for change and proceeding with change Investing for long period without being fully able to calculate development of important influence factors
FineVest	Finance	„What does a company need to have a chance of being successful? For that I see the sustainability topic as a mega trend " „There was no transparency in the company, a big challenge [for us]." „Yes, the acquisition of Bank X was announced end of November. Two weeks later Lehman was broke and we looked at each other with big eyes." „We have at the moment also the question: Are the markets we are operating in still the right ones?"	Sustainability trend Transparency issues Financial crisis New/old markets	Understanding new markets and trends and repositioning Unforeseen market developments
Style+	Fashion	"And this is how it began that, by more and more specialization and segmentation, we started having left and right an increasing [market] competition. " „As I said, to some extent new sections have been built up, market integration, and stock control are certainly two important ones, but also sales has been adjusted to the new format structures [...]." „In addition the whole topic of e-commerce is coming up, [...], so the market has undergone an extensive change in the last ten years. And ya, this means for our strategic vision a challenge to be more focused and clearer defined." „I think it has nothing to do with sustainability. But ya, it's a topic in the market. These are influences which affect us of course."	market competition Repositioning and rethinking E-commerce trend Sustainability trend	Competing on the market whilst understanding and adjusting to new trends Rethinking the business model
LawRder	Law	„So there are in every equitable transaction situations where the transaction is at the verge to overturn." „For an attorney in our field there is only one question within the negotiation situations: How do I act?" „Personnel, exactly. For us Personnel is the true asset." „There hasn't been done much yet [in that field], because the capital investment is very, very high. " „And one or another company acquisition, also particularly public acquisitions, this are always the most profitable, the hardest, because much more can go wrong."	Transaction development Negotiating in tough situations Human resources Investments for uncertain/unknown projects Company acquisitions	Negotiating and adjusting behavioral strategies to tough situations. Handling of investments of uncertain nature
SoftTec	IT	„Critical are always moments [...]- so you have plans with a technology, but you always need the general set-up to implement your plans. " „And suddenly 2002 the implosion of the markets. And not only an implosion of the new market, but in general absolute investment resistance. This was also a tough situation to deal with, if you actually need capital and orders." „We know that the technology works. We know that [the technology] is globally applicable. But how to bring it successfully to the market?" „Also a critical factor of success is the staff recruitment. That is today a really, really tough topic. The biggest uncertainty."	Implement new technology Unforeseen market developments Successful global market strategy Staff recruitment	Setting up new technologies in global markets Dealing with unforeseen developments
SocM	Social Media	"The uncertainty in the market is huge. Nothing can be predicted. The only certain thing is that change is constant. You need to be really flexible and know how to adjust in this market. This partly happens because we don't sell material products, we sell experience." "If CEO is the only responsible for the change do not take over the project! Problems! A certain structure level in the client is essential. Collaboration: resources, time, effort!"	Flexibility and adjustment Project influencing factors	Handling new market situations , influencing factors ,and aligning
MedSow	Pharma	"The markets are very mature and highly competitive." "Balance between independence and interdependence." "When selecting a salesperson for a distribution project in a poor district"	Competitive market Understanding interdependencies	Positioning and acting upon the market
Brand-1	Marketing	"Brand Strategy and Positioning" "In the last few years the market has changed. There are more business opportunities now because the country's economy is growing." "We don't work for any potential clients"	New market situation Strategic vision Client selection	Capturing business opportunities by handling a growing market
Sure2b	Insurance	"As a leading company, it seeks to stay ahead through innovation and effort to generate new products and services that meet the specific needs of their clients, whether corporate or individuals." "Currently [we] own two hospitals in the capital. However, many important companies which offer its employees health insurance from [us] have their factories and plants elsewhere in the country, usually in [tough terrain]. "	New innovation trends Changing customer needs Investment in new facilities	Staying ahead through innovation in alignment with changing customer needs
EntreuX	Internet	„Ok, so nothing with a basement, you know? There was nothing aligned with any strategy. Therefore it is essential and important to built a brand-building strategy." „All these projects are projects which developed because of ‚as soon as possible', because otherwise we couldn't move on operating in any way." „For instance in Spain. If you want to have theoretically a good overview about shop performance, you have to click in each shop and bam, bam, bam. And this is, I mean, there is just too much administrative effort, right? It is very very unnecessary."	Building a brand building strategy Unforeseen situations Efficiency and pace	Building a baseline strategy and dealing at the same time fast with upcoming problems.

Table 2: Overview of companies comprised by empirical study and extract coding schema of their challenges.

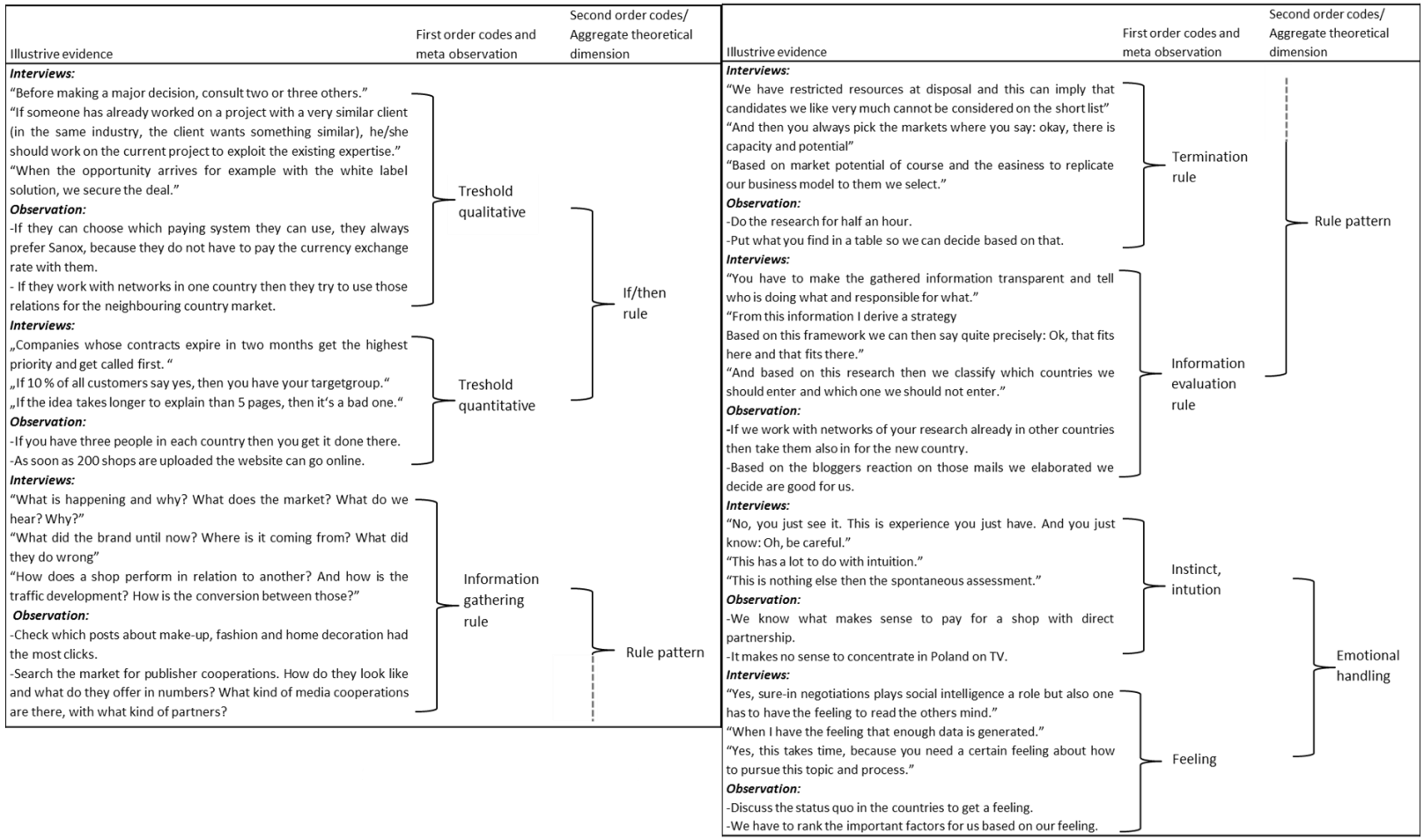

Table 3: Extract coding schema for elements of judgment: if/then rules, rule pattern, emotional handling.

Origins of experience Illustrive examples	Codes
Interviews: • I act based on my experience horizon [about prior projects ouside of the organization] • This is may way [of doing things]. This is my personal way. *Observations:* • I know that people don‘t buy such things in Easter in Poland • During the time 15.03.-01.05. Italians travel a lot	Individual experience • Experience from outside the organization • Experience from personal life • Inisghts new to the organization
Interviews: • This is know-how, this is just there in the organization • This is an implicit rule here how we arrange the teams for negotiations *Observations:* • Use contacts you already know from Brazil • Get suggestions from Maria what is interesting to post	Organizational experience • Experience shared in the organization • Experience made within the organization • Adopting ways of doing things
Interviews: • There are platforms where we [commercial industry] meet and exchange insights • If you operate on a market then you know about what worked for competitors and what didn‘t *Observations:* • I looked at Google Center and checked out the pages ranked reall yhigh which we are working with, we have to check them • What are the blogs of our competitors?	Industry experience • Experience shared by the industry • Experience made by competitors and other market participants • Trends /dynamics of the market

Table 4: Coding example for origins of experience

If/then rules	
Characketeristics	Illustrative examples
• Gives direction what to do • Gives direction what not to do • Gives guidance • Simple constructs (one rule) • Standalone decision contsructs	*Interviews:* • First you try to be rational then you play on time. • Successful companies operate on five markets. • You need a huge network to get fast good information. • I question everything in principle. *Observation:* • If we get 10 sales that is good. • If we use an offer of one affiliate network make sure that you update the background. • If you have a blog which is priority 7 you have something from that, if it is less you will not get so much PR.

Table 5: Examples of if/then rules and their characteristics.

Rule Pattern	
Characketeristics	Illustrative examples
• Gives direction • What and how to do • Procedure • Guidance • consists of specific sequence of specific single rules	*Interviews:* • How to built a good team? What employees do we need? We check those with experince and without experience. Those without previous experience would learn the new technology better, that is why we decided to take them. *Observations:* • Do we have new offers? New codes? If not, check the competitors. What do they have? Is it interesting for us? Contact those shops.
Information gathering rules	
Characketeristics	Illustrative examples
• Search guidance • Limits search set • Speeds up information gathering • Defines pre selection of where to look at and where not to look at	*Interviews:* • So what is the core problem here? • What are the main strategic sectors? *Observations:* • So do research on blogs, websites related to start ups. • We have to search for direct links with shops.
Termination rules	
Characketeristics	Illustrative examples
• Search terminates by certain criteria • Usually implicit • Reduces time spent on search • Suposed to put focus on relevant information	*Interviews:* • Is there a monetary implication [then • [check] always in correspondence with marketconditions. *Observations:* • Any time you come across new exclusive coupons [...] • If we know it is exclusivley for us, then [...]
Information evaluation rules	
Characketeristics	Illustrative examples
• Final step of decision making process • Evaluation of information • Decision based on criteria	*Interviews:* • [it seems] that first of all we have to work on the product. • From this we deduce the actions . *Observations:* • Since e-commece currently related to Moscow and St. Petersburg [...] , so use name in subtext. • We take them, [since] we work with them in Italy and Poland

Table 6: Examples of rule patterns, their characteristics as well as their typical internal rules.

Emotional handling	
Characketeristics	Illustrative examples
• (gut) feeling • Just knowing • Intuition • Instinct • No reasoning • Impulsive	*Interviews:* • We needed a long time to decide based on the information to have a good feeling • Yes there are some people in the spanish team, they just know how it works. • No, you just know. This is again an example for that point where you just know. *Observations:* • You have a certain feeling that the aim is near. • My perception is right now that we should focus rather on this website. • Have a look and get the feeling for sales

Table 7: Examples of emotional handling and its characteristics

Examples: Illustration of empirical evidence of rule patterns

Strategic Challenges

client selection	*fast decision making*	*shop selection*	*link acquirement*	*traffic generation*	*implementing newsletter*
"We don't work for any potential clients. We exclude potential clients if: 1.The person who first contacts [us] has a private e-mail address (e.g. hotmail or yahoo) and not an e-mail address corresponding to a firm. ..... 2.We [unsuccessfully] try to corroborate if the firm exists by not finding the firm's website, not finding the firm's number in the phone book (yellow pages) or asking people in the industry that should know the firm and have never heard of it, etc. ..... 3.The person who first contacts [us] doesn't show any interest in having a conversation over the phone or meeting in person. ..... Only when all of them are true we forget about the inquiry, if only one of the three points is true… it's ok because it may be a small business/start-up and so they don't have a corporate website yet, etc."	"This means many, this means that with every detailed decision one has to be guided by the big picture. This means, if I […] have to sign anything, then I check of course in which context this stands relatively to the big picture. ..... To know further: Does this have monetarily any consequences? ..... One knows: Does it look formally right? ..... Does it look like there is something wrong? ..... And then I just would hand it over without checking the content into much detail.."	„Are there any other shops in Italy as popular as Zalando? ..... If not, check the competitors, what do they do? ..... What can we adopt from them to our site? Which categories? ..... If Fashion is the same then check sport stuff."	„What kind of links have been offered to us? ..... To what kind of websites do these belong? ..... Are there any special websites? ..... If yes, did we publish already in such a blog? ..... And if yes, are all of the prices the same? ..... Does it make sense to negotiate if price is high? ..... If yes, negotiate and order 5 links from them."	„We have to increase traffic, so apart from Valentine, what are the next big events? ..... Women's day, ok, how big is the event? ..... What kind of gifts do they buy, anything for groups? ..... If they only buy little gifts, promote in Facebook, otherwise on slider."	„To understand what we have to fulfill please subscribe in their newsletter to see what they are offering and advertising and give suggestions ..... and based on the suggestions we will decide how to proceed."

Examples: Illustration of inherent sequential order of rule patterns

IGR TR	IGR TR	IGR TR	IGR TR	IGR TR	IGR TR
IGR TR	IGR TR	IGR TR	IGR TR	IGR TR	IER
IGR TR	IGR TR	IGR TR	IGR TR	IGR TR	
IER	IGR TR	IER	IGR TR	IER	
	IER		IGR TR		
			IGR TR		
			IGR TR		
			IER		

Table 8: Empirical examples for rule pattern variety

Examples: Illustration of empirical evidence of rule patterns					
Strategic Challenges					
client selection	*fast decision making*	*shop selection*	*link acquirement*	*traffic generation*	*implementing newsletter*
"We don't work for any potential clients. We exclude potential clients if: 1.The person who first contacts [us] has a private e-mail address (e.g. hotmail or yahoo) and not an e-mail address corresponding to a firm. ..... 2.We [unsuccessfully] try to corroborate if the firm exists by not finding the firm's website, not finding the firm's number in the phone book (yellow pages) or asking people in the industry that should know the firm and have never heard of it, etc. ..... 3.The person who first contacts [us] doesn't show any interest in having a conversation over the phone or meeting in person. ..... Only when all of them are true we forget about the inquiry, if only one of the three points is true… it's ok because it may be a small business/start-up and so they don't have a corporate website yet, etc."	"This means many, this means that with every detailed decision one has to be guided by the big picture. This means, if I […] have to sign anything, then I check of course in which context this stands relatively to the big picture. ..... To know further: Does this have monetarily any consequences? ..... One knows: Does it look formally right? ..... Does it look like there is something wrong? ..... And then I just would hand it over without checking the content into much detail.."	„Are there any other shops in Italy as popular as Zalando? ..... If not, check the competitors, what do they do? ..... What can we adopt from them to our site? Which categories? ..... If Fashion is the same then check sport stuff."	„What kind of links have been offered to us? ..... To what kind of websites do these belong? ..... Are there any special websites? ..... If yes, did we publish already in such a blog? ..... And if yes, are all of the prices the same? ..... Does it make sense to negotiate if price is high? ..... If yes, negotiate and order 5 links from them."	„We have to increase traffic, so apart from Valentine, what are the next big events? ..... Women's day, ok, how big is the event? ..... What kind of gifts do they buy, anything for groups? ..... If they only buy little gifts, promote in Facebook, otherwise on slider."	„To understand what we have to fulfill please subscribe in their newsletter to see what they are offering and advertising and give suggestions ..... and based on the suggestions we will decide how to proceed."
Examples: Illustration of experience origin					
organizational experience **organizational experience/ industry experince** **organizational experience** **organizational experience**	**individual experience** **Organizational experience** **Organizational experience** **Organizational experience** **Individual experience**	**Organizational experience** **organizational experience/ industry experince** **industry experince** **industry experince**	**Organizational experience** **Organizational experience** **organizational experience/ industry experince** **Organizational experience** **Organizational experience** **Organizational experience** **Organizational experience**	**Organizational experience** **Individual experience** **Individual Experience/ Organizational experience** **Organizational experience**	**Organizational experience** **Industry experience**

Table 9: Empirical examples for rule pattern and origin of experience of rule pattern component

Third Dissertation Paper

How Organizational Heuristics Emerge in Strategy Making

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Abstract:

Heuristics are rules of thumb or "shortcuts" that practitioners use to make decisions in uncertain situations. Although scholars disagree about whether heuristics are good or bad, they emphasize their impact on strategic decision-making processes. However, little is known about how heuristics emerge. Building on a practice perspective, this paper draws on an ethnographic case study in the internet industry to develop a process model of the emergence of organizational heuristics in strategic decision making. The model describes three phases—*coping*, *converging* and *connecting*—that are linked by contextual factors and sustained by mediators to form heuristic patterns over time. This study makes three important contributions. First, it extends strategic management research by revealing the underlying dynamics of how organizational heuristics come into being and are institutionalized during strategy making. Second, this study adds to the strategy-as-practice stream by showing that organizational heuristics are influential strategic decision-making practices. Finally, it elaborates on the organizational decision-making debate that prominent but separately discussed decision models can build on each other, as they are interlinked in the process.

Keywords: strategic decision making, strategy – as – practice, organizational heuristics, simple rules, ethnography, case study, process model

Introduction

It is well established that heuristics play a crucial role in guiding decision making in organizations' strategic processes. Heuristics play a pivotal role not only because of organizations' environmental uncertainties (Davis et al., 2009, Mousavi & Gigerenzer, 2014) but also because organizations have to address a high degree of internal ambiguity (March & Olsen, 1976). Therefore, organizations cope by employing heuristics to make satisfactory decisions in strategy making (Simon, 1955). Recently, Bingham and Eisenhardt (2011) argued that in highly dynamic environments, it is essential for organizations to rely on so-called "simple rules". Simple rules are heuristics that can be easily remembered and applied but also effortlessly disregarded if necessary (Bingham & Eisenhardt, 2011). Particularly in complex settings, in which uncertainty is high and the context novel, experience-based heuristics seem to be an effective means of pursuing strategic initiatives (Gavetti et al., 2005; Maitland & Sammartino, 2014), as simplification enables organizations to tackle problems for which all supposedly relevant information cannot be computed and for which no consequences can be determined a priori, nor even after the decision is made (Schwenk, 1984; Schwenk, 1995).

However, thus far, studies exploring heuristics in strategic decision making have focused on the performance of heuristics and their content. Bingham and Eisenhardt (2011) show that heuristics in strategy making lead to competitive advantages in dynamic markets, such as the high-tech industry. They argue that in pursuing strategic processes, such as internationalization, organizations learn selection, priority, procedural and temporal heuristics (Bingham & Eisenhardt, 2011). In their study, Maitland and Sammartino (2014) show that multinational organizations powerfully use heuristics to cope with politically hazardous environments, such as those in Africa. They argue that under significant information constraints, organizations are able

to build small-world representations based on certain heuristics, which enhances their decision-making processes (Maitland & Sammartino, 2014). Although heuristics have been shown to be valuable and influential in terms of organizational action, the underlying dynamics and processes through which they emerge in organizational decision making remain unexplored. Despite the role of experience in their manifestations (Bingham & Eisenhardt, 2011), it is still unclear through which processes they come into being. However, raising the question regarding the underlying dynamics of heuristic emergence on the organizational level enhances our understanding of how meanings can manifest themselves in organizational decision constructs such as heuristics, which act as influential guides in organizational action (March & Olsen, 1976; March, 1988).

The strategy-as-practice stream is a promising field of research for embedding an understanding of how organizational heuristics theoretically and empirically emerge. This stream of research is concerned with the everyday activity of strategy making and its underlying processes and dynamics (Langley et al., 2013; Jarzabkowski & Paul Spee, 2009; Whittington, 2006; Jarzabkowski et al., 2007). Focusing on *strategizing* activities and practices, strategy-as-practice scholars are interested in understanding the everyday engagement of organizations, actors and strategy to uncover the inherent dynamics within strategic processes (Whittington, 2006). Scholars in this field argue that strategy is shaped and constructed by strategic practices and everyday strategy-related discussions (Whittington, 2006; Jarzabkowski & Paul Spee, 2009; Hendry, 2000). They ground their research agenda in the so-called social practice turn, which sees practices as the primary phenomena to study to understand social constructions, such as organizations (Schatzki, 2006; Nicolini et al., 2012; Geiger, 2009). However, although they study strategizing activities in strategic decision-making process, such as strategic initiatives

(Jarzabkowski, 2003) and strategy meetings (Kwon et al., 2014; Jarzabkowski & Seidl, 2008), the question of heuristics in strategic decision making and their influence on strategizing remains unaddressed.

This study of strategic decision making in practice offers some answers to these questions. Using ethnographic techniques, a model of how organizational heuristics emerge was developed through a grounded inquiry into the everyday strategizing activities at EntreuX. EntreuX is a mature startup company whose digital couponing business operates in the internet market in ten countries worldwide. Adopting a practice lens, this study examines EntreuX's strategic decision-making dynamics in the course of everyday organizational action by investigating sayings, doings and meanings over time. In the course of this examination, my study elaborates a process model, which consists of three phases: *coping*, *converging* and *connecting*. Each phase is constituted and characterized by certain forms of discussion. They are interlinked by *observing*, *transferring* and *aligning* action and sustained by the moderator's *recognition*, *motivation* and *legitimacy*. Together, these three components allow for heuristics to emerge in strategy making.

My inductively derived model contributes to the strategic management and strategy-as-practice literature by offering a deeper understanding of strategic decision-making practices, particularly the way in which heuristics that are central to these practices emerge over time. Revealing and bringing attention to the underlying dynamics provides scholars and practitioners with an important way of understanding how meanings manifest themselves in rules, which again manifest themselves in heuristics. Tracing and grasping such a process allows for insights into how and when the processing of experience materializes into rules, which are then institutionalized and influence quick strategic decision making. Further, adding to the

organizational decision-making debate, my study reveals that prominent but separately discussed decision models can build on each other, as they are interlinked in the process.

This paper is organized into five sections. It begins with a review of the previous literature on heuristics in strategic decision making and suggests the strategy-as-practice stream as a fruitful avenue for an empirical investigation of organizational heuristics. The methods section explains how the practice lens is operationalized in the research design and presents the data analysis steps. Building on the analysis, the findings demonstrate the phases, their linkages and the moderators forming the emergence process of organizational heuristics. Finally, the findings are discussed in a theoretical light by explicating the study's contributions and suggesting avenues for future research.

Foundations for Understanding the Emergence of Organizational Heuristics

Heuristics and Strategic Decision Making

The role and value of heuristics (i.e., rules of thumb or shortcuts) in decision making in the context of uncertainty is highly debated in the field of strategic management and organizational studies (Newell & Broeder, 2008; Eisenhardt & Zbaracki, 1992; Stubbart, 1989). On the one hand, heuristics have been shown to contribute positively to decision making in strategic contexts (Bingham & Eisenhardt, 2011; Eisenhardt & Sull, 2001; Eisenhardt & Martin, 2000; Bingham & Eisenhardt, 2014; Maitland & Sammartino, 2014). On the other hand, some scholars have argued that heuristics are biased and are thus likely to produce unwelcome outcomes (Schwenk, 1995; Schwenk, 1984; Kahneman et al., 2011; Vouri & Vouri, 2014).

Scholars advocating the positive value of heuristics emphasize that heuristics are rational strategies with regard to decision making in complex settings (Bingham & Eisenhardt, 2011; Bingham & Eisenhardt, 2014; Eisenhardt & Sull, 2001; Meszaros, 1999; Maitland & Sammartino, 2014, Gigerenzer & Gaissmaier, 2011). Mousavi et al. (2014) note that when confronted with fundamental uncertainty, i.e. uncertainty that cannot be reduced, rather simple solutions are the key in tackling business decision making. In line with this thought, recent studies in strategic management encourage organizations to learn so-called simple rules to cope with strategic challenges (Bingham & Eisenhardt, 2011; Bingham & Eisenhardt, 2014). Simple rules are heuristics, which are the decision-making capabilities that firms learn from processing experience (Eisenhardt and Bourgeois 1988; Eisenhardt et al. 2010; Eisenhardt and Sull 2001; Eisenhardt and Zbaracki 1992; Bingham and Eisenhardt 2011; Bingham et al. 2007; Brown and Eisenhardt 1997; Davis et al., 2009; Eisenhardt and Zbaracki 1992). Bingham et al. (2011; 2014) argue that, particularly in strategic contexts, a heuristic strategy allows for the effective management of uncertainty, pace and complexity. Following Eisenhardt and Martin (2000: 1106), comprehensive decision-making procedures only apply to strategic problems in moderate markets, whereas firms in dynamic environments have to rely on simple, experiential decision-making processes that "rely on quickly created new knowledge and iterative execution to produce adaptive, but unpredictable outcomes". Consequently, in dynamic markets, heuristics allow firms to perform well by allowing them to follow fast-arising opportunities (Eisenhardt & Sull, 2001).

In contrast, another line of thought sees heuristics as biased cognitive shortcuts (Tversky & Kahneman, 1981; Kahneman & Tversky, 1973; Kahneman & Tversky, 1972; Hodgekinson et al., 2002), which are applied due to cognitive restrictions and the failure to engage in more

sophisticated analytical methods (Schwenk, 1995; Dane & Pratt, 2007). According to Kahneman and Tversky (1973), relying on only a few cues for decision making might trigger simplified processes with deficient outcomes. They argue that individuals rely too heavily on heuristics in decision making instead of considering more sophisticated analytical methods (Kahneman & Tversky, 1973). Further, some scholars even argue that heuristics are not at all applicable to strategic contexts (Vouri & Vouri, 2014) because strategic contexts are fundamentally different from contexts in which individuals have to make up their minds within seconds. Strategic contexts offer more time and information to ensure the application of more sophisticated methods, such as analytical procedures, to aid in decision making (Vouri & Vouri, 2014). Therefore, according to this view, heuristics are unnecessary and misguided decision tools for strategic projects.

However, scholars widely accept that heuristics have an important impact on strategic decision-making processes (Schwenk, 1995; Mintzberg et al., 1976; Bingham & Eisenhardt, 2011; Meszaros, 1999; Eisenhardt & Sull, 2001). More importantly, decades ago, Simon (1955; 1986) famously questioned the assumptions of global rationality in decision making and introduced the notions of bounded rationality and satisficing. Satisficing is the decision process in which individuals engage when they search for manageable or "good enough" decisions instead of optimal solutions because optimal solutions, in principle, cannot be reached in organizations (Simon, 1986). In organizations, strategic decision-making processes are not of a linear type (Mintzberg et al., 1976; Mintzberg, 1978; Simon & Newell, 1958). They are of a non-programmed nature involving unstructured and intertwined coping processes (Cyert et al., 1956; Mintzberg et al., 1976). Following Simon's notion of satisficing, scholars argue that experiences are abstracted into rules, which individuals follow because these rules essentially seem to work

best (March, 1988). This type of feedback and rule following can be adapted for complex environments (Hogarth, 1981) and plays a central role in decision making (Kleinmuntz, 1985). Particularly in strategic management, where problems are usually of a novel, complex, dynamic and ambiguous nature (Mintzberg et al., 1976; Davis et al., 2009; Maitland & Sammartino, 2014), judgment based on heuristics prevails in deciding under uncertainty (Mintzberg et al., 1976; Eisenhardt & Bourgeois, 1988; Eisenhardt et al., 2010; Eisenhardt & Zbaracki, 1992; Khatri & Ng, 2000).

Previous research on heuristics in decision making shows that heuristics play a crucial role in decision processes. However, thus far, the literature on heuristics in strategic management has focused more on either the individual level, dealing with the cognitive capacities of the organization's decision makers (Hodgekinson et al., 1999), or on the performative aspects of heuristics in volatile environments (Maitland & Sammartino, 2014; Bingham & Eisenhardt, 2014). Despite existing research on simple rules, we do not yet know much about heuristics on the organizational level. Although Bingham et al. (2011) offer valuable insights into what organizations learn from experience, an in-depth understanding of how simple rules and heuristics emerge is missing. Although March (1988) notes that we have to understand how decision rules are created and changed, we lack research on how heuristics in organizations emerge.

Strategy as Practice

A promising reference point for a theoretical and methodological consideration of the emergence of organizational heuristics can be found in the recent stream of research on strategy as practice. Concerned with strategy in the making, this stream emphasizes the importance of studying

strategic practices to understand the underlying dynamics of strategy (Whittington, 2006; Jarzabkowski & Paul Spee, 2009). According to many scholars, practices, in a broad sense, are the central phenomena to study in order to understand social life in organizations (Nicolini, 2012; Schatzki, 2006; Feldman & Orlikowski, 2011). Building on Heidegger's notion of "being in the world" (Sandberg & Dall'Alba, 2009; Nicolini et al., 2012) and Wittgenstein's argument that only through practices can we ascribe meaning to the everyday context (Nicolini et al., 2012), the practice turn focuses on (1) the relationship between systems and practices, (2) how and what people are doing and (3) the role of individual and collective agents in organizations (Ortner, 1984).

Particularly within the organizational context, a more recent view understands organizational practices as structured actions unfolding over time (Schatzki, 2006). For Schatzki (2006), practices are characterized by four principle phenomena. First, there are know-how understandings within a practice, which allow for reasonable ways of coping with everyday issues while practicing (Schatzki, 2006; Nicolini et al., 2012). Second, instructive rules keep the practices going by specifying what to do (Schatzki, 2006; Nicolini et al., 2012). Third, practices have a so-called *teleo affective structure*, which ensures that practices are oriented towards a particular end. However, this end is not a fixed point in time or a stable goal; it is instead a constantly renegotiated understanding of the outcome of the practice (Schatzki, 2006; Nicolini et al., 2012). Fourth, general understandings about the nature of the practices govern the actions within these practices (Schatzki, 2006; Nicolini et al., 2012). In summary, practices are a *space-time manifold of actions,* enduring over time through repetition and held in organizational memory (Schatzki, 2006: 1864; Nicolini et al., 2012).

Building on the practice turn in organizational theory (Schatzki, 2006; Nicolini et al., 2012), strategic practices are understood as shared procedures of thinking and doing (Whittington, 2006), which can explain strategizing patterns (Grant, 2003). Strategy-as-practice scholars are interested in the sayings and doings that shape practices in the strategic context (Jarzabkowski & Paul Spee, 2009; Seidl & Whittington, 2014). They try to understand how the aggregation of activities can result in organizational phenomena, such as strategy (Johnson et al., 2003), in ways that normative theories cannot explain (Jarzabkowski & Paul Spee, 2009; Jarzabkowski et al., 2007). Emphasizing dynamics, relationships and enactment (Feldman & Orlikowski, 2011), scholars ask how non-deliberate action can result in ongoing patterns (Chia & Holt, 2006). Following the call of Whittington (2006) and investigating how influential practices are produced, this stream of research offers rich insights into the strategic process. However, although Schatzki (2006) introduces decision-making practices in his studies, he does not provide an account of what decision-making practices actually are or how they are constituted. Although strategy-as-practice scholars have offered insights into strategy making, less attention has been directed towards strategic decision making and its heuristical decision constructs. This research gap is surprising because strategic decision making is an important component of the strategic process (Hendry, 2000; Chia & Holt, 2006; Jarzabkowski, 2003).

In fact, Hendry (2000) argues that discussions during strategizing activities mediate between strategic decision making and social practices. Strategic decisions can be observed as elements of organizational discussions because “teams reason out discursively the appropriate action to take, capture these in the form of decisions and then act on basis of these” (Hendry, 2000: 967). He argues that related organizational discourse is instrumental; therefore, links between actions and

intentions can be traced (Hendry, 2000). Because language goes hand in hand with social practices, strategic decision making can be seen as part of social practices (Hendry, 2000).

As strategic decision-making literature neglects the powerful tool of a practice lens, the strategy-as-practice stream neglects investigating decision-making practices such as heuristics. This research gap is surprising because attempts have been initiated in the past to provide an integrated setting to study strategic decision making through a practice lens by tracing related sayings and doings. Applying these views to an analysis of the emergence of organizational heuristics allows an investigation of everyday interactions during strategizing, particularly sayings and doings during strategic decision making. My study thus not only addresses the challenge of explaining how organizational heuristics emerge but also examines how organizational heuristics can be understood as powerful decision practices.

Method: An Ethnographic Case Study

Researching the dynamics of decision-making practices, particularly the emergence of these practices, is a complex endeavor (Maitland & Sammartino, 2014). The notion of their emergence implies that a processual lens should be used to understand the phenomenon in question (Langley, 1999). To overcome these difficulties, the research setting comprises an ethnographic case as an inductive research design that is informed by a broad interest in strategic decision making while coping with uncertainty. As outlined in the previous section, adopting a practice lens for strategic decision making allows for a focus on the everyday activities of managers and subordinates who make strategic decisions in situ, a similar focus to those in previous strategy-as-practice studies (Jarzabkowski, 2003; Kaplan & Orlikowski, 2013). Focusing on everyday

activities requires immersion into the field by observing, engaging and interacting with practitioners. In line with strategy-as-practice fieldwork, I chose to study strategizing activities in the company EntreuX. My ethnographic case study follows an embedded case study design because I tracked six strategy-related projects over time with embedded units of analysis (Yin, 2003; Eisenhardt, 1989; Langley, 2007; Langley & Abdallah, 2011). My interest was to understand how strategic decision making occurred and how decision rules, namely heuristics, emerged. Therefore, the units of analysis were the decision streams within each project.

Research Design

In line with the purposeful sampling logic (Patton, 1990), I chose to study the emergence of organizational heuristics in the mature startup company EntreuX. EntreuX operates digital couponing websites in ten countries worldwide, including Russia, Colombia and Italy. With roughly sixty employees, its headquarters is located in Germany. From this headquarters, it has striven since its foundation in 2010 to become one of the world's biggest players in the online couponing business. Backed up by several venture rounds, its headquarters has pursued strategic projects that align with its vision. EntreuX promises an information-intensive context for understanding and observing the emergence of organizational heuristics for three main reasons (Patton, 1990): (1) By operating in the internet market, which has been characterized in previous studies by volatility and rapid change (Bingham & Eisenhardt, 2011), EntreuX practitioners have to make quick decisions when strategizing (Eisenhardt & Sull, 2001). Additionally, in such a context, practitioners tend to decide based on heuristics (Davis et al., 2009). (2) EntreuX is a mature start-up company. Therefore, the organization is dealing with shaping and evolving organizational patterns; the emergence of organizational heuristics can thus be witnessed during a field study of several months (Bingham & Eisenhardt, 2011). (3) EntreuX is rapidly growing,

engaging simultaneously in ten different country projects worldwide. Consequently, strategic processes can be traced in real time and learned content can be traced across projects.

I collected my data by participating in all relevant firm activities as an embedded observer on a regular basis for 6 months. In the first few months, I attended team-building activities to establish trust and to gain insights into EntreuX's culture, rules and procedures (Kirk & Miller, 1986). Consequently, I was allowed to spend approximately 3 days per week at the company for three months, working at my own desk in their open office space. I thus had access to meetings, workshops, and on-site working activities. Most importantly, I had access to and participated in strategy meetings. Prior to the meetings employees would explicitly emphasize that strategic decisions would be on the agenda during these meetings. Such meetings included strategy meetings of the management team and strategy meetings of six country teams, including those for Italy, Poland, Russia, Colombia, Germany and France. Strategy meetings were the most important observations to engage in for the following reasons: (1) All projects are strategic projects happening under time pressure, with little prior information cues available and actors faced with great uncertainty. (Miles & Huberman, 1994). (2) The strategic processes occur within the same context, which provides a rich criteria overlap and allows for a comparison of decision streams (Miles & Huberman, 1994). In total, I observed 26 meetings. In addition to real-time participant observations, I conducted 13 retrospective semi-structured interviews with participants in the strategy meetings. In the semi-structured interviews, interviewees were asked about their experiences in making strategic decisions to trace their learned content and to compare insights from the observation with the rationalizations of the interviewees (Bingham & Eisenhardt, 2011).

Data analysis

To make sense of the data, the analysis progressed in five main steps, as Figure 1 illustrates. The data analysis process was highly iterative, going back and forth between data and several rounds of coding as well as consulting the literature on strategic decision making and heuristics to develop theoretical accounts.

Insert Figure 1 about here

First, after repetitively going through the data, I distilled so-called issue streams. Issue streams overcome the difficulty of pinning down decisions in ethnographic research because decision interactions and decision making are tough to capture (Langley et al., 1995). Conversations and discussions at least address issues, whereas decisions are not always the center of organizational debates (Langley et al., 1995). Identifying issue streams allows for data sorting and provides a first impression about what practitioners are primarily addressing in their strategy meetings. In this step of analysis, I was able to distill nine issue streams: networks, campaigns, offers, blogs, public relations (PR), website, shops, social media and competitors.

Second, using these issue streams to sort my data, I performed the first round of open coding for each issue stream (Glaser & Strauss, 1967). I tried to dive deeply into each stream and to distill the typical forms of sayings that evolved around decision making. Hints of decision-making activity were, for instance, discussions about finding a solution to a problem and emphasizing subsequent action steps (Mintzberg & Waters, 1990). In this way, I tried to grasp decision-making engagement through a strategy-as-practice lens (Whittington, 2006; Jarzabkowski & Paul Spee, 2009). By applying open coding I stayed as close as possible to the informants' articulations when selecting codes (Glaser & Strauss, 1967). During this step, a vast amount of codes emerged, such as for instance the following: "looking for", "do you?", "information from

observation", "information from native background", "always do" and "let‘s do that". These codes express the way participants were dealing with issues during discussions in meetings and with decision making.

Third, to make sense of the data, I clustered the 1rd order codes by grouping them into second-order codes (Glaser & Strauss, 1967). This abstraction is the first level of interpretive coding (Miles & Huberman, 1994) and led to three second-order codes: information gathering, information providing and decision making. Under the code "information gathering", all codes are included, which shows the participants' engagement in determining how and where to gather appropriate information to solve a problem. Codes such as "looking for" and "do you?" fall in this category. The code "information providing" includes codes such as "information from observation" and "information from native background". Here, participants retrieve their knowledge about issues or their findings from previous investigations to solve problems or they use their experience as a guide. Finally, "decision making" summarizes codes such as "always do" and "let‘s do that". These codes are expressions of action. Participants articulate that they are making a decision about what to do or how to do something.

Fourth, because processes reveal themselves over time and not as single discrete entities, I used the visual mapping and temporal bracketing strategy to derive aggregate dimensions from my codes (Langley, 1999). I visualized the content of all strategy meetings over time by vertically sorting all countries and horizontally sorting all meeting dates. Within this graph, for each country and meeting date, I included corresponding text passages with their second-order codes. Such text passages show the discussions evolving around strategic issues in strategy meetings. Their investigation is in line with recent strategy-as-practice studies (Kwon et al., 2014). As a result, I was not only able to see the unfolding of sayings and doings regarding the issues over

time and across projects, but I could also reveal the distribution of the second-order codes over time. Because of the differences of the distribution of second-order codes over time, I was able to cluster text passages and form aggregate dimensions, which were my theoretical core concepts (Glaser & Strauss, 1967). Three main concepts emerged, which I named the coping phase, the converging phase and the connecting phase. The term "phase" is justified because the clustered text passages capture a verbal interaction pattern at a certain instant within the entire data process, which is repeatedly observable (Langley et al., 1995). Under the "coping phase", I summarized text passages that showed a high degree of information-gathering codes, whereas information-providing codes and decision-making codes occurred less often. The "converging phase" captures text passages with a high degree of information-providing codes, whereas information-gathering codes and decision-making codes occurred to a lesser degree. Finally, the "connecting phase" is marked almost exclusively by decision-making codes within the text passages. Information-gathering codes and information-providing codes are in general nonexistent in this phase. Table 1 shows the entire coding scheme with empirical examples and Table 2 illustrates in more detail which kinds of discussions are attributed to which phase. For each text passage the related heuristic is formulated to show that the discussions indeed lead to heuristics.

Insert Table 1 and 2 about here

In a final step, I analyzed the phases and their text passages to identify interrelations and differences beyond the second-order codes. My aim was to understand which interactions and conditions within the phases allowed transitioning from one phase to another. Going back and forth between data and preliminary findings, I distilled characteristics for each phase with regard to the following: articulations, participation engagement and team structure. These characteristics

are central to strategy meetings and are usually investigated in strategy-as-practice studies (Kwon et al., 2014; Jarzabkowski & Seidl, 2008). Based on these characteristics, three specific actions seemed to dominate the interrelations between the phases: observing, transferring and aligning. Observing primarily refers to instances in which participants say that they want to see how and in what way things develop. Transferring is mainly based on the articulation of an intent to use previously generated insights or observations and to implement them in another situation. Aligning refers to articulations that stress that the way in which a decision has been made failed and that the corresponding decision-making approach has to change. Second, not only actions seemed to be important but also the moderators under which such actions would actually continue. The analysis revealed that these actions were sustained by moderating conditions, such as recognition, motivation and legitimacy. Under recognition, characteristics relate to retrieving insights from the past and remembering. Motivation goes hand in hand with characteristics that reveal the ways in which participants engage with one another within the meeting and beyond. Legitimacy refers to the role that participants take in meetings and to the ways in which they accept decisions. Table 3 gives an overview of these linkages and moderators with related text passages.

Insert Table 3 about here

Consolidating the insights from the data analysis led to an understanding of how organizational heuristics emerge. This understanding is captured in the process model derived from this study.

Findings

The data analysis shows that the emergence of a heuristic is a far more scattered process than expected. Although there is a temporal relationship between the phases by which heuristics emerge, these findings reveal that the underlying relationship is dynamic and nonlinear. The process of the emergence of heuristics unfolds over time and across the entire organization. This process is not limited to the strategy meetings of one idiosyncratic team. The corresponding data set is massive, which makes it impossible to demonstrate every single property of the process. Therefore, to unpack such a messy process, I chose to concentrate on how the campaigning heuristic emerged in this section. I can thus highlight the main components and interrelations of the process and use vignettes for exemplification purposes. To understand the vignettes I provide for each phase the related discussions in tables. Additionally, two more condensed examples of the emergence of heuristics can be found in Table 4 and Table 5.

Insert Table 4 about here

Insert Table 5 about here

EntreuX employees claimed that campaigning is a central strategic issue for EntreuX's strategic market preparation. By campaigning, EntreuX strategically develops markets in countries in which they operate. For an internet company, market development means using their web presence as a strategic tool for market handling. Campaigning is challenging because customer needs and incomes vary, along with their perceptions of advertisements, in each country. Advertising products in relation to country-specific commercial events, such as holidays (e.g., Easter), sporting events (e.g., the Olympic Games), product releases (e.g., Apple) and sale seasons (e.g., winter sales), is therefore not a trivial endeavor. Influencing the customer means strategically aligning the website's design and content in various ways. Each country's website

consists of sliders, banners, widgets and shops. Banners are located at the top of the website and therefore catch the eye of potential customers. So-called sliders take an attractive position under the banners. Sliders are banners that do not remain fixed on the website, changing every few seconds. Widgets are small sections on the website located at the left or right site, which show the customer three to five offers related to specific tags, such as “traveling”. By clicking on the banner, sliders or widgets, pages open that are either organized in categories or in shops. If a page is organized in categories, then the customer can choose to look for offers in categories, such as “fashion”, “sports” or “electronics”. If a page organized in shops, the customer can choose, for example, to look at a “Walmart”, “Ralph Lauren” or “Apple” shop for offers. Each shop and category is filled with appealing text and pictures to catch the eye of the customer. Because customer needs and events vary, EntreuX faces a significant challenge in understanding how to campaign in the best possible way. Therefore, in simultaneously running several campaigns, EntreuX developed a heuristic to enable quick decisions about how to campaign in the future.

The campaigning heuristic mainly originated from discussions within the Poland and Italy teams. Hence, in the following section, vignettes will capture their discussions and illustrate the components of the process model, as seen in Figure 2.

Insert Figure 2 about here

The Coping Phase

Vignette: Coping. In the strategy meetings of the Italy and Poland teams, participants come together and discuss which and what type of campaigns they should use over the next few

months. Despite launching a Christmas website design the previous year, EntreuX has no experience with campaigning, nor any idea of which events are commercially relevant in each country. Because Valentine's Day is approaching as well as the end of the winter sale, the question is how to handle customer needs in each country by elaborating a campaigning strategy.

Information Gathering: Laura, the head of business development, ponders a campaign with her team members in the Italian team meeting: "Should we make the campaign? What do you think?" Team members Vince and Mary are not really sure about how to campaign for Valentine's Day and for the winter sale because they argue that the Christmas website was not that appealing. However, campaigning decisions still have to be made, so Laura asks the following: "What needs to be improves? How can we make the campaign more visible?" Laura has no experience with the Italian market, so she asks Mary and Vince, who are Italian, about the sales in their country, the importance of such events and how Italian consumers perceive advertisements. She also opens the floor for a discussion of what the campaigns might look like in more detail—either being sorted by shops or sorted by categories, such as traveling offers and sports offers. All three are approaching the campaign issue by making suggestions ("maybe…") and by asking questions to obtain more information. Vince questions the visibility of the Christmas campaign and argues for another visualization method. Similarly, in meetings with the Poland team, Laura asks whether the Valentine's Day campaign and winter sale campaign make sense. Regarding other campaigns, such as the Women's Day campaign, Rose asks, "Maybe we could promote it on Facebook?" Sarah suggests possible special offers for that period. They wonder what type of offers are best to advertise—for example, "little gifts", "chocolates" or "group experiences".

Information Providing: During the Italy meeting, Mary and Vince try to make sense of the Christmas campaign experience and from what they know about their home country. Vince claims that visibility is an important factor; he introduces this topic from the very beginning and attempts to provide ideas to solve the issue. From his observations, he argues that sliders are only observed for a few seconds on the website. Along these lines, Laura suggests what a page might look like and what type of categories should appear based on the experience with the Christmas design from the previous year. In the Poland meeting, Rose adds that there are other events coming up in Poland, such as Grandma's Day, Grandpa's Day, and International Women's Day, which might be commercially relevant.

Decision Making: Laura, Mary and Vince discuss the website design and decide to use banners instead of sliders. They decide quickly about the best action given the current situation and will "see" what happens. The Poland team considers using a similar page design to the Christmas campaign page for promising campaigns, such as Valentine's Day, and using Facebook posts for smaller events, such as Grandma's Day and Grandpa's Day. Although they are unsure about what will work best, they make quick decisions about what seems to be good enough at the moment based on the available information. Consequently, Sarah suggests simultaneously publishing two very different posts to "check and compare…" to observe how customers react to each post.

This vignette, based on the quotations from Table 6, shows that participants in the strategy meetings try to find a common understanding of whether to proceed with a campaign and, if so, how to implement such a campaign. They seem to engage in *coping* with decision making.

Insert Table 6 about here

The data show that c*oping* phases include text passages having the following characteristics, based on the distribution of information-gathering, information-providing and decision-making codes. First, all participants are primarily actively engaging in information gathering. Because prior experiences with campaigning are limited, all team members participate equally in making sense of the situation. They do not have just one answer, so everybody is contributing different ideas about what information might be helpful for decision making. Because participants cannot yet evaluate the value of each new insight, their information-gathering suggestions do not necessarily build on one another. Therefore, information gathering proceeds in a rather experimental mode, which means that participants try to generate as many leads as possible. Second, information providing is occurring less than information gathering, and it generally takes the form of participants bringing their own experiences to the table. Participants either refer to their own experiences in, for instance, their own country, or they refer to experiences with other projects, such as previous campaigns. Third, participants decide what is "good enough" in a rather experimental mode based on the available information. The articulations within the second-order concepts show that participants decide what they think is best at the given moment for a given situation, but they leave the discussion open to observe the consequences of their decisions. They emphasize making a decision and then seeing how their decision plays out. They thus know that they will reevaluate their decision making based on the resulting observations. This open-ended process shows that participants engage in *observing* in coping phases, which seems to be linked to a successive phase.

The Converging Phase

Vignette: Converging. After engaging in a Valentine's campaign, team Italy and team Poland come again together to discuss the Easter campaign. In contrast to the previous phase, instead of engaging in information gathering, they decide to consider the lessons learned from their experiences with the two preceding campaigns.

Information Providing: Based on the observations from the previous campaigns, Laura provides suggestions about what information is important for their decision making in relation to the Easter campaign. She formulates lessons learned, which are rules of thumb abstracted from previous experience. Laura suggests that the timing of the event is important because the team observed that the offer categories and the landing page upload depend on that information. Further research must be conducted about the commercial behavior of individuals with regard to the event to determine if the event actually triggers any commercial activities worthy of a campaign. For the campaign's visibility, it is important to know when to start the advertising. Finally, offer categories play a crucial role in fulfilling customers' needs. To get a feeling of what customers might need, Laura argues for checking the consumer behavior statistics for the Easter period prior. In the Poland meeting, Sarah says that she believes it makes sense to upload a campaign page for a big event one month in advance because she and her team observed that this decision went well with the Valentine's Day campaign.

Information Gathering: Building on the aforementioned lessons learned, only sporadic suggestions for information gathering occur. In the Poland meeting, Sarah encourages the team to "do research about how Easter influences e-commerce" to generate better suggestions

for possible product offers on the website. For the same reason, in the Italy team meeting, Sarah asks her team members to "maybe find statistics about that time of the year". However, they seem to have all information they need to decide how to proceed with the Easter campaign.

Decision Making: In both team meetings, team members Jack, Rose and Mary accept the articulated lessons learned. The decision is thus made to address campaigning by generating insights on the themes formulated above. Additionally, particularly on meeting day 5, on both teams, the lessons learned are articulated in an abstract way for all events. Here, Laura makes the decision to address all events throughout year in this way.

The vignette, based on quotations from Table 7, reveals that by observing the decisions made in the *coping* phase, a heuristic or rule of thumb emerges by *converging* lessons learned from the previous phase. This finding can be explained by the characteristic distribution of the second-order codes within this phase's text passages. First, contrary to the previous phase, during the meetings in the converging phase, information gathering plays an inferior role compared with information providing. Talk primarily evolves around information providing, based on the experiences derived from the previous decision implementations in the coping phase, which means that neither new insights nor ideas are involved in the process. Participants reflect on their shared understanding of the situation and their shared experience and engage in the process within this realm. These insights are usually common knowledge to the operating team. Therefore, their establishment or articulation is only challenged in minor ways. Participants do not engage as much as before by asking questions or providing suggestions. By sharing a

common understanding of the situation after observing the implications of their satisfactory decisions in the previous phase, they agree on lessons learned and formulate rules of thumb. Second, information gathering only occurs in relation to the articulated lessons learned if additional information might be important for decision making. Therefore, it plays a subordinate role in relation to the information provided by lessons learned. Third, decision making occurs in the form of accepting the articulated lessons learned as a way of making campaigning decisions. By not questioning the lessons learned, participants are in agreement that the articulated rules of thumb are the best way to make campaigning decisions. These rules of thumb are even formulated in an abstract manner to be transferrable to similar problems. Therefore, *transferring* marks the bridge to the subsequent phase, which is presented in the next section.

Insert Table 7 about here

The Connecting Phase

Vignette: Connecting. In the process of coping with the problem of campaigning and by consolidating to lessons learned in the Italy and Poland meetings, the formulated rule of thumb, or heuristic, is used to make decisions about campaigning in Russia, Germany, France and Colombia. For each country, the corresponding teams come together and use the campaigning heuristic for decision making.

Decision Making: In the Russia team meeting, Sarah is talking to Brad about upcoming events. She itemizes the points that are important in relation with upcoming events, such as the "name of event", the "period of event", "landing page upload time", the "impact of event" and "product categories". By itemizing these points, she does not provide further explanation

but decides how to address campaigning in Russia. Brad does not question whether the rules of thumb are crucial for campaigning. He accepts the heuristic as a valid decision-making construct. Therefore, in the previous phases, the elaborated heuristic is applied as a rule on how to make the best and quickest decisions about campaigns. Similarly, in the Germany meeting, Laura applies the heuristic by asking the team to "make a roadmap for 2014 regarding events in online marketing: fairs, consumer events, [etc.]". Again, the team is not questioning her approach and accepts it as a rule of thumb for making the best decision given their situation. Sarah and Laura transfer the heuristic from Poland and Italy to Russia and Germany, respectively, and apply it by giving the teams the task of finding the information needed to decide about campaigns. Team members do not argue with Laura and Sarah and accept the heuristic as a valid procedure for campaigning, based on the experience and lessons learned from the previous phases.

Information Gathering: When Sarah expresses her decision for how to proceed with campaigning in Russia, Brad asks about how to obtain the required information. Beyond Brad's question, questions and suggestions are lacking.

Information Providing: Similarly, because the decision has been made about how to proceed and nobody questions the articulated heuristic, no further information has to be provided.

Building on the vignette, based on the quotations from Table 8, text passages from the *connecting* phases show the following characteristics with regard to the distribution of information-gathering, information-providing and decision-making codes. First, talk again evolves around agreed-upon content, mainly around decision making instead of information

gathering or information providing. No new suggestions or ideas surface. The heuristic is articulated explicitly as a rule of thumb that is transferred from the lessons learned in the previous phase. In the team meetings, the participants do not question this heuristic. Unlike in the previous converging phase, the heuristic is stated as a decision, not for informative purposes. Participants are aware that they are applying a construct based on previous experience and observations in a similar context. Although they are not discussing this construct, they know where it comes from and why they will decide in that particular way. Although participants have undeliberately engaged in the emergence of organizational heuristics during the previous phases, in the *connecting* phase, they deliberately transfer their insights in form of a heuristic to similar contexts. Second, information gathering plays not only a subordinate role but is also almost nonexistent. Participants will only ask for information if they need further information about how to proceed with the heuristic. However, this information does not enrich the heuristic; it instead addresses the execution of the heuristic. Third, information providing occurs in similar fashion. If participants in a team meeting provide information, this information revolves around the usage of the heuristic and does not provide additional suggestions or insights into the heuristic's content.

Insert Table 8 about here

The connecting phase can unfold in two possible ways. On the one hand, the heuristic might lead to a satisfactory decision; therefore, it will be repeatedly applied in similar contexts. On the other hand, the heuristic might not lead to the desired outcomes. In that case, the heuristic is *aligned* during a new *coping* phase. Triggered by events or occasions in which a previously established heuristic does not seem to be valid anymore, participants take new clues into account or dismiss other clues and thus change/align the heuristic. The way in which the alignment occurs is subject

again to coping activities during the coping phase because participants have to actively engage in finding a common understanding of what did not work and what has to be changed to make the heuristic work again. For instance, in the Colombia team meeting, the heuristic to develop a partner network by relying on existing network contacts does not seem to work. Therefore, the team argues that the rule of thumb must be changed. In the coping phase, they will address that issue and come up with an aligned heuristic involving local shops as the focus of their partnering strategy. Aligning thus links back to the coping phase.

Moderators

Finally, the data analysis shows that there are specific moderators who sustain the emergence process of heuristics. Derived from the properties observed in the team meetings with regard to articulation, participant engagement and team structure, these moderators are *recognition, motivation* and *legitimacy. Recognition* is demonstrated when the participants say that they see similarities between problems or when they touch on topics discussed in previous meetings. *Motivation* is shown when the participants actively engage in discussions during meetings but also address the problems outside meetings, for instance, on coffee breaks or at lunch. They are thus able to bring insights to the meetings that do not necessarily stem from their own observations but from those of other members of the organization. Finally, *legitimacy* plays a role when, for instance, team leaders sum up the insights from other meetings and articulate the heuristics with which everyone is conforming. Furthermore, it plays a role when team members articulate their expertise, on which they base their insights in the meetings.

These moderators particularly reveal themselves in the way that participants interact with another while bridging the phases explained above. As seen in Table 3, to bridge the coping and

converging phases using observational insights, participants must be able to recognize that contexts are similar and must be motivated to actually scrutinize the observations to generate new insights. Furthermore, the articulation of observed insights is performed by participants, who either have a hierarchal position and/or relevant expertise in relation to the topic. Otherwise, their insights cannot be seen as legitimate and will not become rules of thumb. Furthermore, to bridge between the converging and connecting phases to transfer insights, the similarity of the contexts must again be recognized, and the rule must be articulated by a person who has the legitimacy to do so. Finally, in bridging the connecting phase and the coping phase, participants must recognize not only similarities but also differences between contexts to change the heuristic. Additionally, they have to be motivated to dive into a new coping phase to align the heuristic.

The findings answer the following research question, which was motivated by a practice perspective on strategic decision making: How do organizational heuristics emerge? In the discussion section, the answer to this question is first presented in relation to the findings on the summary of the process. The process is further elaborated in a theoretical light, and its implications for strategic decision making and the strategy-as-practice debate are outlined.

Discussion and conclusion

Process Summary

The findings identify three phases, along with corresponding linkages and sustainable moderators, which form a process that leads to the emergence of organizational heuristics. Figure 2 illustrates the process with its phases, linkages and moderators.

C*oping Phase.* This phase marks the starting point of the process. It is triggered by a problem for which a strategic decision has to be made, although participants have little understanding of the situation and its solution. Hence, this phase is mainly characterized by an active engagement in information gathering to make sense of the situation and to generate information for decision making. Participants gather information by articulating several sometimes conflicting ideas about relevant information and the ways to seek such information. On the basis of this information, they discuss what decisions might be best, given the situation. By going through this decision-making dynamic of finding a good enough, i.e., satisfactory, decision, they cope with the situation at hand in an experimental decision-making mode and anticipate the outcomes to see what works best.

Converging Phase. By observing the outcomes of previous decision-making efforts, the coping phase links itself to the converging phase. The resulting insights are subject to a new decision-making dynamic, which is mainly characterized by providing information from collective experiences in the form of lessons learned. Newly gained insights are abstracted into rules of thumb, which are generally not questioned because participants now share a common understanding. Participants tend to build on each other's contributions during these discussions and decide quickly to use the articulated rules of thumb, based on the provided information. In that sense, in this phase, understandings converge into decision-making rules of thumb by processing experience.

Connecting Phase. Transferring the abstracted rules of thumb from the previous phase to similar problems results in the emergence of an organizational heuristic. Compared with the previous phases, the connecting phase is primarily characterized by decision making. Usually, one participant articulates a heuristic as a decision on how to address the situation based on the

heuristic's performance in the previous situations. The heuristic is not questioned by the other participants because they share common experiences. The decision-making procedure is therefore characterized by the application of a standard decision practice, namely, the heuristic. Although the abstraction of insights into a rule of thumb in the previous phases occurs undeliberately, its application to a new situation in the connecting phase is a deliberate action. As long as the heuristic works for the situations applied, it is reapplied for similar strategic decision-making problems. However, should the heuristic not lead to the anticipated results, aligning occurs by reopening the coping phase to determine how to best deal with the situation.

Moderators. Recognition, legitimacy and motivation seem to be crucial for the emergence process of heuristics to proceed. Recognition refers to the participants' ability to recognize the given context as similar to other contexts. Therefore, in the converging phase, observations can be abstracted into rules of thumb because participants recognize the original context as similar to the target context. Similarly, transferring can only take place based on the same argument. If recognition is not fulfilled, then the process will not move past the coping phase. Motivation means that participants actually want to solve a problem, engage actively in discussions and bring in insights from meeting to meeting. Participants might also address strategic problems outside the meetings and seek related discussions with other members of the organization. If participants do not bring insights from meeting to meeting and do not engage in the decision-making dynamics throughout the first and second phases, common understandings cannot be established, and commonly agreed-upon heuristics thus cannot emerge. In this case, the process might not move past the coping phase. Legitimacy means that common understandings are formulated into lessons learned and consequently into rules of thumb, which form the heuristic. A heuristic's articulation and transfer are accepted if the following holds. Participants with either

a hierarchal position or related expertise formulate heuristics as strategic decisions, which are unchallenged and applied by the team members. If legitimacy is missing, then a common understanding cannot be established, and the process remains in the coping phase.

The established understanding of how organizational heuristics emerge, as summarized in Figure 2, makes three important contributions to the strategy and decision-making literature: (1) It shows how dynamic interactions in strategy meetings lead to the emergence of organizational heuristics through the manifestation of sayings and meanings into rules of thumb; (2) it adds to the decision-making literature by arguing that the usually separately discussed prominent decision-making models – decision making by "satisfycing" (Simon, 1955), decision making by "simple rules" (Bingham & Eisenhardt, 2011), decision making by "standard response" (March, 1988) - are indeed interlinked in this process, which leads to the emergence of organizational heuristics; and (3) it extends the strategy-as-practice literature by arguing that the emergence process of organizational heuristics and the organizational heuristic itself are strategic practices.

Implications for Heuristics and Institutionalization

First, the detailed study of strategic decision making at EntreuX offers an understanding of how organizational heuristics emerge during strategy making, which has critical implications for organizational actions (Eisenhardt & Sull, 2001). Understanding this emergence is important because the process shows how micro action produces macro developments over time, which have long-term consequences by influencing action alternatives and subsequent outcomes in organizations. By studying strategic decision making over time in a context of quick decision making, urgency and a lack of information, this study offers insights that complement existing research on strategic decision making and heuristics (Bingham & Eisenhardt, 2011) and reveals

how heuristics emerge due to everyday interactions in strategic processes. This study goes beyond identifying the importance of experience and abstraction in the formulation of heuristics, or simple rules (Bingham & Eisenhardt, 2011), by providing a more detailed and dynamic view of the interactions occurring, thus fostering the ability to articulate and therefore apply organizational heuristics.

In their studies, Bingham and Eisenhardt (2011) answer the question of "what" organizations learn from experience by arguing that heuristics are the outcome. By showing that heuristics are abstracted from experience and are applied in decision making, Bingham and Eisenhardt (2011) provide us with a limited understanding of heuristics. Not only does this paper ask "how" heuristics emerge; it also shows that abstraction from experience is insufficient for the formation and application of heuristics. The abstraction from experience and the application of heuristics are only facets within the dynamics of strategic decision making through heuristics. The process model shows that participants in strategy meetings must first go through a coping phase to be able to generate insights from which lessons learned can be abstracted. Participants must be motivated to actively engage in discussions to ensure that insights and sources of information are brought to the table and to foster a high degree of information processing to tackle the perceived uncertainty (Duncan, 1974; Thomas & McDaniel Jr., 1990). Introducing contrasting concerns and uncorrelated leads for information gathering fosters necessary discussions (Duncan, 1974). In addition, passing along information and discussing a puzzling development facilitate the reduction of equivocality in the situation at hand (Daft & Weick, 1984). Decisions that are based on a common understanding allow for the observation or experience outcomes, from which lessons learned can be abstracted. This action of observing goes along with Bingham and Eisenhardt's (2011) processing of experience. However, the abstraction and formulation of

lessons learned or rules of thumb is insufficient for the application of heuristics. The articulation of experiences as rules of thumb is only accepted by employees when formulated by an actor who is legitimized by a hierarchal position or related expertise. This undeliberate dynamic emerges in the converging phase. Lessons learned from experience first appear as provided information instead of a decision construct. If these lessons are accepted during this phase, heuristics can then form and be deliberately applied in the connecting phase.

Second, Crossan et al. (1999) provide a conceptual understanding of how intuition becomes institutionalized. They conceptualize in their 4I model – Intuiting, Interpreting, Integrating and Institutionalizing – that individuals have intuitions about important insights from experience. By explaining these experiences, they collectively interpret insights and integrate these insights into a common understanding (Crossan et al. 1999). If organizational members repeatedly engage in this process, routinized actions occur, and shared understandings become institutionalized (Crossan et al. 1999). This study contributes to this conceptualization by providing an empirical elaboration of how rules are institutionalized, which introduces a detailed understanding of this process. This elaboration is an important contribution because institutionalization is a mostly unconscious process, which becomes decreasingly reversible the further it proceeds (Phillips et al., 2004; Meyer & Rowan, 1977). The emergence model of organizational heuristics captures how simple doings and sayings undeliberately navigate the process of institutionalizing rules of thumb into heuristics.

The internal dynamics within the phases of the process model show the significant role of shared understandings in fostering rule emergence. Through shared interpretations of sayings and doings, organizational properties arise and mark a first step towards shaping institutionalized practices (Phillips et al., 2004). Similarly, Crossan, Lane and White (1999) argue that through

continued conversation, a coherence between organizational members emerges, which they call an *integrating* process. Participants develop a collective mindset, and negotiated action takes place (Crossan et al., 1999). Although the phases of the process model are similar to those of the 4I processes formulated by Crossan et al. (1999), the internal dynamics within the phases extend these insights and provide some interesting observations. The narrowing of several ideas and suggestions into one heuristic reveals a dynamic in which step-by-step actions, such as information gathering, information providing and decision making, play a crucial and changing role over time. During the coping phase, information gathering dominates and allows for the elaboration of sufficient information, which provides a platform for generating a shared understanding. The more organizational members engage in discussions during this phase, the more ideas and suggestions arise. In the converging phase, information providing dominates to articulate shared understandings in the form of rules of thumb. Here, the participants' engagement drops because one person can be responsible for the formulation of rules of thumb due to the shared understanding of the situation at hand. In the connecting phase, decision making dominates through the collective application of understood rules of thumb in form of a heuristic. The participants' engagement again drops, and information providing and information gathering is obstructive to fast decision making.

In line with Philips et al.'s (2004) theoretical work on the interrelation of sayings and institutionalizing processes, the text passages of discussions during these phases and the linkages reveal that specific moderators sustain the process of the emergence of heuristics. However, although Philips et al. (2004) theoretically show that such moderators are *context*, *recognition* and *members*, in the case of the emergence of heuristics, these moderators empirically seem to be *recognition, motivation* and *legitimacy*. The *recognition* moderator refers to the recognition of

the context, which is important to ensure that the participants are able to talk about the same topic and to derive insights based on recognized similarities between contexts (Phillips et al., 2004). *Motivation* refers to the importance of members who transmit the sayings and meanings from one phase to the other (Phillips et al., 2004); however, these members are also motivated to actually engage deeply with a problem, instead of just fulfilling an unreflective role in the organization (March 1988). Finally, the actors must have the legitimacy to actually sum up insights or heuristics, which will then be accepted by the other participants (Phillips et al., 2004).

Implications for strategic decision making

Investigating the internal dynamics of the phases of the process model of the emergence of organizational heuristics adds surprising new insights into the strategic and organizational decision-making debate. It shows that usually separately discussed prominent models of decision making are interlinked in the emergence of heuristics and thus in the institutionalization of rules.

During the coping phase, organizational members "decide on a course of action, they design a custom solution and try it" (Daft & Weick, 1984: 292). Organizations develop by trying out new things and seeing what works (Daft & Weick, 1984). They thus engage in satisficing rather than optimizing and only consider the cues that seem to be the most promising (Simon, 1955). This approach is in line with Simon's (1955) notion of finding a satisfactory decision and acting on it. The team members do not seek an optimal way to address the information at their disposal; they instead seek to decide quickly and to make "good enough" decisions, given the situation at hand (Simon, 1955). In the converging phase, organizational members process their experiences to be able to derive rules of thumb by observing the outcomes of their decision making (Bingham & Eisenhardt, 2011). These rules of thumb are heuristics, which are simple decision constructs.

They can now be easily applied to similar problems (Eisenhardt & Sull, 2001). They stay in the organizational memory base, and organizational members draw on them when a strategic context reveals related cues for its usage (Bingham & Eisenhardt, 2014). Institutionalization is thus enacted by repeatedly applying heuristics (Phillips et al., 2004). In that sense, through its repetitive application in other settings and through the dissemination of discussions among multiple organizational members, the heuristic becomes taken for granted and institutionalized (Phillips et al., 2004). This taken-for-grantedness fosters a pragmatic view of heuristics by organizational members, which is the case in the connecting phase. They simply apply the heuristic as a standard procedure because it seems to work best (March, 1988). The heuristic is now an inherent decision-making rule, on which organizational members only reflect when it does not produce the anticipated results (March, 1988).

To summarize, my study shows that the decision-making dynamic within the coping phase relates to Simon's (1955) understanding of finding a satisficing decision. During the converging phase, participants engage in a decision-making dynamic that corresponds to the processing of experience and the rules derived from that experience (Bingham and Eisenhardt, 2011). Finally, in the connecting phase, the decision-making dynamic can be grasped as a pragmatic application of standard procedures (March, 1988).

Implications for Strategy - as - Practice

Understanding the emergence of organizational heuristics by adopting the strategy-as-practice lens allows for an understanding of strategic decision making and thus heuristics as social and embodied ways of doing. These ways of doing are interrelated, though the actors involved are not always conscious of their interrelated nature, and they are still built on a shared

understanding of doing (Jarzabkowski & Balogun, 2009; Whittington, 2006). The emergence process of heuristics shows that heuristical decision making seems to be a common way of addressing uncertainty in strategic decision making. Furthermore, it emphasizes that heuristics and heuristic practices rely to a high degree on shared understandings within the organization, which are interrelated and perpetuated over time. In line with Bingham et al. (2011), heuristics are a common strategic tool in organizations, as they rely on shared understandings of experiential lessons. These lessons cannot be easily grasped and codified, but they still exist in the organizational memory (Bingham & Eisenhardt, 2011). These stored lessons correlate with Schatzki's (2006) claim that practices are engrained in the organizational memory base. Therefore, this paper's findings position organizational heuristics as strategic decision-making practices. Schatzki's (2006) core phenomena in connection with this paper's findings extend the view on heuristics beyond the notion of simple rules. First, because heuristics are articulated as lessons learned, actors develop a know-how understanding while coping with strategic problems. Second, heuristics rely on instructive rules, which are provided by more experienced actors, such as team leaders or more experienced team members. These actors have the legitimacy to articulate heuristics in a way that other participants will accept and follow. Third, heuristical decision making is oriented towards an end because the aim of heuristical decision making is finding a decision, which works well in similar contexts and can be easily and quickly applied. For instance, as Bingham et al. (2011) show, selection heuristics allow for the narrowing of strategic problems to a manageable set of alternatives from which to choose, which corresponds with the teleo affective structure of practices (Schatzki, 2006). Finally, heuristics exhibit a general understanding of the situation at hand. Because heuristics are dependent on the context, which must be recognized by participants, actors who engage in heuristical decision making

share a general understanding of the work they must do and the situation in which they find themselves.

In summary, heuristical decision making can be considered as a strategic practice because this type of decision making includes organized action steps (Bingham & Eisenhardt, 2011) that evolve over time and can be seen to be governed by Schatzki's (2006) four phenomena immanent to practices.

Conclusion and Limitations

By providing an understanding of how organizational heuristics emerge, this paper makes three important contributions. First, it adds to the strategic decision-making debate by showing how heuristics in strategy making emerge and are institutionalized. Second, it adds to the strategic and organizational decision-making debate by revealing that usually separately discussed prominent decision models are interlinked in the emergence process of heuristics. Third, the paper adds to the strategy-as-practice debate by using the process model to elaborate heuristics as strategic practices.

However, this study has the following limitations. Although the paper notes that several emergence processes of organizational heuristics allow for the generalizability of the findings, such generalizability must be approached in a cautious way. The findings are generated in an entrepreneurial context, which is different from those in more mature organizations. From a methodological point of view, the study is not able to be in all places at once. Therefore, there might be missing components within the process model, which might require our attention.

Despite these limitations, this paper lays the groundwork for promising further research in strategic decision making and heuristics. For subsequent studies, it would be interesting to investigate the ways in which the heuristics that have emerged actually influence organizational action. Furthermore, it would be compelling to investigate how the emergence of heuristics can be influenced by further elaborating the process of this study. Additionally, the process and practice perspective on heuristics marks a cornerstone for qualitative research around this issue. Heuristics cannot only be traced through interviews; these constructs can also be grasped through ethnographic means. Deeper understandings around heuristics-related topics can thus be generated. This paper thus provides support for research around heuristics in strategic decision making and related organizational action; therefore, it falls in line with the increasing interest in heuristics in strategic management.

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Appendix

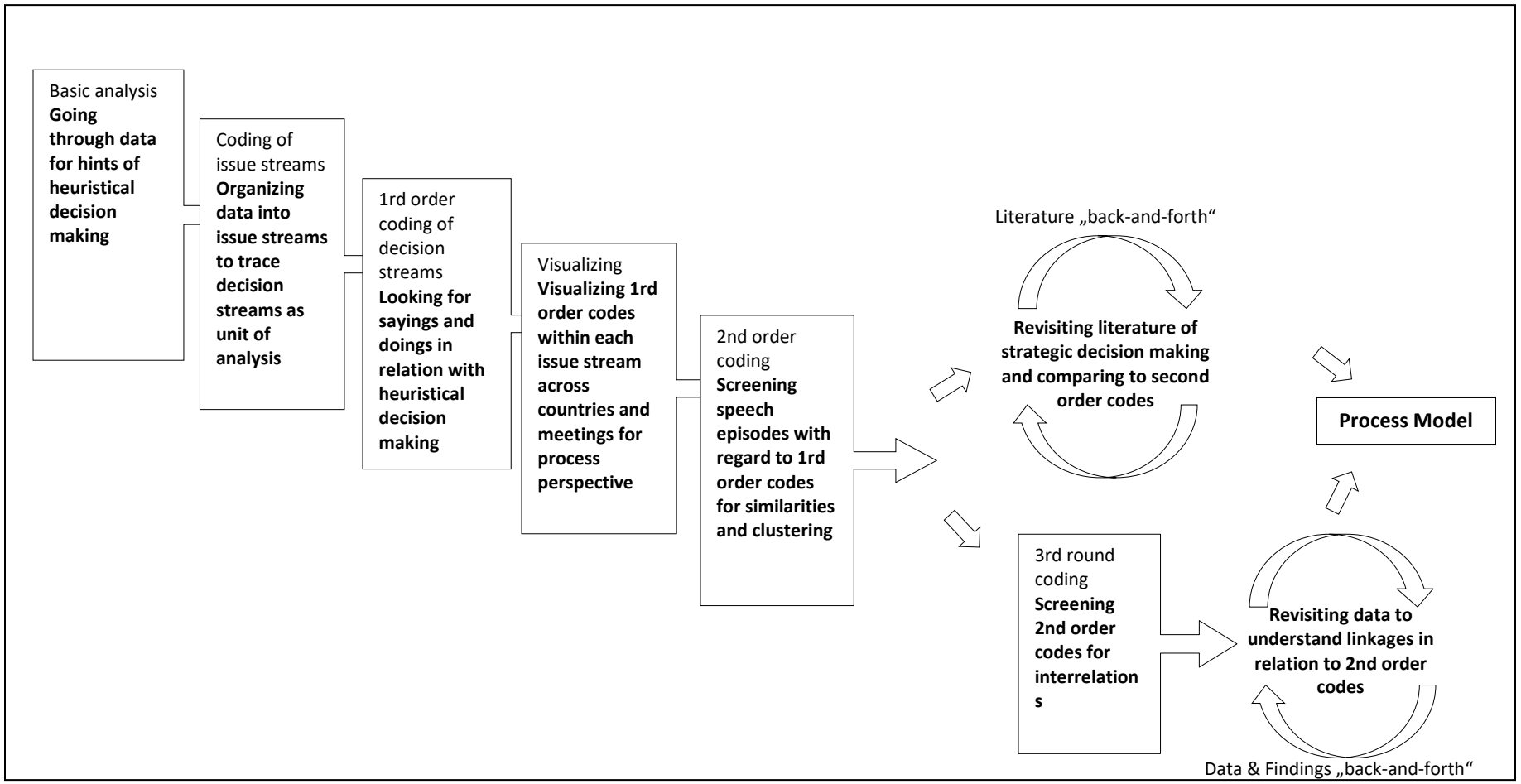

Figure 1: Process of data analysis.

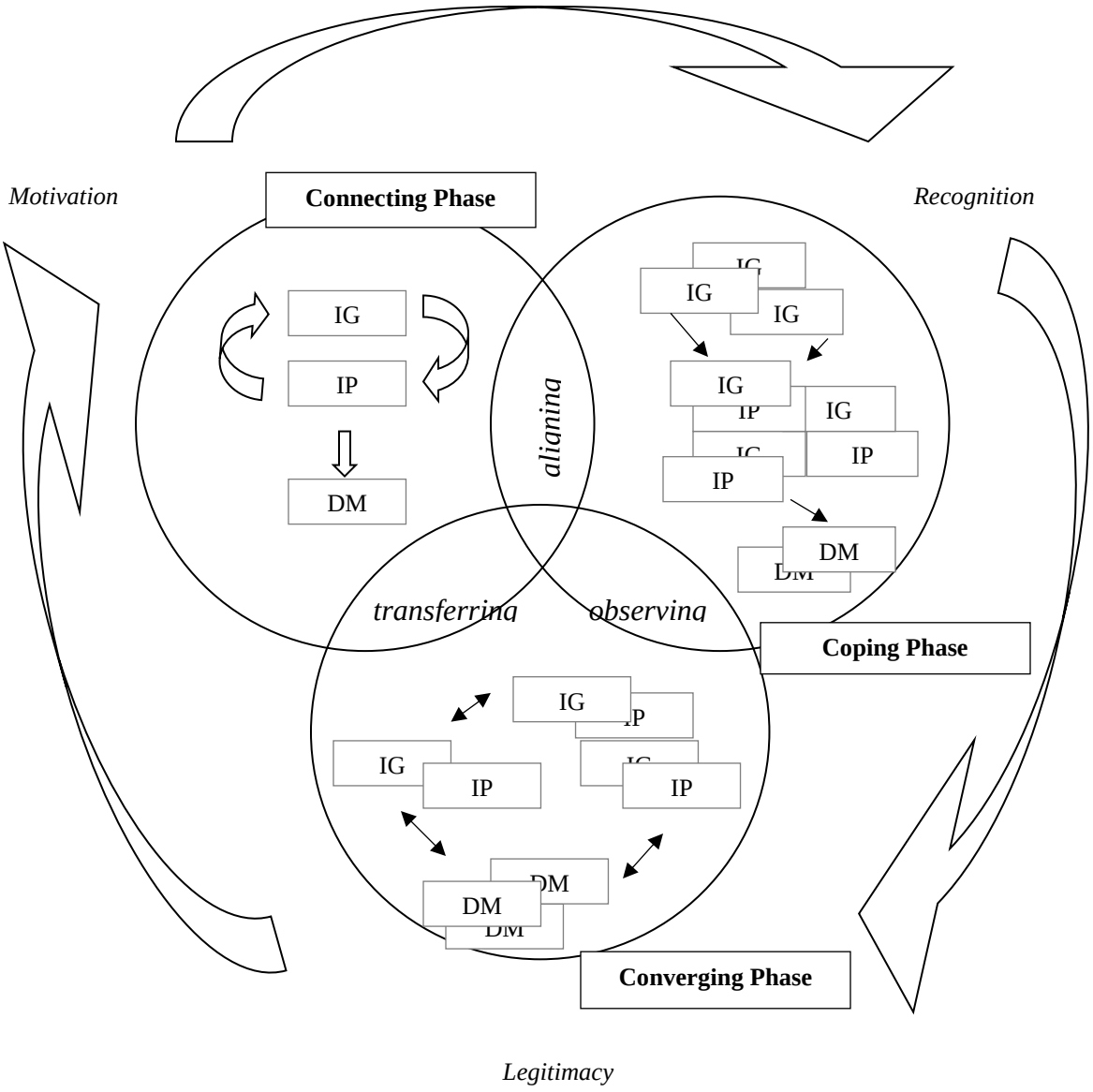

Figure 2: Process of the emergence of organizational heuristics (IG= Information gathering; IP= Information providing; DM= Decision Making).

Coding scheme:

Examples	1rd order codes	2nd order codes	Distribution of 2nd order codes	Aggregate dimensions
„Do you think we should make us of insurance offers?“ “Do you know whether they work with other networks?” “Are there any big shops which wanted to work with the network?” “What kind of information is interesting to give them to publish?”	do you? looking for	information gathering	IG IP DM	coping phase
„bounce rate of category page, is really high “ „we have now 100 sights per day, it was 80 per day “ „Around 60% are young visitors! On our site [they are] 18-34“ „They like particularly luxury products…let’s see “ „[It is] so strange, because our country is behind in development to the other markets…hard to talk to contacts “	information from observation information from native background	information providing	IG IP DM	converging phase
„Ok, any time you come across new exclusive offers please make sure it appears in the exclusive page “ „Ok, so 25 new shops [for next week]“ “Let’s aim this week at Twitter” „Let’s search for more shops and for some of the popular shops we can order texts to create traffic at least. “	always do let‘s do that	decision making	IG IP DM	connecting phase

Visualization of 2nd order codes across time and issue streams with related text pessages

Table 1: Illustration coding scheme.

Aggregate dimensions with text passages:		
Examples		**Dimension**
Mary*:** In our exclusive deal we have a lot of clicks, but still, no transaction… ***Laura*:** although we have it on the slider ***Toni*:** maybe we put it in FB? ***Laura*:** yes, but the community there is not that big yet… Maybe make paid advertisement… How long will this exclusive deal be valid? ***Mary*:** till 26.02. ***Laura*:** not so long. ***Mary: Soon I have to change the slider, but don't have any updates yet and one offer is for end of March. ***Laura:*** Ok, if we base it on the number of clicks yes, but if coupon over then no transactions, maybe do the best 3 offers in the front and the others behind. ***Mary:*** ok ***Laura:*** regarding exclusive deal…let's push it for Monday and Tuesday on Facebook and push it like "Last Chance"…paying 50 €. It shows also the partners that it's good to give us such deals. **[ITALY]**	***Sarah:*** Are there any new networks which come to Columbia? ***Matt:*** Checked, but only one from Brazil I think ***Laura:*** Also we decided how to cooperate with new shops…or we can in future work with networks together and try to get them new shops together "let's take that shop together…" Network X are also in Germany, so maybe on the higher level we can work with them together… ***Sarah:*** Maybe check also networks in Brazil ***Matt:*** Yes, and we really should work on Columbia's local level ***Laura:*** But is it not good for shops to know that it's big, coming from Europe etc.? ***Matt:*** not really… ***Sarah:*** So Brazil's networks…, maybe there are shops from Columbia they want… So with which network do you have a good relation from Columbia? ***Bill:*** None, no contact person, only sales ***Sarah:*** So maybe find out such contacts which are in charge for Columbia's market…so bring such contacts together Use contacts you already know/have in Brazil and use those contacts to make new contacts like "hey, we want to go to Columbia, this is our person, do you have a contact?" ***Bill:*** so what are your contacts? ***Matt:*** I contacted 15 companies, have reply of 4 ***Bill:*** Other question regarding small shops…are they interesting? ***Laura:*** So regarding traffic…hmmm ***Sarah:*** I think in our case we need it for traffic and SEO wise ***Matt:*** So try to get them in one network? ***Laura:*** yes, or on a no deal basis… We have to decide together what is better for this market **[COLUMBIA]**	coping phase
Related heuristic: *Promote short offers in Facebook, long-term offers on the website.*	***Related heuristic:*** *Make use of network contacts to expand to neighboring countries*	

Examples		Dimension
***Dan*:** No, not yet, nobody (freelancer) came back to me yet with news ***Laura*:** Did you give them a deadline ***Dan*:** no ***Laura*:** Then let's give them a deadline, good for two reasons 1. You find out if they are reliable and credible 2. And we can plan better **[FRANCE]**	***Sarah:*** yea, in SEO it is hard to rank a category page high, easier with shop page, because people, especially [in Russia] search for shop names… ***Brad:*** yes, you mentioned we should show [offer], sale, city…saw that in metrics that works good… ***Sarah:*** ok, currently the e-commerce is related to M-City and P-City and in other areas lower…so use name in the subtext. **[RUSSIA]**	converging phase
Related heuristic: *Test any new freelancer with deadlines.*	***Related heuristic:*** *Use in Russia additionally to other keywords also the city key word.* *(different to other countries)*	
Laura: The site will launch as soon as the 200 shops mark is achieved. **[GERMANY]**	***Sarah*:** Travelling offers are always good offers, because they come along with a big commission. **[RUSSIA]**	connecting phase
Related heuristic: *A website is ready to go online if 200 shops are offered on the website.*	***Related heuristic:*** *Concentrate on travelling offers for websites, where sales have to pick up.*	

Table 2: Illustration of aggregate dimensions.

Text passages comparison based on: team structure, articulation and participant engagement

Examples		Action	Moderators
Sarah**:* Every two weeks we should see how our sliders perform. [ITALY] Sarah argues to observe the slider performance in order to understand what kind of advertisement works best for the market of Italy. ***Laura: I clicked through some pages of our website and my feeling is that there are almost no shops with texts. That has to change. [GERMANY] Laura observed that the ratio between shops with texts and shops without texts is too low and has to be raised for a good website performance.	***Sarah*:** Social media? How is it going? [POLAND] In Poland the team elaborates how social media efforts paid out so far. ***Sarah:*** Ok, check and compare…to see if impact is this week…Put one normal post as before and then the new one, so both…to check… [POLAND] Sarah argues to observe two different kinds of posts to find out whether they have to change their posting strategy in Poland.	<u>Observing:</u> • participants emphasize that they or another team member will observe consequences of decisions taken • participants ask for recent developments • participants inform about their observations of recent developments	<u>Recognition:</u> Participants recognize context to be able to observe relevant developments <u>Legitimacy:</u> Team leader selects what is noteworthy to observe by hierarchal power and /or expertise or team members articulate their observations as noteworthy by expertise <u>Motivation:</u> Participants share insights and developments beyond their team and their team meetings in the kitchen for example.
Sarah*:** Check what the people like, do they like funny stuff or quotations? In Spain they love quotations. [POLAND] Sarah wants to transfer insights from Spain to Poland regarding what works best to get the attention of customers. ***Laura: Take them (networks) into our portfolio, we work with them in Poland and Italy…and it works well with them. [GERMANY] Laura transfers lessons learned from Poland and Italy regarding how to make use of existent networks in their portfolio.	***Laura:*** We don't pay with EuropeX the currency exchange rate. I would always take EuropeX, it is very efficient. [RUSSIA] Laura argues in Russia to take the billing system EuropeX, since it is the best one for European countries and worked well in the other countries they are operating in. ***Mary:*** We looked at the website of Spain and tried to do it that way. [ITALY] Mary transfers the way how advertise in a catchy and attractive way from Spain to Italy.	<u>Transferring:</u> • participants transfer lessons learned from one country to another as a articulated heuristic • Participants transfer lessons learned from one problem to another as a articulated heuristic	<u>Recognition:</u> Participants recognize context and structure to be able to find transferrable insights and to transfer those insights. <u>Legitimacy:</u> Lessons learned are summed up and applied by team leader by expertise and/or hierarchal power or by team member by expertise

Text passages comparison based on: team structure, articulation and participant engagement			
Examples		**Action**	**Moderators**
Brad: some networks give offers for some cities …but for us… ***Sarah:*** yes, because we don't have physical offers, it makes no sense ***Brad:*** ok, sometimes we have offers for some exact cities right now ***Sarah:*** it makes only sense for physical offers. Our main business model are online code offers…so…out ok [RUSSIA] In Russia the rule not to take city related offers into account will be dismissed and aligned towards a rule to use cities for key words in their offers. ***Rose:*** Also some words like X-Box as key words acme up. It was a new version on the market, so customers checked… [POLAND] Rose found out that additionally to seasonal and sport events also popular product launches are noteworthy events for their website.	***Bill:*** only a few shops work with networks … ***Laura***: ok, so we discussed that you should go to the shops and give them the opportunity to grow although the market is not there yet. [COLUMBIA] In Columbia the shop and network acquiring strategy has to be changed, because the market is different to other markets and shops do not corporate to the same extent with networks. Therefore the main focus are now local shops instead of networks.	<u>Aligning:</u> • participants have to change heuristics because of difficulties in their application • Participants take more clues or less clues or add other clues to a heuristic	<u>Recognition:</u> Participants have to recognize context to understand why something is not working and what can be done <u>Motivation:</u> Participants want to go beyond established heuristics and pay attention to changes to align heuristics.

Table 3: Illustration of linkages and moderators.

Heuristics emergence across phases: **Example 1** **Network heuristic**		**Example 2** **Blog heuristic**		**Characteristics**	**Phase**
Laura: Any special deals? ***Mary:*** One special deal, it's a shop about furniture for home ideas for presents, and it is valid till September […] *Laura:* Is this code exclusively for us? ***Mary:*** Don't know yet ***Sarah:*** We can check that […] ***Sarah:*** […] Did you find new networks? Any new names? Researched Amazon, Apple? […] And [do] presentation material, similar to the Mexico team. Send such a presentation to the networks whether they are interested to get coupons and special deals. […] Think about it, make a blind template for it, send it to the design teams and then to the networks (3-4 slides) [ITALY]	***Laura*:** Will we have enough new ones (offers)? What about networks, some of them are expired? Some quitted the networks? Maybe they come back? Did you ask them? ***Rose*:** No not yet, because most of the shops which are done are actually not that good. ***Laura:*** But still, we have to understand why and what we can do better. ***Rose:*** Should we do contracts with them? ***Laura*:** Right now that is not working, but it will. Check the networks out whether it works out and whether it makes sense [POLAND]	***Laura:*** Do research on blogs, websites related on startups or in other ways to us. Look at smaller blogs, magazines. And then we decide where it makes sense to go deeper, make contact and then analyze the contact persons style: Do they do info graphics, documentary articles, interviews etc. How are they writing: funny, familiar, classic, theoretical, picture related articles? We need to analyze to know who to contact, how to contact, with what goal, with what information. This is important. Important for traffic, making people talk about us. Not paying them to write about us, they should want to talk about us. Maybe they are interested in startup business, or in the coupon business, or in international young companies. [ITALY]	***Vince:*** We looked at blogs regarding our core business: I didn't find this category, in Google only one. There are blogs of our competitors. […] ***Sarah:*** So back to blogs, we need blogs anyway, because they improve our Google Ranking, so that is important too… ***Vince:*** How it is related with our business? How can I propose them? ***Sarah:*** Maybe we give them interesting insights. Maybe just take a look on their site, maybe there is a student's magazine… ***Laura:*** Look at first at different sites, screen whether there is any opportunity for us to contact them. Collect the data, the style etc..then propose and we decide it together. [ITALY]	• Information gathering and information providing dominate • Participants engage actively in the conversation • A certain way to deal with a problem is not established yet but decisions which „make sense" are made	Coping phase

	***Mary*:** I send out the presentation with screenshots from Valentine's Campaign. Some said it was interesting, but some said it is too long. Do you know? Maybe we can make a presentation which is less stress to read? ***Sarah*:** Or maybe just a 2 pager with article who we are and the slots we can promote and the customer reach for them? Like in Mexico 1. briefly small key facts about us, like we have already partnerships with more than 400 shops 2. What are potential slots (screenshot of page maybe?) 3. how we can increase customer reach; Pop up Newsletter, social media [ITALY]		***Rose:*** And then there are blogs, their own blogs. And in their video they said that it brings a lot of people… ***Sarah:*** After we have a video we could concentrate on an own blog… Let me ask the other countries when they decide to open the blogs… […] If you have a blog which is Priority 7 you have something from that, if it is lower you will not get so much PR… [POLAND]	***Laura:*** Regarding blogs, we have our own blogs in Spain, Mexico and Brazil. We plan that to do for Italy, but we can't without a third person. It is on our plan though. We think it would be really interesting. [ITALY]	• Decision making dominates • Usually lessons learned are articulated • Engagement of participants drops in relation to previous phase	Converging phase
	Laura: What we did in other countries we did a smaller and more intensive presentation which combines the most relevant information for networks. 1-2 pager. Nice task for this week to work out a 1 or 2 pager for the networks, depends on the information. And if we want exclusive deals, the network contacts the shops, and they don't want to read through the long presentation [POLAND]	***Sarah:*** Do you have the 2 pager presentation? Who is in touch with AN? ***Roger:*** me. ***Brad:*** 2 pager is prepared for [us] ***Sarah:*** […]Send them (the shops) the 2 pager and they could give us exclusive coupons [RUSSIA]	Happens in [ITALY] when they open their own blog.		• Decision making dominates • Decisions are made without somebody questioning them or providing alternatives • Usually one participant articulates the accepted heuristic	Connecting phase
Heuristic	Send to each new network in each country a presentation with 2 slides only, comprising: key facts, potential slots and customer reach to get good offers.		Develop for each country an own blog for PR and Google ranking.			

Table 4: Illustration of process of emergence of heuristics across phases.

Phases and linkages across heuristic emergence:

Coping		Converging	Connecting	
Laura: Any special deals? *Mary:* One special deal, it's a shop about furniture for home ideas for presents, and it is valid till September […] ***Laura:*** Is this code exclusively for us? ***Mary:*** Don't know yet ***Sarah:*** We can check that […] ***Sarah:*** […] Did you find new networks? Any new names? Researched Amazon, Apple? […] And [do] presentation material, similar to the Mexico team. Send such a presentation to the networks whether they are interested to get coupons and special deals. […] Think about it, make a blind template for it, send it to the design teams and then to the networks (3-4 slides) [ITALY]	***Laura*:** Will we have enough new ones (offers)? What about networks, some of them are expired? Some quitted the networks? Maybe they come back? Did you ask them? ***Rose*:** No not yet, because most of the shops which are done are actually not that good. ***Laura:*** But still, we have to understand why and what we can do better. ***Rose:*** Should we do contracts with them? ***Laura*:** Right now that is not working, but it will. Check the networks out whether it works out and whether it makes sense [POLAND]	***Mary*:** I send out the presentation with screenshots from Valentine's Campaign. Some said it was interesting, but some said it is too long. Do you know? Maybe we can make a presentation which is less stress to read? ***Sarah*:** Or maybe just a 2 pager with article who we are and the slots we can promote and the customer reach for them? Like in Mexico 1. briefly small key facts about us, like we have already partnerships with more than 400 shops 2. What are potential slots (screenshot of page maybe?) 3. how we can increase customer reach; Pop up Newsletter, social media [ITALY]	***Laura:*** What we did in other countries we did a smaller and more intensive presentation which combines the most relevant information for networks. 1-2 pagers. Nice task for this week to work out a 1 or 2 pager for the networks depends on the information. And if we want exclusive deals, the network contacts the shops, and they don't want to read through the long presentation [POLAND]	***Sarah:*** Do you have the 2 pager presentation? Who is in touch with AN? ***Roger:*** me. ***Brad:*** 2 pager is prepared for [us] ***Sarah:*** […]Send them (the shops) the 2 pager and they could give us exclusive coupons [RUSSIA]

Linkages:

Observing	Transferring	Aligning
Both teams have to experience in what way „it makes sense" to deal with the networks. In Italy the team „send out the presentations" and experienced the response from the networks. That way they understood that the presentation should have only two slides.	After understanding that the presentation has to have two slides only with their most important information, they transfer this insight to Poland and Russia.	In a next step by sending out the 2 pager presentation the country teams understand that with a well done presentation of slots on their homepage they can bargain for exclusive deals by offering banner and slider slots. That way they further align how the 2 pager should look like.

Table 5: Illustration of process of emergence of heuristics across linkages.

Coping	Meeting Day 1	Meeting Day 2	Meeting Day 3
Italy	***Laura*:** Valentine's day is coming up and you told me as well as for Poland, after Christmas sale is huge, but there are not so many offers anymore. Should we make the campaign? What do you think? ***Vince*:** One page among others for Christmas was not so good, it must be more appealing, more upfront. ***Laura*:** What to improve? How to make it more visible? ***Vince*:** There are six sliders, Christmas sale was on the second and each slider takes 7 seconds. ***Laura*:** We can put it on the first slider? ***Mary*:** Maybe we change the slider and not doing the campaign page? ***Laura*:** No, better a page to be ranked well. What is your concern regarding winter sale? ***Vince*:** People wait for all shops to have winter sale. ***Laura*:** We want to give them a platform, which presents winter sale in the best possible way. Maybe visibility should be better. We can switch it into the first slide? ***Vince*:** maybe in one fixed slide over the others? ***Laura*:** Yes, good idea, then it's a banner. Yes, sure, I will ask how to implement. Then that's good because the winter sale page will be permanently there for 2 month, till March? And Valentine's page for 2 weeks. …. ***Laura*:** So, now we have to decide about the setup of the page, I think category related widgets and not shop related widgets for winter sale and for valentine maybe shop related, let's see. Think about 6 shops, make up your mind. And for the winter sale it makes sense to go for categories or not? If so, how many widgets and what categories? At least 6 category widgets, travelling, electronics, fashion etc.	***Mary*:** We decided on the Easter categories: holiday stuff, travelling. Shops are only few and few offers…need good and more for the categories. ***Sarah*:** Start page maybe from 15.03.? ***Vince*:** Any time 15.03. – 01.05. …People in Italy travel there a lot. A page for all these spring holidays would be good.	
Poland	***Laura*:** Next point, a new campaign page will come up about Valentine's day. What about having it in Poland and what about the winter sale? ***Rose*:** We have there really big discounts 50-60%, period is until beginning of March. ***Laura*:** Ok, then we will have two campaign pages: Valentine & Winter Sale in Poland. We use same campaign site as for Christmas, please decide how many coupons for Valentine campaign with 5-10 shop widgets. For winter sale campaign maybe in category widgets. Valentine campaign should stand end of January. ***Rose*:** There is Grandpa and Grandmom day end of January. We have regarding that 1600 Facebook fans. ***Laura*:** Oh, didn't hear of it yet, good. We make here similar to Nicolaus page? Promote it in Facebook. So people will buy in that time chocolates really online? ***Jack*:** Yes, like special kinds with sayings, not regular chocolates.		***Sarah*:** Apart from Valentine, next big event? ***Rose*:** Women's day 08.03.14 ***Sarah*:** Is it a big event? ***Rose*:** Not sooo big, but still little gifts are made. ***Sarah*:** Anything for groups? For instance they have in Mexico stuff like: Experience in a group… How is it? Think about it, how big the event really is. ***Rose*:** Maybe we rather promote it in Facebook, because we have already Valentine & Winter Sales as campaigns on website? ***Sarah*:** Yes and only really good coupons with big sales, because many customers see it.

Table 6: Coping quotes related to vignette.

Converging	Meeting Day 2	Meeting Day 5
Italy	***Sarah*:** So one month in advance the page has to be online. Like Valentine representation. […] Maybe find statistics about that time in the year…what people like to do or buy. ***Mary*:** I did, already but not so many information… *Sarah*: Then we will do following promotion 1. slide: celebrate Easter holidays with us 2. slide: celebrate Easter Similar to Valentine's Campaign.	***Laura*:** So, we need [an overview] about all events in Italy that have implication on our business. Goal is to have a roadmap of the year. We have already a type of table: 1. Name of task 2. Period of event 3. What kind of use for us 4. When to upload landing page 5. Categories
Poland		***Sarah*:** Do research about events. ***Jack*:** Easter… ***Sarah*:** So do people travel for Easter? ***Rose*:** We do not buy any gifts, but travelling, yes. ***Sarah*:** So do research how does Easter influence e-commerce. Find out which shops and offers we need. ***Laura*:** Not only looking at Easter, but about whole year, so that we have an overview about all events which influence our business. Need categories as events, dates, seasons etc. ***Sarah*:** Also the period when the landing page should be online, or whether only Facebook post or landing page.

Table 7: Converging quotes related to vignette.

Connecting	Meeting Day 5	Meeting Day 6
Russia	***Sarah***: And last point: Next events? @ ***Brad*** you already listed events which will come up 1. column: name of event 2. column: period 3. column: when landing page should be ready 4. column: how big is the event (need landing page or Facebook post) 5. column: what kind of product categories ***Brad***: We have it for end of march ***Sarah***: Please extend it. ***Brad***: I am afraid people don't buy much for Easter. ***Sarah***: Ok, for such events where you don't know… Make research what people buy for Easter in the market, or from which shops has been bought last year. Or ask your friends what they would buy etc. So you have a better judgment in the future. Check out in your research what the categories are, travelling etc; And look in the internet what they say about the events.	
Germany	***Laura***: Can you please make a roadmap for 2014 regarding events in online marketing: fairs, consumer events, Valentine's Day.	
France		***Laura***: ***@Rick,*** You did a good job on the event calendar. You all look please at it and check what other thoughts you have and what comes to your mind.
Columbia	***Laura***: So do research over events in Columbia related to the online marketing and e–commerce market. Everything which somehow influences our work…Aim is to have an overview over the whole year, to know what comes… ***Sarah***: Events, how big, they are, what kind of posts, how long and what are the product categories etc.	

Table 8: Connecting quotes related to vignette.

Publications

Publication

Kazakova, T.: How Organizational Heuristics Emerge in Strategy Making, in: Academy of Management Best-Paper Proceedings 2015, forthcoming.

Peer reviewed conference proceedings and presentations

Kazakova, T.: „How Organizational Heuristics Emerge in Strategy Making“, Academy of Management Conference, Vancouver 2015.

Kazakova, T./Geiger, D.: „The complexity of simple rules: Heuristics in strategic decision making“, Academy of Management Conference, Vancouver 2015.

Kazakova, T.: „How Heuristics Emerge in Strategy Making“, 31st EGOS Colloquium, Athens 2015.

Kazakova, T./Geiger, D.: "The Complexity of Simple Rules in Strategic Decision Making", Komission Organisation im Verband der Hochschullehrer für Betriebswirtschaft, Zürich 2015.

Kazakova, T./Geiger, D.: "The Complexity of Simple Rules: A Concept of Organizational Heuristics in Strategic Decision Making", Academy of Management Conference, Philadelphia 2014.

Kazakova, T./Geiger, D.: "The Complexity of Simple Rules: The Micro Foundations of Organizational Heuristics in Strategic Decision Making", Strategic Management Society Conference, Copenhagen 2014.

Kazakova, T./Geiger, D.: “Exploring Strategic Learning: Uncovering the Essence of Organizational Heuristics”, 29th EGOS Colloquium, Montreal 2013.

Kazakova, T.: "At the Core of Strategic Processes: Towards a New Understanding of the Role of Heuristics in the Strategy-As-Practice Research", Academy of Management Conference, Boston 2012.

Kazakova, T.: "Opening the Black Box of Strategic Decisions", 28th EGOS Colloquium, Helsinki 2012.

Submitted Papers

Kazakova, T./Geiger, D.: The Complexity of Simple Rules in Strategic Decision Making. Under review at Business Research

Kazakova, T.: Organizational Heuristics: Towards a New Understanding of Organizational Judgment in Strategic Decision Making. Under review at Review of Managerial Science

Statutory Declaration

Eidesstattliche Versicherung

Ich versichere hiermit an Eides Statt, dass ich die vorliegende Arbeit ohne unzulässige Hilfe Dritter und ohne Benutzung anderer als der angegebenen Hilfsmittel angefertigt habe. Die Dissertation mit dem Titel:

„Strategic Decision Making under Uncertainty:

Towards a Theory of Organizational Heuristics“

wurde gemäß der Darlegung nach § 6, Absatz 3 der Promotionsordnung der Fakultät Wirtschafts- und Sozialwissenschaften der Universität Hamburg vom 24.10.2010 (siehe Selbstdeklaration) selbständig und ohne fremde Hilfe verfasst.

Weitere Personen waren an der Erstellung der vorliegenden Arbeit nicht beteiligt. Insbesondere habe ich hierfür nicht die entgeltliche Hilfe von Vermittlungs- bzw. Beratungsdiensten (Promotionsberater oder anderer Personen) in Anspruch genommen. Niemand hat von mir unmittelbar oder mittelbar geldwerte Leistungen für Arbeiten erhalten, die im Zusammenhang mit dem Inhalt der vorgelegten Dissertation stehen.

Die Arbeit wurde bisher weder im In- noch Ausland in gleicher oder ähnlicher Form einer anderen Prüfungsbehörde vorgelegt.

Ich versichere an Eides Statt, dass ich nach bestem Wissen die reine Wahrheit gesagt und nichts verschwiegen habe.

Vor Aufnahme der obigen Versicherung an Eides Statt wurde ich über die Bedeutung der eidesstattlichen Versicherung und die strafrechtlichen Folgen einer unrichtigen oder unvollständigen eidesstattlichen Versicherung belehrt.

Hamburg, 08.04.2015

Tatjana Kazakova

Disputation

Hamburg, 21. Juli 2015

1. Gutachter: Prof. Dr. Daniel Geiger
2. Gutachter: Prof. Dr. Timo Busch
3. Gutachter: Prof. Dr. Sebastian Spaeth