

# Chapter 6

## Cognitive Diversity of Top Management Teams as a Competence-Based Driver of Innovation Capability

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**Abstract** In order to gain and maintain innovation capability, organizations have to adapt their profiles and processes to perpetually changing environmental conditions. However, the resulting need for a high degree of flexibility, which includes avoiding an information undersupply by being stable but inflexible, entails the risk of an information overload. Therefore, a balance between an organization's flexibility and its stability is needed. Top Management Team (TMT) cognitive diversity seems to constitute a promising resource, which under certain circumstances can be turned into an organizational competence, allowing for a high but stable level of organizational flexibility. Employing insights from complexity theory and adopting agent-based simulation is suggested as a further research method in order to deduce underlying causal interrelations.

### 6.1 Introduction: Strategizing in a World of Variety and Change

Permanent changes in so-called “real-time economies” have amplified the characteristics of markets as worlds of variety and change (Tapscott 1999; Siegele 2002). Beside others, this is due to fast and constitutional developments in information and communication technologies in the last 10 up to 20 years, which contributed to a drastic shift from an industrial to an information age of the global society

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(Ottens 2003). Additionally, strategic management of organizations is more and more confronted with multiple, intertwined, sometimes contradictory, and mostly competing demands articulated by worldwide stakeholders and resource holders (Müller-Christ and Hülsmann 2003). In consequence, organizations like companies and their strategic management have to cope with an increasing complexity and dynamic in their relevant environments (Hülsmann and Berry 2004).

For that reason, the bases on which decisions in management are rendered are increasingly characterized by imperfect information (introduced into the management literature by Simon 1972). Organizations face the challenge that the amount of external information, emerging from their complex and dynamic environments, might exceed their information-processing capacities (Hülsmann et al. 2008). These capacities however are necessary in order to develop ideas, concepts, and practices that improve the respective company's product or service characteristics that are perceived as new and valuable by any stakeholder of the respective organization, in other words for the innovation capability (see, e.g., Rogers 2003). Gaining and maintaining innovation capabilities requires the ability to adapt the company's profile and processes to the perpetually changing environmental conditions (e.g., shifting customer demands). A lack of this ability as an effect that emanates from a too low information-processing capacity might lead to a so-called lock-in situation (Schreyögg et al. 2003). This includes a vital risk to the functionality and robustness of the locked organization (Hülsmann and Wycisk 2005b).

From a complexity-science-based perspective organizations can be regarded as Complex Adaptive Systems (CAS). They consist of autonomous, heterogeneous, interactive, and learning elements and coevolve with their environments. Thereby, they exist in a so-called melting zone between the edge of chaos and the edge of order (Wycisk et al. 2008; based on Holland 2002; Kauffman 1993). According to Wycisk et al. (2008), international supply networks are one example for such a CAS, which leads to the term Complex Adaptive Logistics Systems (CALs). Hence, the management of such a CALs in particular, but as well as of systems (e.g., a network of companies) and single organizations (e.g., companies) in general, are claimed to deal with increasing complexity and dynamics and the endangerment of lock-in-situations.

The challenge lies in two opponent requirements: On the one hand organizations need as much as possible information to be processed in order to react flexibly to changing environmental demands. On the other hand the information inflow has to be on a manageable level (Hülsmann et al. 2008). In this means it is essential to understand how companies can adjust the level and quality of their capabilities and capacities with regard to the accessing, acquiring, and processing of knowledge and information to external requirements. Thus, a key factor for successful strategic management, aiming at the organization's long-term survivability by gaining and maintaining the innovation capability, even under complex and dynamic conditions, seems to be the organization's adaptivity, which is defined by Hülsmann (2008) as the ability to keep the balance between an organization's flexibility and its stability (Hülsmann et al. 2008).

This article addresses this challenge by focusing on an approach that aims at an increase of organization's flexibility, without losing sight of the limitations of a flexibility spillover. According to Top Management Team (TMT) cognitive diversity research the heterogeneity of a team potentially contributes to organizational flexibility (Allen 2001; Akaishi and Arita 2002; Hülsmann et al. 2008; Stolarski and Tilebein 2009) by leading to an increased knowledge pool and inducing an extensive range of perspectives (Kauer et al. 2007; Pitcher and Smith 2001). The competence-based view, in which perspective flexibility can be seen as a competence itself, provides an adequate theoretical framework for an examination of cognitive flexibility as a source for flexibility as a competence on an organizational level (Sanchez 2004). However, former empirical diversity research does not deliver data of how and under which conditions cognitive diversity will reach its full potential as a driver for organizational flexibility. Additionally, it is not clarified yet from which degree on diversity endangers an organization's stability.

The overarching objective of this article is to analyze theoretically possible contributions of TMT cognitive diversity to organizational adaptivity and to point out approaches, elucidating the issue further. Therefore, several subgoals emerge: On a descriptive level, the need for organizational adaptivity and thus for a high but limited level of organizational flexibility will be specified. Furthermore, a description of flexibility as an organizational competence and TMT cognitive diversity as a possible approach to develop this competence shall be given. On an analytical level, the cause and effect chains between TMT cognitive diversity and the respective organizational flexibility and hence adaptivity shall be examined. Finally, implications for the management of organizations as well as for further research shall be deduced.

For that reason, the article proceeds as follows: In section two, potential effects of organizational flexibility in relation to a company's information-processing capability will be outlined, in order to show that a certain degree of flexibility is essential for an organization's innovation capability. Section three describes flexibility from a competence-based view, because TMTs are characterized by individual competencies that might lead in the following to organizational competences. Therefore, diversity management for TMTs will be emphasized as a special kind of the management of flexibility as an organizational competence. With recourse to these findings, section four introduces TMT diversity as a potential driver of organizational flexibility and proposes agent-based simulation as an alternative research approach, in order to derive deeper insights regarding the specific interdependencies between diversity and the flexibility of organizations. Section five sums up the findings and illustrates the attended limitations of this research as well as further research requirements.

## 6.2 Locked Organizations: Limitations to Rationality-Based Decision-Making in Strategic Management

According to Dörner (2001) a complex system (e.g., an organization or an organization network) can be seen as “(...) the existence of many interdependent characteristics in a section of reality (...)”. The more interrelations among the elements within a system as well as between a system and its surrounding environment exist, the more information is potentially available (Dörner 2001; Malik 2000). Burmann (2002) gives the example of new global sales opportunities for companies, evolving from the vast amount of information on new products and technologies, which is offered via Internet (Burmann 2002). The term “dynamics” describes the accelerated variation of the system status (e.g., the Internet) over time (Coyle 1977; Probst and Gomez 1989). Applied to the mentioned example, dynamics could be understood as the permanently altering and available information on the Internet. In this case, the elements (pieces of information) themselves change and thus the relations between them and other organizations and their elements alter as well.

Hence, in order to obtain the organization’s abilities to react to timely demands, they have to deal with complex information that are perpetually changing. In other words, organizations have to be capable to adapt to changes in their relevant environments so as to ensure their survivability. A system’s adaptivity, in turn, helps to keep the balance between a high level of flexibility and a system’s stability (Hülsmann et al. 2008). Whereas the former can be achieved by processes of system opening (Hicks and Gullett 1975; Garavelli 2003), the latter can be achieved by processes of system closure (Luhmann 1973, 1994). Both processes are opposite action alternatives, from which an organization’s management has to choose in individual situations. Thus, the management is confronted with perpetual decision-making situations regarding the system’s endowment with information, which is necessary for the management to render their decisions rationally, respectively, nearly rationally (Hülsmann and Wycisk 2005b).

Processes of system openings are based on mutual interrelations (Luhmann 1973), as they allow the system to communicate with the environment. Thereby it sustains the existential exchange process of resources (Staehele 1999; Böse and Schiepek 1989). While the system is in an open state, it is able to absorb some of the complexity within the environment and thereby the needed resources (Hicks and Gullett 1975). System openings are needed to gain an adequate amount of information for making preferably rational decisions. The higher the degree of complexity in the environment, the higher is by trend the degree of necessary information to find a solution for a certain problem. By system openings the decision maker therefore allows for more complexity that has to be absorbed by the system (Hülsmann et al. 2008), while the ability of processing this amount of complexity remains on a constant level. At the same time, the management has to take into account the dynamics of information and the risk of an information

overload caused by system openings (e.g., Hülsmann 2005; Gebert and Boerner 1995; Gharajedaghi 1982). Furthermore, because flexibility is enabled by a system's ability to open its borders for required resources (e.g., information) (Hicks and Gullett 1975; Garavelli 2003), the system structures can alter permanently in the course of aiming at maintaining the system's ability to meet the demands of its relevant environment. In order to avoid system boundaries which diffuse too much, the degree of flexibility has to be balanced by processes of stabilization.

Hence, processes of system closures are required as a compensating means (Luhmann 1973, 1994). Not every single piece of information adds to the decision-making process, wherefore the flow of information has to be cut at some point to enable a timely decision. Furthermore, no social system (e.g., organizations) is able to absorb the whole complexity of its environment. Hence, the problem of bounded rationality is immanent in every decision-making situation, which implies that managers are forced to base their decisions on incomplete information (Simon 1972). For this reason systems have to select the information they process, confining themselves to those parts which are still manageable by the system and necessary to solve specific problems (Luhmann 1994). In consequence, processes of system closure must be incorporated in a decision-making process in order to select information in terms of quality and quantity with regard to its contribution to the company's innovation capability.

Therefore, in order to provide an organization, respectively, a system such as a CALS with a preferably high degree of adaptivity, its management has to find the optimum balance between system openings and system closures. In turn, this leads to perpetual decision-making situations. The management has to provide the system on the one hand with a preferably high degree of flexibility, but on the other hand it has to assure its stability. This can be seen as one of the major tasks and challenges in the management of such systems like organizations or organization networks.

If an organization does not succeed in balancing the underlying contradictory objectives, the management's ability to render decisions as rationally as possible might be restricted (Hülsmann and Berry 2004). The quantity and quality of information needed for a total rational choice in a complex and dynamic environment cannot be met by any system's capability to access, acquire, or process information. Too much system opening, respectively, flexibility, might therefore lead to an information overload. Too much system closure, respectively, stability, might lead in contrast to an undersupply of information (Hülsmann et al. 2008). Both decrease the system's abilities in adapting to the changing and challenging demands of the environment and therewith to be innovative. If this is permanent and not only a temporary incident the respective system or organization can become a so-called "locked organization" (Schreyögg et al. 2003). This phenomenon is based on path dependencies that develop in the course of repetitive actions of a system's single elements, fortified by feedback loops (David 1985). Actions that have been carried out in the past can therewith decrease the current range of possible action alternatives. Path dependency theory refers to this phenomenon as "history matters" (Arthur 1989; David 1994). As a result, a dysfunctional and suboptimal situation with a limited choice of possible decisions might occur

(Schreyögg et al. 2003). Processes of locking can therewith reduce an organization's capability to cope with the complexity of its environment by decreasing its ability to continue its exchange of vital resources with its environment. Neither can it identify all necessary resources (e.g., information about new products, new trends or innovations) from the offered mass in the environment nor evaluate or integrate them. As a consequence, the organization cannot respond to the demand of the environment (e.g., products of the company which potential buyers need) in time, quality, quantity, or place. This lack of flexibility could result in a disequilibrium which in turn could lead to negative environmental responses in terms of the required resources (e.g., through a lower volume of sales the company could loose its market shares). In the worst case, a lock-in situation may result in an organizational collapse (Hülsmann and Wycisk 2005b).

Therefore, the questions arise how to avoid a lock-in situation (ex-ante) and how to cope with an existing lock-in situation (ex-post). With recourse to the above stated dependencies between organizational flexibility and the risk of a lock-in situation, two challenges can be deduced: The increase of an organization's flexibility itself, as well as the increase of an organization's ability to cope with a high degree of flexibility. In other words, it is necessary to implement organizational flexibility on a level as high as possible, but low enough to ensure that the system's stability is not endangered, in order to gain and maintain the innovation capability.

### **6.3 Organizational Flexibility by Competence-Based Management**

Subsequent to the above-mentioned need for organizational flexibility on a high but stable level, the question arises, how the organizational system's structure (e.g., of a company or of an organizational network of companies) can be created in order to allow a maximum level of flexibility without losing the system's stability. One possible approach applying to the flexibilization of organizations is competence management (Sanchez 2004). According to the competence-based view, flexibility can be seen as a competence itself (Sanchez 2004; Krüger and Homp 1997) and can be understood as a basic demand of the organization structure, allowing it to form and apply competences and to refine their arrangement if necessary (Hülsmann et al. 2006). Important thereby is the differentiation between individual competencies and organizational competences (Müller-Martini 2008). In order to provide organizations with the required adaptiveness so as to secure a sustainable development and survival in dynamic, complex, and highly competitive environments (Hülsmann and Wycisk 2005a), flexibility is not only necessary on the individual levels. Rather it has to be implemented as a competence on an organizational level, wherefore the competence-based perspective offers an appropriate theoretical framework (Sanchez 2004).

According to Sanchez et al. (Sanchez and Heene 1996, p. 8; Sanchez 2004, p. 521) competences can be described as “(...) the ability to sustain the coordinated deployment of assets in ways that help a firm achieve its goals.” In the theory of the competence-based view a firm is seen as a learning organization that builds and deploys assets, capabilities, and skills to achieve strategic goals (Hamel and Heene 1994).

Five different “modes” of competences have been defined by Sanchez (2004):

- (1) cognitive flexibility to imagine alternative strategic logics;
- (2) cognitive flexibility to imagine alternative management processes;
- (3) coordination flexibility to identify, configure, and deploy resources;
- (4) resource flexibility to be used in alternative operations; and
- (5) operating flexibility in applying skills and capabilities to available resources.

Competence modes 3–5 are highly dependent on and limited by the competence modes 1 and 2. The cognitive flexibility, in turn, provides an appropriate connectivity to the approach of cognitive diversity. Therefore, this article focuses on the first two competence modes.

Competence mode 1 reflects an organization’s ability to imagine different strategic ways of creating value in a certain market. Hence, it is highly dependent on the individual competencies of the organization’s top managers to perceive the organization’s relevant environment. Competence mode 2 reflects an organization’s ability to imagine different processes in order to achieve the organization’s strategic goals, which are, in turn, dependent on competence mode 1. In analogy to competence mode 1, this competence again highly depends on the individual competencies of an organization’s top managers (Sanchez 2004). Although each meaning of the competence modes refers therewith to a different kind of flexibility, they all react toward a changing environment (e.g., changing markets or new technologies). Hence, they contribute, up to a certain point, to an organization’s adaptivity. Therewith, the risk of a lock-in situation can be reduced. In consequence, the question arises, how organizations can achieve the competence “cognitive flexibility” regarding their strategic logics and their management processes. The latter are the preconditions for developing coordination, resource, and operating flexibility in order to enable organizations to avoid as well as to cope with lock-in situations as described above and hence, to gain and maintain innovation capability.

#### **6.4 Design of Cognitive Diversity of TMT—A Key Issue of Strategic Organization?**

According to the upper echelon perspective individual characteristics of TMT members like values, personalities, and experiences take influence on strategic choices and the overall performance of a firm (Hambrick 2007). TMTs constitute the aggregate informational entity, which is responsible for strategic decisions

regarding the whole system's, respectively, organization's or company's future behavior and thus its development (Hambrick et al. 1996).

Speaking in terms of the competence-based view, TMT members' individual competencies might contribute to the TMT goals. In conjunction, individual competencies can constitute a resource, which composes an organizational competence under certain circumstances (Müller-Martini 2008). Focusing on TMT characteristics and composition (Hambrick et al. 1996), TMT diversity research contributes to the clarification of these circumstances.

TMT diversity is defined as the extent to which a top management team is heterogeneous with respect to its members' demographics or cognitions (Simons et al. 1999). As cognitive diversity, accounting for deep-level differences like cognitions, beliefs, and attitudes, is much more potent in group interactions than surface-level demographic differences (Harrison et al. 1998) this article focuses on cognitive differences opposed to surface-level demographic differences, e.g., age or gender. Cognitive differences are defined as distinctions in individual information processing, which comprises the way a person perceives and uses information (Lord and Maher 1990). Similarly, team-level information processing describes the way a team perceives and uses information (Akgün et al. 2006; Hambrick 2007). From a competence-based perspective, the information-processing capability of individuals as well as of teams can be regarded as a precondition to imagine alternative strategic logics and management processes. In other words, it constitutes a precondition for the development of cognitive flexibility, which is, in turn, a precondition for the competence organizational flexibility (Sanchez 2004). In this context the questions arise, in what way cognitive TMT diversity contributes to the creation of such an organizational competence and how this competence again contributes to organizational adaptivity, respectively, how does it help to avoid or to cope with organizational lock-ins and to foster an organization's innovation capability.

In empirical diversity research it is often assumed that cognitive diversity potentially enhances a team's information-processing capabilities, e.g., in means of coding and sorting out information or considering alternative solutions to a problem (Akgün et al. 2006). This again provides several assets relevant to organizational flexibility, e.g., allowing for decision-making based on less imperfect information. The basic idea underlying this assumption is that diversity broadens a team's knowledge pool. The heterogeneity of team members with regard to, e.g., knowledge, experience, and educational background enables them to produce a wide range of different ideas and to approach problems and tasks from different perspectives, resulting in enhanced problem-solving quality, creativity, and innovation (e.g., Cox and Blake 1991; Thomas and Ely 1996). In addition to these effects, taking place inside the organization, diversity may lead to a better acquisition and assimilation of new external knowledge (Jansen et al. 2005) and thereby again can contribute to an organization's flexibility (Akaishi and Arita 2002; Allen 2001).

However, in analogy to the risk of an information overload and the resulting need for a balance between flexibility and stability, diversity does not prove beneficial by all means. A number of studies revealed risks related to high degrees of



team diversity (e.g., Miller et al. 1998; Cronin and Weingart 2007). Accordingly, communication and cooperation barriers tend to arise in heterogeneous teams, hampering information processing. In this case diversity leads to rigidity, counteracting the potential benefits it may have otherwise and confronting an organization with further risks in addition to the difficulties in today's business environments.

Apparently, within the field of diversity research there is no consensus on diversity effects, respectively, under which circumstances diversity emerges as a risk or a resource (see, e.g., overviews in Kilduff et al. 2000; Van der Vegt and Bunderson 2005). Although there seems to be a high potential, there are no definite implications for how to manage a diverse team successfully, respectively, how to unlock organizations by diversity management.

However, numerous researchers agree that unmeasured moderator, mediator, intervening, independent, or dependent variables contribute most predominantly to the observed inconsistency of empirical studies (e.g., Carpenter 2002; Hambrick et al. 1996; Pitcher and Smith 2001). Further there is evidence that diversity is a multifaceted construct, whose facets interact with team processes in converse ways (Pelled et al. 1999). Aside from the complexity of the subject matter, the underlying processes of information processing in diverse teams are highly dynamic and take influence on team performance in the course of time (Harrison et al. 1998; Picher et al. 2001).

As Stolarski and Tilebein (2009) point out, classical empirical methods are not capable of comprising the complex and highly dynamic relationships, accompanying diversity effects. For example, numerous potentially relevant moderator and mediator variables, taking influence on the "cognitive diversity"—"team information processing" relationship must remain unconsidered (Stolarski and Tilebein 2009). Apparently, this calls for an alternative research approach and research method, which takes account of all relevant variables and of the dynamics evolving between the variables (Stolarski and Tilebein 2009). Thus, it will be possible to clarify TMT diversity effects and consequently to explore TMT diversity as a driver for organizational flexibility.

Complexity research provides illuminating insights regarding the relationship between diversity, information-processing capability and adaptivity of systems. Thus a basic understanding of the complex and dynamic mechanisms, which underlie diversity effects, can be derived from complexity theory (Tilebein 2006a). Complexity theory, which has its roots in systems theory, evolutionary biology, game theory, and information science, looks for common principles of CAS. The dynamics of these systems can be either chaotic, locked in a stable state, or "on the edge of chaos" (Kauffman 1993).

Although chaotic systems are highly dynamic, they cannot respond to external impulses in a timely and adequate manner, comparable with organizations, being too flexible. Systems with a lack of flexibility on the other hand always reproduce their prior states wherefore they are not capable of adapting to changing conditions. Apparently, systems with too much flexibility and systems lacking flexibility are not able to cope in an adequate manner with the information provided by their

environment, which, in turn, can lead to lock-in situations and hinder the organization to be innovative.

The edge of chaos is a balanced state where a system shows both stable and changing characteristics. In this state, a system reaches a maximum in information-processing capability, and it can display spontaneous order and absorb external disturbances (Langton 1992; Kauffman 1993; Wolfram 1994; Tilebein 2006b). This again reflects organizational adaptivity as described in Sect. 2.

The different types of dynamics in CAS are based on information-processing procedures performed by the interrelated system elements, which are called agents, and on the information flows within the network of agents (Holland 1995). The more interaction partners each agent has, i.e., the higher the network density is the more information can be passed on through the network (Boisot and Child 1999). In order to be adaptive, CAS have to combine this information transfer capacity with adequate information storage capacities, which strongly relates to the idea of balancing system opening and system closure that was introduced in Sect. 2.

This analogy is acknowledged by results from agent-based simulation models, used in complexity theory (Law and Kelton 1991). For example, there is evidence from very simple agent-based models, Kauffman's Boolean Networks that an optimized fit between network density and diversity leads to adaptivity of the system. In contrast, networks with low diversity and low density might lead to locked systems, while highly dense networks between highly diverse agents might result in chaos. Lowering or rising diversity can optimize information-processing capacity of those extreme systems and thus allow for adaptivity again (Kauffman 1993).

Agent-based simulation in general strives to model individual behavior and interactions of a system's micro-level entities, called agents (Klüver et al. 2003). Most important concerning the current issue agents possess schemes determining their individual goals and their actions, including their behavior toward and the information exchange with other agents (Dooley 2002; Klüver et al. 2003). This allows for simulating, e.g., the emergence of cooperation in social groups, the communication of beliefs and aspirations, the negotiation with or without resorting to conflict, and the coordination of activities (Schieritz and Milling 2003; Wooldridge 2002). Additionally agents are able to interact not only among themselves, but also with their environment. In other words, they absorb the information provided by their environment and adapt to them (Wooldridge 2002).

To sum up, in complexity research agent-based simulation is an established approach to examine diversity effects in regard to information-processing capability and flexibility, respectively, stability of a system. Recently management science is beginning to realize and discuss on a broader basis the vast potential of simulation methods for experimental theory building (Davis et al. 2007; Hazy 2007).

## 6.5 Conclusions

In competitive environments of increasing variety and change strategic management has to face the risk of “locked organizations” (Schreyögg et al. 2003), which includes vital risks to the organization’s operational reliability and robustness (Hülsmann and Wycisk 2005b) and to its innovation capability. Unlocking an organization from this risky state and reconstructing, respectively, maintaining its ability to cope with volatile and diverse environmental demands requires organizational adaptivity, which in turn requires a high, but stable level of organizational flexibility (Hülsmann et al. 2008). From a competence-based perspective the capability to imagine alternative strategic logics and management processes is an essential precondition for organizational flexibility, respectively, cognitive flexibility (Sanchez 2004).

The upper echelon view acknowledges a major role of management team characteristics in strategic decision-making and flexibility. Accordingly, one of the drivers of organizational flexibility seems to be TMT cognitive diversity. As shown many times in TMT diversity research, diversity leads to an increased knowledge pool, inducing an extensive range of perspectives (Kauer et al. 2007; Pitcher and Smith 2001). Thus diversity potentially enhances the flexibility of the organization, which might allow for adaptivity of the system (Allen 2001; Akaishi and Arita 2002).

To sum up, TMT diversity might constitute an organizational competence, which fosters the innovation capability. But the circumstances, which enable organizations to utilize this resource and develop an organizational competence, have not been identified by empirical research yet. While prior research has shown that top management team diversity affects strategic flexibility and performance, there is no consensus on the mechanisms underlying these effects.

Hence, strategic management should be aware of cognitive diversity as a potential driver of unlocking organizations. Adjusting the heterogeneity of a management team, e.g., via appointing new members to the team or by providing similar, respectively, dissimilar information to the team members, in order to allow for organizational adaptivity could be a first, practical approach. However, regarding the contradictory empirical results described above, caused by, e.g., unmeasured moderator and mediator variables changing TMT diversity by way of trial in order to optimize organizational flexibility appears rather hazardously.

Accordingly, it is proposed to use agent-based models to clarify how and under which conditions diversity will reach its full potential as a driver for innovation capability. Referring to the shortcomings of empirical diversity research described above, agent-based simulation appears to be an appropriate approach to cope with the complexity and dynamic of intertwined variables, which contribute predominantly to the inconsistent results in empirical research.

Regarding the huge amount of TMT diversity studies, each focusing on different variables, which moderate the relationship between cognitive diversity and information processing (Stolarski and Tilebein 2009), it becomes clear that simulation models in management research will have to be more complex than those originally used in complexity theory, e.g., Boolean Networks. This renders more complex

agent-based systems appropriate tools for modeling diversity and information processing in management teams as they are able to model aspects like, heterogeneity, autonomy, openness to the environment and communication (Bandtke 2007).

Thus, it seems promising to develop and apply agent-based systems, which are capable of modeling decision processes in TMTs in order to ascertain the conditions under which TMT diversity contributes to the innovation capability of organizations.

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