
Contextual Ambidexterity and Individual Competencies for Exploration and Exploitation in Small and Medium sized Enterprises

– Empirical Results from Case Studies in the German New Media Industry -

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Abstract: Organizational research states that the implementation of contextual ambidexterity in SMEs is promising due to their specific framework conditions such as resource scarcities, flat hierarchies, top management team integration, organic organizational structures and cultures, as well as muddling through learning modes. However, the competence requirements of contextual ambidexterity on the individual level remain vastly unclear. Despite some initial evidence for the performance impacts of ambidexterity in SMEs, there is no research that systematically links organizational and individual competencies in that area. After having conducted longitudinal case studies of four publishing houses, we found evidence that dedicated ambidextrous competencies for managers and employees balance exploration and exploitation. We present here a new ambidexterity model and some empirical results of applying this model to the German New Media Industry.

Keywords: New Media Industry; Exploration; Exploitation; Ambidexterity; Organizational Antecedents; Individual Competencies; Innovation Performance

1 Introduction

This paper¹ describes a new ambidexterity model to balance exploration and exploitation activities in SMEs, and some empirical results of applying this model in the German Publishing Industry. Due to an enduring discontinuous change in the firm's environment,

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the new media sector is under enormous pressure to pursue innovation processes to develop new online products and services. The transition from offline (i.e. print) to online products affords an immersive example for the need to establish ambidexterity, since it reflects the imperative of simultaneously exploring entirely new business models and exploiting the well established print business model without cannibalizing it by offering new online products.

This paper is organized as follows: first we will describe the new ambidexterity model that embraces the role of organizational antecedents and individual competencies for the firms overall exploration and exploitation performance. Then, we describe the state-of-the-art on the moderating role of organizational antecedents for exploration and exploitation performance. Then, we reflect on individual competencies for exploration and exploitation, which proves to be an almost entirely new field of research. After describing the research setting, we focus on the dedicated hypotheses for organizational antecedents and individual competencies driving exploration and exploitation. After presenting related empirical results we describe initial conclusions and restrictions of the research presented in this paper.

2 Theoretical Background

There is a huge body of literature on ambidextrous organizations and the related capabilities of how to manage the tensions between exploration and the exploitation of resources in the innovation process. Since the seminal work of March (1991) on these different modes of organizational learning, many scholars turned to different facets of ambidexterity, e.g. basic modes such as structural (Benner/Tushman 2003; Andriopoulos/Lewis 2009), contextual (Raisch/Birkinshaw 2008; Gibson/Birkinshaw 2004), and sequential (de Visser 2010; Gupta et.al. 2006); as well as network ambidexterity (Kauppila 2010; Wessel/Gersch/Goeke 2010), antecedents and drivers (Jansen/van den Bosch/Volberda 2005; Bledow et.al. 2009), and performance impacts (He/Wong 2004; Lubatkin et.al. 2006). However, only a few studies have tackled the role of ambidexterity in Small and Medium Sized Enterprises (SMEs) (Kohtamäki/Kautonen/Kraus 2008; Ali 2011; Lubatkin et.al. 2006), and how to implement ambidexterity on an operational basis in the context of SMEs' restrictions in resources availability, lack of innovation, management skills etc.

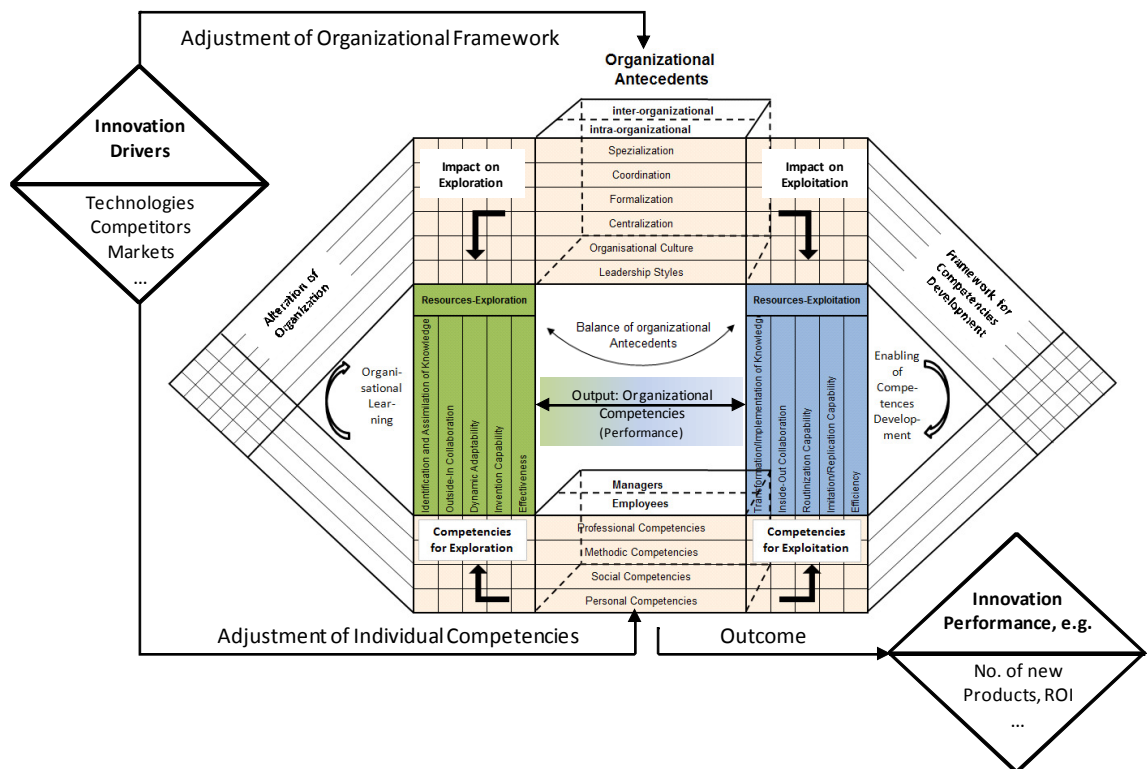
However: "A Small Business is not a Little Big Business", (Welsh/White 1981), which means that insights from past and current research on ambidexterity cannot easily be transferred to SMEs. For instance, dual structures, i.e. splitting up the organization in explorative units such as R&D departments, and exploitative units for production and distribution, often simply do not exist in very small firms (Fischer et.al. 2011). Thus, a research gap is to be ascertained in how SMEs cope with the challenges of balancing exploration and exploitation.

3 Developing the New Ambidexterity Model

Figure 1 provides an outline of the elements, the subsistent relationships, the survey marks and operational items of the ambidexterity model. The model is based on a contingency-based approach to organizational adaptation (Burns/Stalker 1961; Lawrence/Lorsch 1967, Miller/Friesen 1983), assuming that ambidexterity and its organizational and individual enabling depends on context factors like environmental dynamics and complexity (Auh/Menguc 2005), and that the main driver for switching between exploration and

exploitation as alternative modes of learning is environmental change. At the same time, the model is based on a multi-level analysis: ambidexterity may not only arise at an organizational level but also at an individual, team or inter-organizational level (Kaupilla 2010; Simsek 2009, p. 605; Hobus/Busch 2011, p. 192). Furthermore, multiple interdependencies are anchored within the model, focusing on (a) reciprocities between organizational design and individual competencies development, leading to a loop between individual and organizational learning, and (b) amplifying and/or compensation effects between organizational design dimensions and performance criteria (Simsek 2009, p. 607). Finally, the model raises the question as to how single organizational design dimensions and individual competencies contribute to single exploration and exploitation performance criteria:

Figure 1 Ambidexterity Model



The basic hypothesis of our model is that ambidexterity develops as the result of:

- a specific **configuration of organizational antecedents** which are specialization, coordination, formalization, (de-)centralization, leadership styles and organizational culture (Jansen et.al. 2006; Gibson/Birkinshaw 2004);
- a specific **configuration of professional, methodical, social and personal competencies** to support exploration and exploitation activities within the organization (Hafkesbrink/Schroll 2010).

The following interdependencies are considered to be important for our research:

- the model assumes that firms adjust their organization to new requirements from the firms environment (independent variable, contingency variable) by altering the

organizational antecedents (response variables I) mentioned above within organizational change processes;

- the model also implies that individual competencies of managers and employees are adjusted to new requirements of the firm's environment by altering professional, methodical, social and personal competencies (response variables II) within personal development and training processes;
- alterations in the organizational framework may also impact individual competences development, i.e. it may support or impede individual competencies acquisition (moderation effect between response variables I and II);
- individual learning cumulates along the team level up to the organizational level introducing double-loop learning;
- alterations of organizational antecedents and individual competencies directly impact the performance of exploration and exploitation (dependant variable);
- organizational competencies (the output variable) are composed of exploration- and exploitation performance criteria: these are for (1) exploration: identification/assimilation of knowledge, outside-in collaboration capability, dynamic adaptability, inventive capability, and effectiveness; and for (2) exploitation: transfer/valorization of knowledge, inside-out collaboration capability, routinization capability, imitation/replication capability, and efficiency;
- overall innovation capability (e.g. measured by the number of successful products or ROI) is the outcome variable (dependant variable) of the model.

4 Organizational Antecedents for Ambidexterity: the state of the Art

First it is stated that the likelihood of exploration decreases with the organization's knowledge specialization, while it increases the returns to exploitation and thus induces a commitment to it (Dimov/Martin de Holan 2005). Also functional specialization enhances knowledge absorption (Cohen/Levinthal 1990; Ketoviki 2008), it improves co-creation in outside-in collaboration (Chesbrough 2011) and in inside-out exploitation (Rocha 1997), it promotes in-depth routinized work processes and thus provides efficiency advantages in daily work (Becker 2010; Strunz/Dorsch 2009). On the other hand, more generalization e.g. through cross-training enhances organizational dynamic capabilities (Grant 1996).

Coordination instruments aimed at self-determination do not support all phases of exploration equally. To identify knowledge and to support management in collaboration with third parties in (open) innovation processes, technocratic coordination instruments are well suited. Self-organization increases generally the effectiveness of learning processes (Kablouti 2007; Malik 1993). Vice versa technocratic coordination instruments (e.g. plans, programs, templates) favor the routinization of processes for exploitation and thus their efficiency (Szulanski/Jensen 2008; Konlechner/Güttel 2010; Simsek 2009; Gladen 2008).

According to Jansen/van den Bosch/Volberda (2006), formalization does not decrease a business unit's exploratory innovation, but positively influences exploitation. The reason that formalization negatively correlates with exploration may be that the search for other than already-known solutions may be inhibited (Weick 1979).

For the impacts of de-centralization on exploration, there is evidence that a high centralization negatively moderates the explorative performance of an organization unit,

and vice versa organizations high in power distance will generate high exploitative innovation (Tsai 2002). Furthermore, bottom-up knowledge and horizontal inflows of a manager will be positively related to the extent to which this individual engages in exploration activities, while top-down knowledge inflows of a manager will be positively related to the extent to which he or she engages in exploitation activities (Jansen/van den Bosch/Volberda 2006; Bledow et.al. 2009; Mom/van den Bosch/Volberda 2007).

In general, a transparent and open organization culture supports processes of resource exploration, while closed corporate cultures are especially conducive to routinization and replication (McCarthy/Gordon 2011; Jaworski/Kohli 1993; Atuahene-Gima 2003; McFadyen/Cannella 2004; Subramaniam/Youndt 2005).

The debate on Leadership styles mostly centers around the dichotomy of transformational and transactional leadership. Thus transactional leadership behavior is supposed to have a negative relationship with exploratory innovation, but a positive relationship with exploitation processes. Transformational leadership will be highly related to exploratory innovation when the organization's environment is perceived as dynamic; conversely transformational leadership will be minimally related to exploratory innovation when the organization's environment is perceived as stable, and vice versa. Here transactional leadership is applied (He/Wong 2004; Simsek 2009; Panday/Sharma 2009; Jansen/Vera/Crossan 2009; Sosik et al. 1997).

5 Individual Competencies for Ambidexterity: the state of the Art

The link between individual competence development and resources exploration or exploitation is still much neglected. In the Anglo-American literature, some research contributions are found on the subject of "individual ambidextrous competences" in the background discussion about "contextual ambidexterity" (cf. Gibson/Birkinshaw 2004). These contributions follow the recognition that ambidexterity is at last based on decisions and the behavioral arrangements of executives and employees: "Although ambidexterity is a characteristic of a business unit as a whole, it manifests itself in the specific actions of individuals throughout the organization" (Gibson/Birkinshaw 2004, p. 211). Looking at exploration and exploitation we advance the following arguments:

Individual Exploration Competencies

- In exploration phases, it is indispensable to add new professional knowledge to existing knowledge. The more professional knowledge exists within the firm, the more opportunities for combining old and new knowledge are available (Ericsson 2007). In combining knowledge domains, new competencies emerge representing converging technology domains etc. (Hafkesbrink/Schroll 2010). If a technology path is to be changed, existing knowledge may become obsolete, and it has to be unlearned (Cegarra-Navarro/Sanchez-Vidal/Cegarra-Leiva 2011; Mäkitalo-Keinonen/Arenius 2010; Cepeda-Carrión/Cegarra-Navarro/Jimenez-Jimenez 2009) otherwise it may lead to a cognitive lock-in of the innovation process.
- The process of professional knowledge generation in exploration phases is supported by methodical, social and personal competences (interdisciplinary competencies) enabling the process of learning. E.g., preconditions must be fulfilled that knowledge can be identified and assimilated (e.g. by applying specific learning methods) and that implicit knowledge is shared (e.g. social embeddedness, social communication

capabilities). Personal Competencies are essential for initiating knowledge sharing and accumulation like openness, self-reflexion etc.

Individual Exploitation Competencies

- Existing knowledge is improved incrementally, especially by experience accumulation, i.e. the application of existing knowledge within a specific work context, for example in the framework of a production process.
- Experience-based learning takes place along established technology paths, i.e. on the basis of an existing production process or product.
- Interdisciplinary competencies support improvements in experience based learning on the existing technology paths.

Individual Ambidextrous Competencies

To balance tensions between exploration and exploitation, individual ambidextrous competencies are needed:

- *Professional Competencies* from multiple sources and disciplines have to be combined in one individual person or have to be split up in a team considering a specific work or task. This depends on the lifecycle of knowledge to be integrated, on the availability of specialists in that area, on the size of the firm, and on the phase of the innovation process (Hafkesbrink/Kulenovic/Bachem 2012). On this basis *Professional Hybrid Competencies* emerge which may be displayed as ‘T-shaped Skills’ (Karjalainen/Salimäki 2008; Oskam 2009) that provide the ground for establishing core competencies within the innovation process. Such T-Shaped Skills are often depending on the convergence of technologies (e.g. *video-journalist*, *bio-informatician* etc.)
- *Ambidextrous Methodic Competencies* need to support the simultaneous emergence of professional knowledge for exploration and exploitation processes, e.g. *knowledge brokerage*, *multi-tasking ability*, etc.
- *Ambidextrous Social Competencies* should at the same time enable and support social integration and discipline (Gibson/Birkinshaw 2004), e.g. *diplomatic and rhetorical capabilities*, *tolerance to ambiguity*, *mediation capabilities*, etc.
- *Ambidextrous Personal Competencies* need to provide the ground for the development of social and methodic competences, e.g. the *capability to combine alternative logics*, *emotional ambivalence*, and the *capability to think outside the box*.

The following table defines selected individual ambidextrous interdisciplinary competencies and provides references from the literature:

Table 1: Examples for Individual Ambidextrous Competencies (own compilation)

Competence-Item	Commentary	Source:
Dialectic (relativistic) thinking/ trade-off- or synthesis thinking	„there is more than one truth“	Forster/Higgins/Taylor-Bianco (2003); Bledow et.al. (2009)

Emotional Ambivalence	Simultaneous presence of negative and positive emotions	Fong (2006)
Knowledge Brokerage	Integration and meshing up of knowledge from separate knowledge sources	Hobus/Busch (2011)
Topsy-turvy-thinking	Turn everything upside down	Gibson/Birkinshaw (2004)
Paradoxial Cognition	Openess against strategic contradictions	Smith/Tushman (2005)
Strategic entrepreneurial Thinking and Action	Management-Competencies between emergence and planning	Lewis et al. (2002)
Capability to lead Discourses, Diplomatic Capability	Moderation of conflicts in cross-funktional teams	Lovelace/Shapiro/Weingart (2001)
Hybridization of alternative Logics	Connecting multiple institutional responses as a reaction to change	Perkmann/Salter/Tartari (2011)
Lateral Thinking	Substantial part of ambidextrous thinking (left mode of brain = rational thinking, right mode = creative thinking)	De Bono (1990); Faste (1994)
Ambiguity Tolerance	Requisite variety, capability of perspective-taking and interpretive skills are factors leading to generate useful ambiguity to achieve exploration, while analytic skills are required to reduce ambiguity to achieve exploitation.	Brun (2011); Jansen/Vera/Crossan (2009)
Multitasking	Fulfilling multiple roles within a certain time frame	Mom/van den Bosch/Volberda (2009)
Integration of Opinions	Learning and achieving convergence through conversation among members	Berson et.al. (2006); Lubatkin et.al. (2006)
Rhetoric Capabilities	Applying e.g. Mission Statements to give orientation to employees for a common philosophy	McCarthy/Gordon (2011); O'Reilly/ Tushman (2004)

6 Research Setting

Sizing down to small firms the scope of action for ambidextrous design narrows. The main research questions in this paper are: what are the organizational design elements in SMEs that provide appropriate degrees of freedom to employees to divide their time between the two conflicting demands of exploration and exploitation, and how do they enable the development of individual ambidextrous competencies?

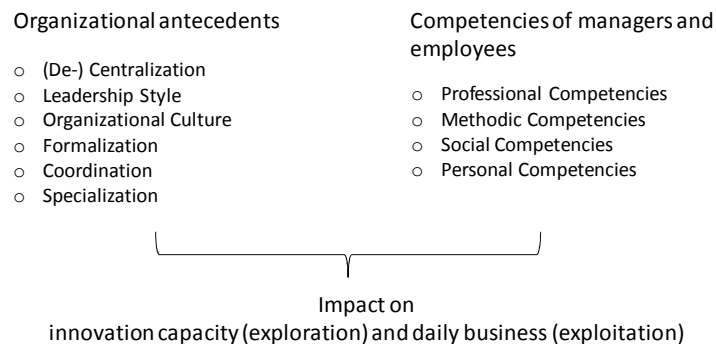
Our research approach comprises multi-stage case studies in four publishing houses that are shifting from offline to online business models. The companies are operating in different segments of the publishing sector, such as newspapers, magazines, books and job printing products. The study targeted all members of the involved SMEs, managers, journalists, graphic designers etc. since almost every workplace is impacted by this online shift.

The data used in this study was collected in four stages: (1) A series of interviews was conducted with managers and/or editors about strategic routes to online business models, including a retrospective analysis about experiences with disruptive change. (2) Workshops were conducted with a mixed sample of managers and employees to discuss drivers for change impacting the current business model and to discuss strategies to develop new digital services. (3) About 70 individual interviews were carried out to gain a broad understanding of day-to-day work in the present paper-based business model, and to understand the role of specific barriers to change. (4) An anonymous questionnaire-based survey was arranged to investigate employees' perception of organizational antecedents for carrying out day-to-day work and innovative projects. Data were triangulated to gain rich heuristic insights in ongoing innovation processes. The case studies were conducted from early 2008 to late 2011.

Evaluation procedures

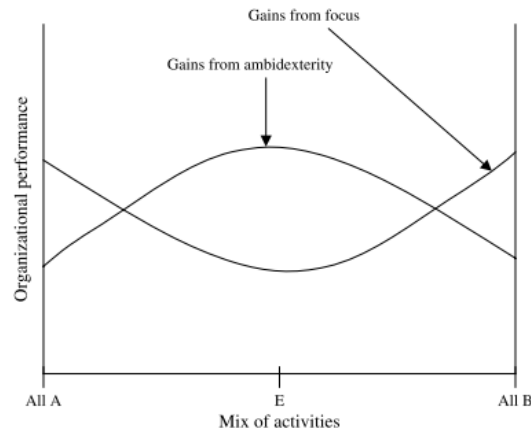
In the context of the standardized anonymous questionnaire we investigated the following dimensions:

Figure 2: Evaluation Dimensions of the Standardized Questionnaire



The basis of the evaluation procedure was the model of Gulati/Puranam (2009) that displays gains from ambidexterity or gains from focus:

Figure 3: Interactions between the Activity Types of Exploration and Exploitation and Organizational Performance (Source: Gulati/Puranam 2009)



This model is able to visualize gains from ambidexterity and focus, using two U-curves, one normal U-curve to display gains from focus as the performance at the end of the continuum (All A or All B) is higher than for the mix of activities; and one inverted U-curve displaying higher performance as a result of a mix of activities. We use this model to describe gains from organizational design in the already-mentioned dimensions specialization, coordination, formalization, etc.

The following performance indicators were used within the investigation:

Figure 4: Operationalization of Performance Indicators

Superior Level:

Exploration	Exploitation
Realization of innovation projects (planning, implementation and control of projects to develop new business models, products, services, forms of organization, etc.)	Management of daily business (planning, implementation and control of day-to-day business in the dominant business model concerning existing products, services and the established organization)

Subordinate Level:

Dimension	Exploration	Exploitation
Knowledge management/-absorption	Identification/assimilation of knowledge	Transfer/valorization of knowledge
Collaboration with external partners	Outside-In collaboration capability	Inside-Out collaboration capability
Stability/ organizational learning	Dynamic adaptability	Routinization
Innovation process	Inventive capability	Imitation/replication capability
Performance	Effectiveness	Efficiency

Organizational antecedents were operationalized as follows:

Table 2: Operationalization of Organizational Antecedents

Organizational antecedents	Measuring Point 1	Measuring Point 2
(De-) Centralization	Centralization	Decentralization
Leadership Style	hierarchical, transactional	participatory, transformational
Organizational Culture	closed, unpredictable	open, reliable
Formalization	high (much bureaucracy)	low (little bureaucracy)
Coordination	institutionalized rules	Self-determination
Specialization	high	low

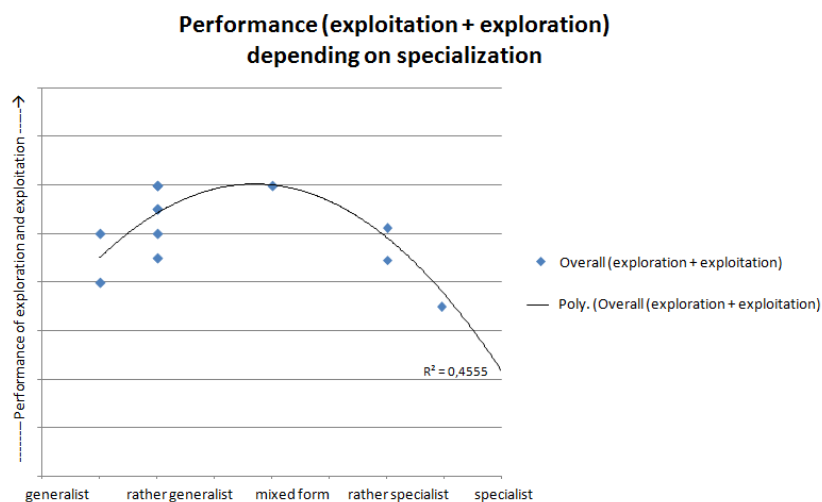
We used a standard scale as follows:

Table 3: Operationalization of Organizational Antecedents (example: centralization)

	agree totally	rather agree	rather not agree	do not agree at all
I have enough leeway in decision-making...				
...to divide my time between creative tasks and daily business independantly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

For each of the survey marks 1 and 2 we described a continuum between 2 poles such as “none to high formalization”, “low to high specialization”, etc. The responses of the informants were accumulated and visualized by calculating a polynomic trend as can be seen from the following figure:

Figure 5: Example for the visualization of responses (item: specialization)



To measure the importance of individual competencies for ambidexterity, the interdisciplinary competence dimensions have been operationalized as follows:

Table 4: Operationalization of Interdisciplinary Competence Dimensions

Methodic Competencies	Social Competencies	Personal Competencies
Abstraction ability	Willingness and ability to transfer knowledge	Creativity
Moderation/ mediation skills	Coaching skills	Ability to self-motivation
Analytical skills	Empathy	Lateral thinking
Decision-making ability	Motivation	Assertiveness/ authority
Mastery of research and learning techniques	Leadership ability	Openness
Media-/ presentation skills	Capacity for cooperation/ teamwork	Self-reflection ability
Multitasking ability	Communication skills	Accuracy
Project management skills	conflict-/ consensus capability	Strength of character
Organizational development skills	Loyalty	Frustration tolerance
Process management skills	Trustworthiness	Entrepreneurship

For Professional Competences the following scale has been used:

Table 5: Operationalization of Professional Competences (example: „Journalistic Competencies“)

Professional Competences	What kind of professional competences do you have currently?	What level do you think you need to implement new products and services in the field of digital media?
Traditional journalism skills: I am able to create journalistic content for print media. I know journalistic work methods, modes of presentation and the effects of journalism e.g. on public opinion.	non-existent basic intermediate full <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	non-existent basic intermediate full <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

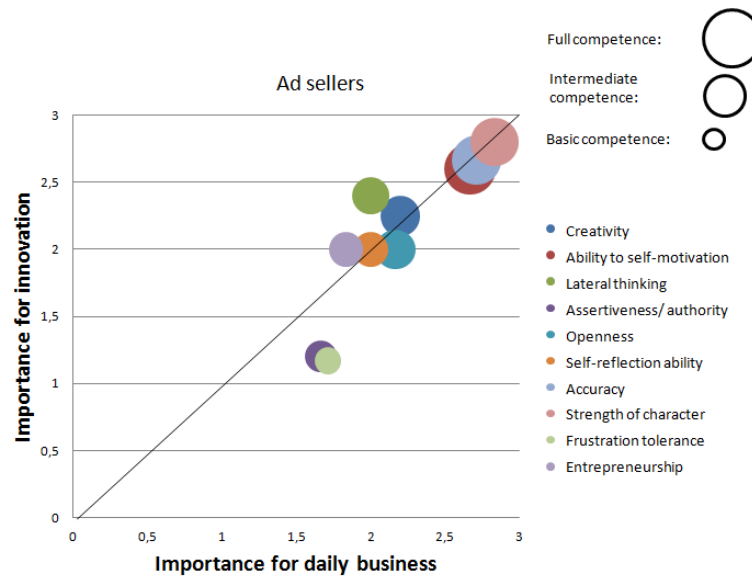
The interdisciplinary competencies have been operationalized in a similar manner, with the addition that the relevance of each of the competencies for day-to-day business and innovation project was asked for:

Table 6: Operationalization of Interdisciplinary Competencies (example: “self-reflexion capabilities”)

Self-reflection ability: I reflect on my actions and statements regularly. Thus I optimize my behavior and my skills more and more.	non-existent	basic	inter-mediate	full
My competence in this field is...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The importance of this competence is...				
...for my daily business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...for my innovation projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Looking at the evaluation procedure, we constructed individual competences similar to the logic of displaying organizational antecedents: a gain from ambidexterity is displayed when the competence is located on the isoquant line between day-to-day-tasks and innovation tasks in Figure 6:

Figure 6: Evaluation Procedure for Individual (interdisciplinary) Competencies (example: personal competencies of ad seller)



In Figure 6 lateral thinking is more important for innovation than for day-to-day work. We define these competencies as hybrid competencies (with differential relevance for exploration and exploitation) and not as ambidextrous competencies (equal relevance for exploration and exploitation).

7 Hypotheses

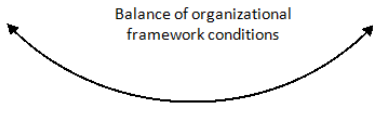
Our research embraces a broad range of hypotheses for the two main levers of the ambidexterity model (cf. Figure 1):

Moderating effects of organizational antecedents on exploration and exploitation performance in SME (HO)

HO1: To maintain flexibility in small companies, hybrids between specialization and generalization dominate the exercise of job functions. SME employees in these hybrids are inherently ambidextrous in the sense that they combine tasks of daily business and driving innovation.

HO2: Coordination by self-determination promotes exploration processes in SMEs. On the other hand, SMEs do not necessarily need hierarchical or otherwise institutionalized coordination instruments for exploitation. In SMEs, mixed forms of coordination exist, such as ad-hoc organizations to connect daily business with innovation.

Figure 7: Hypotheses for the moderating effects of organizational antecedents for exploration and exploitation performance

+/-	+/-	+	+/-	+/-	low	Specialization	high	+	+	+	+	+
+/-	+/-	+	+	+	self-determination	Coordination	institutionalized	+	+/-	+	+	+
+	-	-	-	-	low	Formalization	high	+	+/-	+	+	+
+	+	+/-	+	+/-	low	Centralization	high	+	+	+	+	+
+	+	+	+	+	open, reliable	Organizational Culture	closed	-	-	+	+	-
+	+	+	+	+	transformational	Leadership Style	transactional	+/-	+/-	+	+/-	+/-
Resource Exploration					Input: Organizational Resources			Resource Exploitation				
Identification/assimilation of knowledge	Outside-in collaboration	Dynamic adaptability	Inventive capability	Effectiveness				Transfer/valorization of knowledge	Inside-out collaboration	Routinization	Imitation/replication capability	Efficiency

HO3: Formalization is inherently low in SMEs. This encourages exploration processes. Low formalization however, does not prevent efficient exploitation.

HO4: In SMEs, employees have enough leeway to independently divide their time between day-to-day business and innovation. On the other hand, SMEs do not need compelling centralization for efficient exploitation.

HO5: An open corporate culture encourages both exploration and exploitation.

HO6: Transformational leadership encourages exploration. Efficient exploitation processes in SMEs, however, are not necessarily dependent on transactional leadership.

Moderating effects of individual competences on exploration and exploitation performance in SME (HO)

Finally table 7 displays relevant methodical, social and personal competencies along the dichotomic axes of exploration and exploitation (HQ):

HQ1: To accomplish the day-to-day work and innovation tasks certain constitutive interdisciplinary competencies must exist, such as patience, stress-resistance, self-confidence, etc. These competencies provide the basic enabling levers for acquiring social and methodic competences for exploration and exploitation (Quadrant I).

HQ2: Interdisciplinary exploitation competencies serve as a lever to reduce variances with the aim to best exploit existing professional knowledge. These are, e.g. process management skills, time management skills, adaptive learning skills, etc. They provide the ground for incremental improvements of existing processes and business models (Quadrant II).

Table 7: Individual Hybrid and Ambidextrous Interdisciplinary Competencies for Exploration and Exploitation

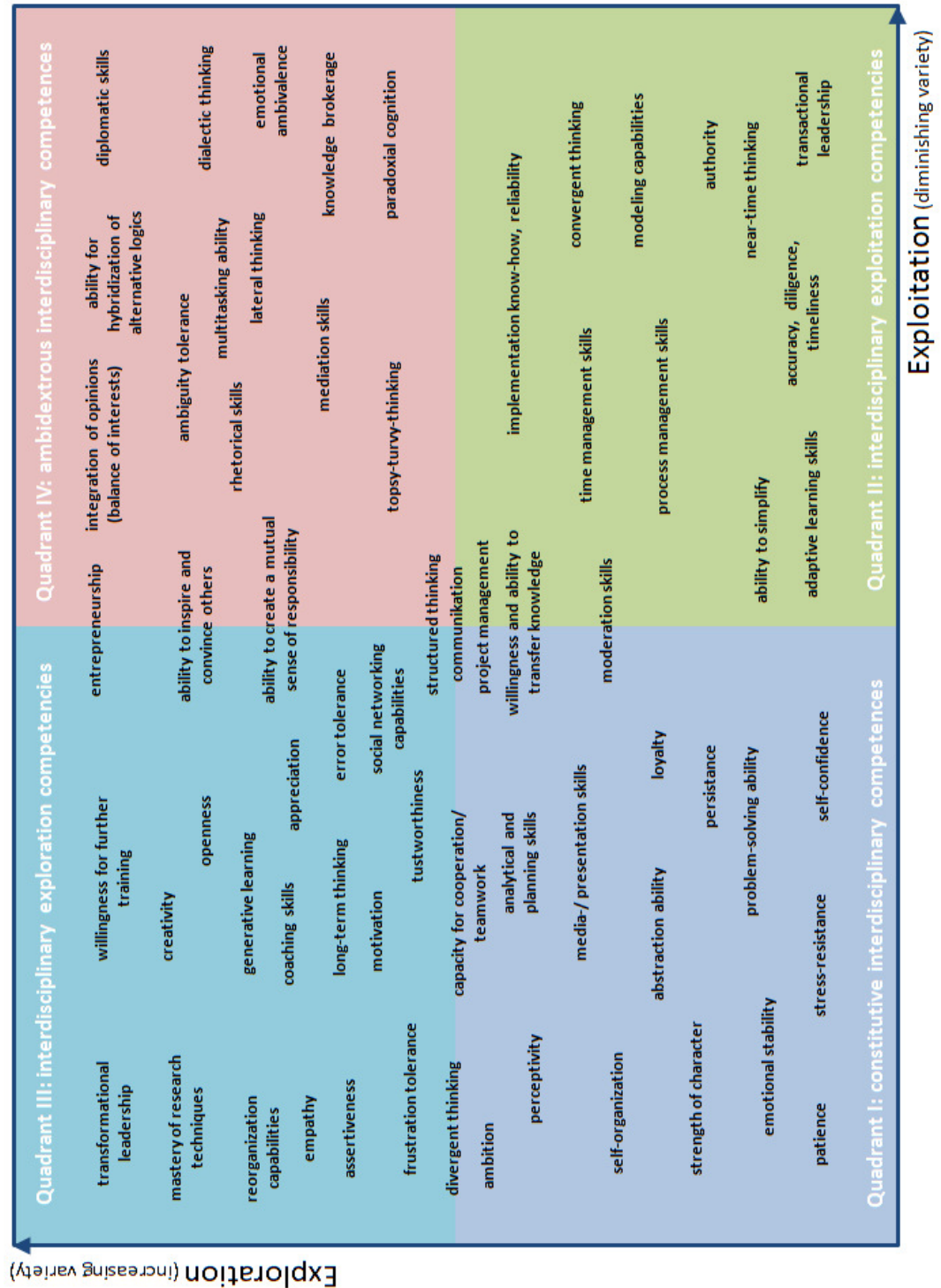


Table 7 displays the individual competencies hypotheses (HQ) for our research as follows:

HQ3: Interdisciplinary exploration competencies serve as a lever to enhance variances with the aim to explore new potentials and professional competences. These are e.g. creativity, openness, generative learning, etc. They serve as a basis for radical innovation processes (Quadrant III).

HQ4: Ambidextrous interdisciplinary competences serve as a lever to solve role conflicts in balancing exploration and exploitation processes. These are e.g. dialectic (relativistic) thinking/ trade-off- or synthesis thinking, emotional ambivalence, etc. (Quadrant IV).

We assume for all individual competencies that the development requirements of these competencies do not alter directly as the size of the organization changes, but we consider – as a result of SMEs' scarce resources – that SME managers and employees have to play more complex hybrid or ambidextrous roles in day-to-day business and in innovation when compared to large companies.

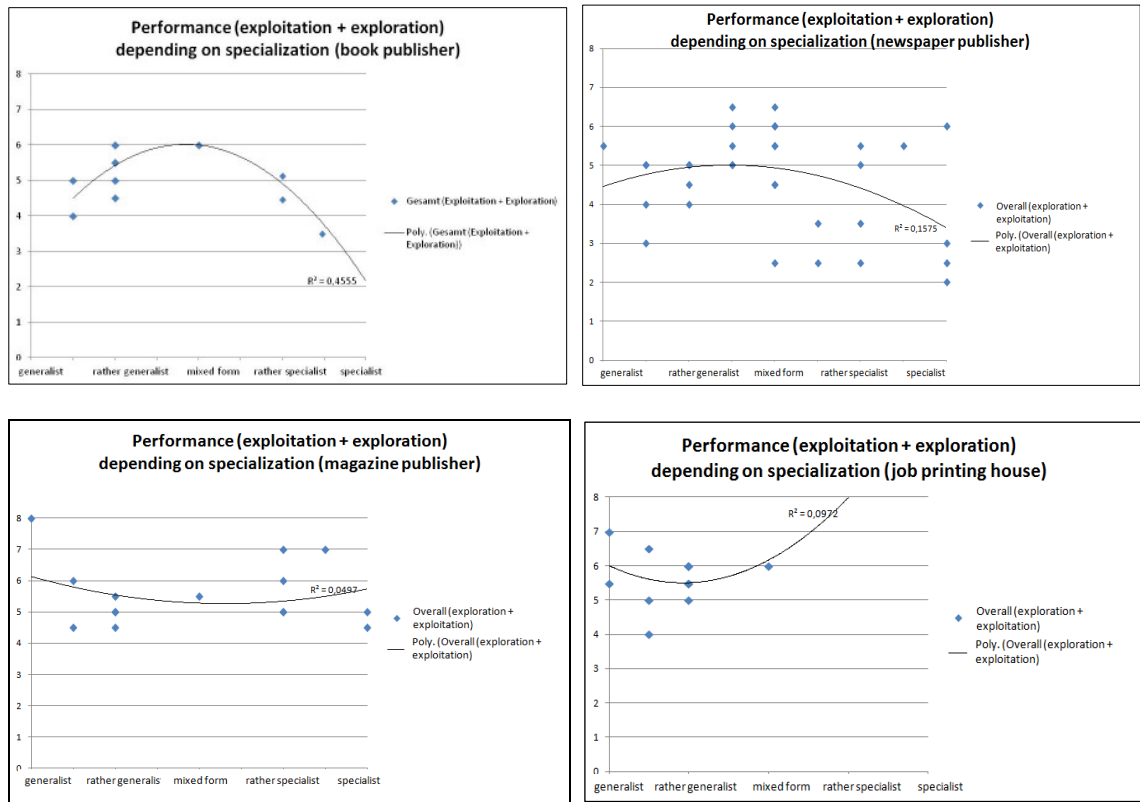
8 Results

Organizational Antecedents for Exploration and Exploitation

HO1: With regard to the question of specialization and generalization, SMEs from the media industries achieved performance benefits for exploration by first implementing job enrichment mechanisms on an individual level at an early stage of development. Then they established new organizational learning loops to complement internal know-how with external know-how of suppliers and partners. Then - at a later stage – they re-defined the division of labor within working teams re-adjusted to the new business model as it reached a level of maturity that allowed a new focus (re-specialization). The transfer of knowledge from the old to the new business model was secured by bridging the gap of expertise between exploitation and exploration via project teams composed of old specialists and new generalists. Thus ambidexterity, as a hybrid organizational capability between specialization and generalization, was able to induce advantages in the management of balancing daily operations and innovation projects. Benefits from focusing on specialization or professionalization were achieved by SMEs at later more mature stages of the business model "online". There, in mature stages of the new business model, SMEs gained efficiency by more routinized knowledge utilization. In the advanced stage of maturation, ambidextrous dual organizational structures were often installed to run the online business separately from the print business, with the aim of creating a new subculture of different values, and beliefs to promote the new business model.

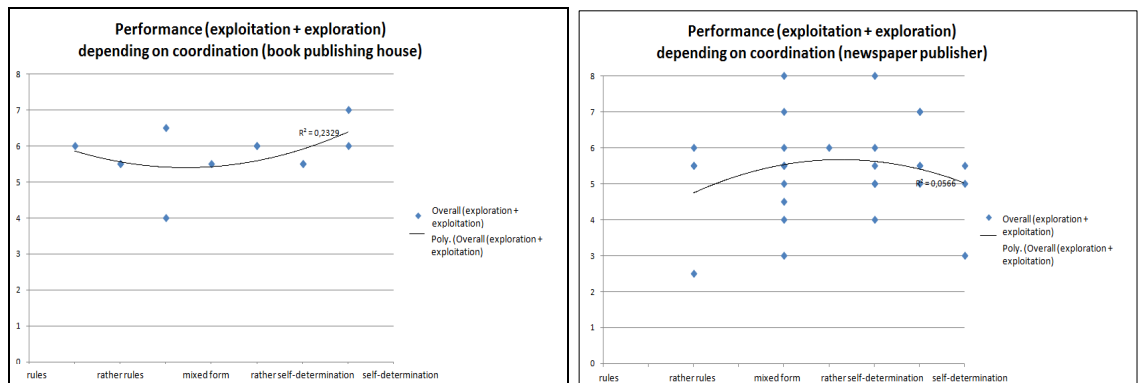
Thus in the four case studies, we found different U-curves and inverted U-curves for gaining benefits from specialization and generalization. Two publishing houses, i.e. the book and the newspaper publisher, gained benefits from contextual ambidexterity, since their online business models were still in the seed phase. The two remaining publishing houses gained benefits from focus, for the magazine publisher to concentrate strictly on print, the job printing publisher strictly on calendars:

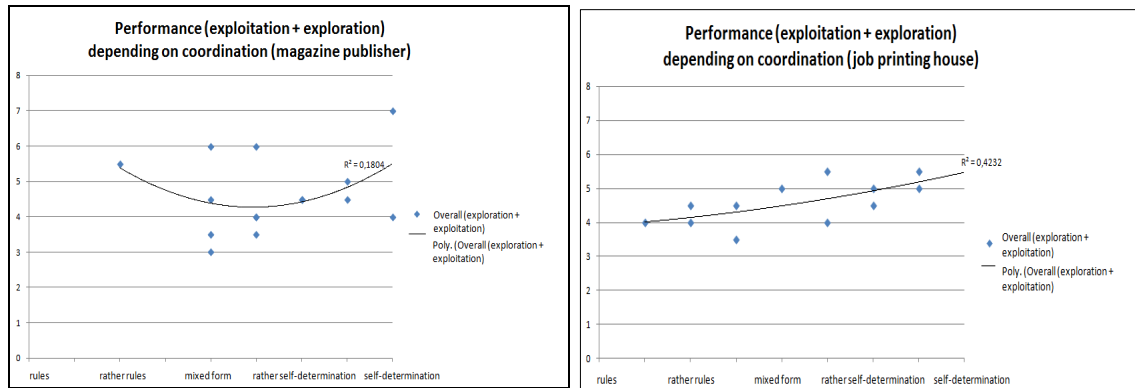
Figure 8: Exploration and Exploitation Performance Moderated by Specialization



HO2: Performance advantages from ambidexterity are realized by SMEs applying flexible coordination instruments such as ad hoc project groups, institutionalized working groups and personal training for the purpose of exploration as well as coordination by, on the one hand, self-determination, and by developing plans and programs for the purpose of exploitation on the other hand. Thus, three of the four companies in our case studies reported benefits from focusing on either self-determination in their online business or by their controlling plans in print. One company gained benefits from ambidexterity since they applied a mix of coordination instruments to balance print and online activities:

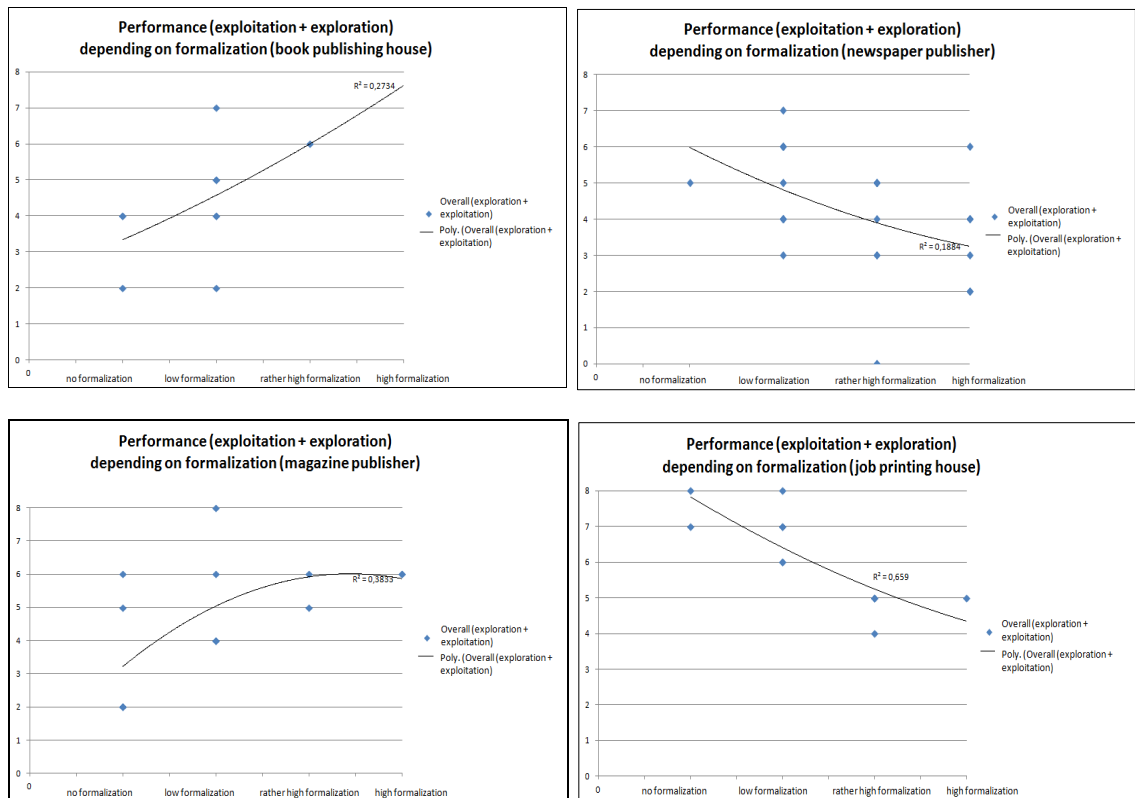
Figure 9: Exploration and Exploitation Performance Moderated by Coordination





HO3: On the question of formalization, in two out of four of our case studies SMEs achieved performance gains for exploration and exploitation by focusing on reducing bureaucracy. In the book and in the magazine publishing house the formal knowledge management systems in use were regarded as helpful for both exploration and exploitation. Thus we found performance gains from increasing formalization:

Figure 10: Exploration and Exploitation Performance Moderated by Formalization

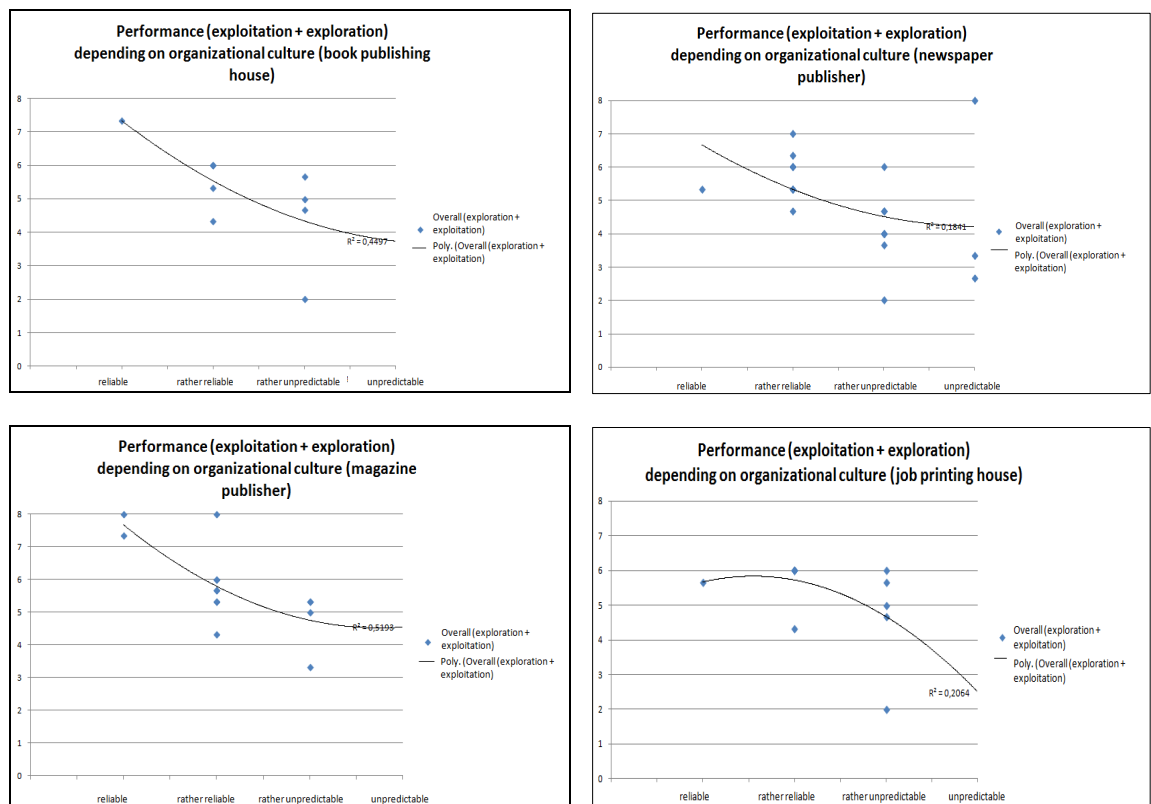


HO4: With regard to the issue of de-centralization SMEs in our case studies gained performance benefits for exploration and exploitation by applying dichotomous decision autonomy degrees and top management team integration (TMT). This included, for example, a high degree of autonomy for the daily operations, but only little autonomy for innovation projects at least temporarily. Thus, in the case studies SMEs realized

performance gains for exploitation in business models that reached a certain maturity by establishing limited decision autonomy. However, this was causing conflicts with exploration, since the accumulation of knowledge was limited by narrowing decision autonomy.

HO5: With regard to the question of organization culture, SMEs realized performance gains for exploration and exploitation through focusing on reliability and openness. This can be seen as a necessary condition for ambidexterity in specialization and coordination: dealing with new knowledge and lining up with existing knowledge, as well as the issue of the coordination of daily operations and innovation, can only be successful if employees regard organization culture as trustful, so that persons concerned share the significant changes. Thus the curves show a more or less consistent trend:

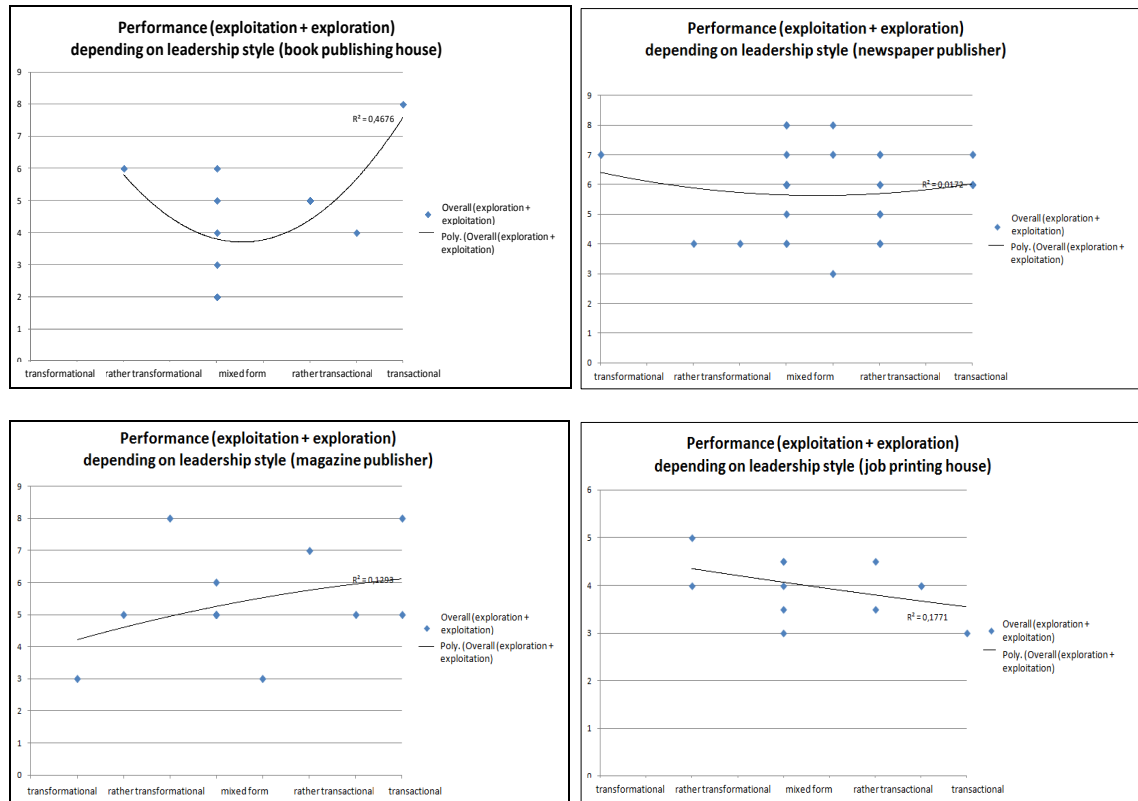
Figure 11: Exploration and Exploitation Performance Moderated by Organization Culture



HO6: In the book publishing house, benefits arose from a stronger focus on either transformational or transactional leadership. While in the print-based core business (exploitation) clear management by exception (transactional leadership elements) was used, more motivational elements of transformational leadership were introduced for the implementation of online innovation projects. In the case study of the newspaper publisher, benefits from focus are also displayed in the graphs, although the amplitudes are not that distinct. This result is the consequence of the structural separation into two units (print and online), and a separate evolving organizational subculture. For the magazine publisher, it can be read in the perception of employees that they tended to benefit from transactional leadership. In the job printing house, however, a benefit from transformational leadership

was obvious. In the perception of employees there was no separation of management styles and instruments directed to daily business and innovation projects.

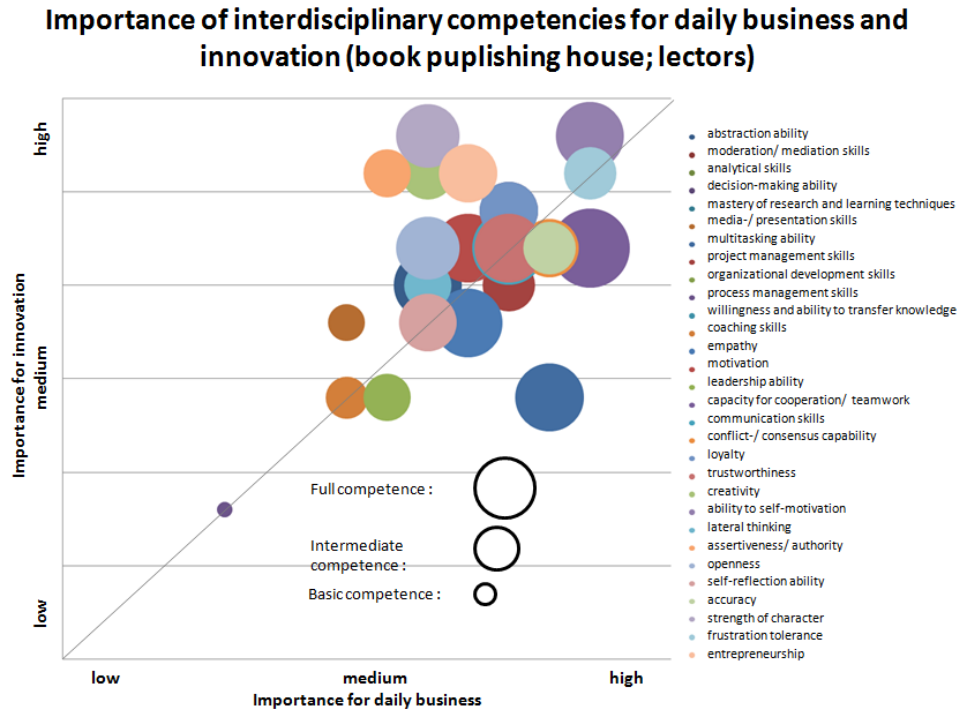
Figure 12: Exploration and Exploitation Performance Moderated by Leadership Styles



Individual Competencies for Exploration and Exploitation

We conducted a census for the investigation of individual competences for exploration and exploitation. Due to the multitude of results we concentrate here on selected findings that represent typical assessments of the respondents:

Figure 13: Relevance of Interdisciplinary Competencies for Day-to-day Business and Innovation
(example of correctors in case study 1)



It is noticeable that along the isoquant in Figure 13 there are specific interdisciplinary skills, which are judged as having equal importance for the daily operations and for innovation. These include decision-making skills, coaching skills, self-reflection ability, trustworthiness, etc. These skills can be described as ambidextrous individual competencies because they equally support daily business and innovation. Furthermore, we found other hybrid skills with greater importance for innovation processes, such as media-competencies, conflict-/consensus capability, ability to self-motivation, creativity, etc. These can be described as hybrid interdisciplinary exploration skills. Still other skills are more important for daily operations, such as leadership ability, presentation skills, etc. These can be described as hybrid exploitation competencies.

HQ1: The empirical findings of this study indicate that the most transferable skills prove to be hybrid skills, in the sense that they support the tasks of exploration as well as tasks of exploitation, though not in the strict sense defined here by ambidexterity. These skills include basic transferable skills such as stress resistance, loyalty, learning ability, abstract thinking and decision-making ability, as well as ambidextrous competencies such as lateral thinking, communication, and openness to knowledge sharing. But, despite the apparent homogeneity of the (publishing) industry, the variety in the innovation process and - even in the daily operations due to the sectoral orientation - is so very high that no clear patterns can be seen in the competence profiles.

HQ2 and HQ3: The relationship of the competencies is mutually orthogonal in the sense that there is no trade-off between daily business and innovation; I.e., skills that are used to cope with innovation tasks are not burned up for the purpose of daily business. Rather, comprehensive synergy effects are observable. In SMEs, as the case studies make clear, the

transitions from day-to-day business towards innovation are often blurred. It is not just about incremental improvements to existing products, but also about leaps in innovation based on changes of fundamental enabling technologies. The reason is usually that in explorative innovation, companies are dependent on the expertise of employees in a particular way. Even with a fundamental change in basic technologies, the technical core competence of existing staff on hand secures competitive advantages in the procurement, processing and presentation of unique content. Here, basic skills among employees exist which are of great value for the transitions towards entirely new business models.

HQ 4: The results do not suggest that there are clearly defined unique ambidextrous competencies which are repeated as a pattern in all case studies and would be virtually universal in the industry. Obviously the sample (4 firms, a total of approximately 79 evaluable questionnaires, 30 interviews) is too small. In all case studies, individual personal skills have emerged as equivalent to the daily operations and innovations. These include the already mentioned decision-making skills, lateral thinking, communication, self-reflection ability, willingness to transfer knowledge, diplomatic skills and tolerance for ambiguity. This shows that such skills balancing contradictions, dichotomies, interests, language barriers, etc. are equally beneficial for exploration and exploitation.

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