

# Job design practices to enable employee driven innovation in healthcare organizations

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## Abstract:

**Purpose:** Nowadays healthcare organization face an increasing necessity to be innovative to meet the constantly raising challenges of their environment. The high workload, the financially strained situation as well as a complex labour market force the organizations to find a cost efficient and effective approach to innovate. The aim of this paper is to support the development of employee driven innovation in the healthcare sector. This is done by identifying job design practices which support employee driven innovations through enhancing the employee's creativity. If and how these job designs can be applied in healthcare organisations is furthermore explored.

**Design and methodology:** The research has been based on a literature review and five semi structured interviews in German hospitals. The interviews were taken anonymously and recorded electronically for the later analysis.

**Findings:** Four job design practices were identified, namely (1) job complexity, (2) job rotation, (3) reflection time and (4) employee interaction. Not all positive relationships as they were suggested by the literature could be found in the healthcare sector. Job complexity of physicians tends to cause stress and should not be further increased. The creativity enhancing impact of job rotation could only be recognized for long-range rotation plans, while short-range rotation causes stress. The positive impact of reflection time, even though there are difficulties in implementing this as well as the positive impact of employee interaction are found in this research.

**Implications and value:** This research is contributing to the literature by taking the theories of creativity enhancing job designs in a new field, the healthcare sector. Furthermore, the research shows how healthcare organizations can support the usage of employee driven innovation in praxis.

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## Keywords

HRM, job designs, employee driven innovation, EDI, hospitals, creativity, healthcare, international business administration

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## 1. Introduction

### 1.1 Why does the healthcare sector need to innovate?

Healthcare organizations are a central and important part of the public welfare system and are necessary for a working society. These organizations are as many other post-industrial organizations nowadays knowledge based and their successful development and survival depend on their innovativeness and creativity (Høyrum, 2010; Martins & Terblanche, 2003). Innovativeness will help healthcare organizations to attain their goals of an improved performance, better patient care and higher patient safety (Xerri & Brunetto, 2013) and many healthcare organizations face the problem of limited financial capital and thus see innovation as an answer to the challenge of “doing more for less” (Åmo, 2006, p. 231).

### 1.2 What is EDI and why should it be used?

Organizations have several strategies to develop and raise their innovativeness. One possible approach is employee driven innovation (EDI), which uses the knowledge, experience and ideas of the company’s employees to innovate (Høyrum, 2010). Høyrum (2010) compared the concept to several other innovation concepts, concluding that EDI belongs to the field of non-technical, non-R&D and high-involvement innovation and has three main characteristics. First, the innovative practices are contributed by any employee in the company and do not limit the employee to its origin primary responsibilities. Furthermore, the innovativeness is bedded in the employee’s daily work activities and third it is driven by his or her experience, ideas, creativity, competence and problem-solving abilities. Even though EDI can be a spontaneous and informal process, research shows that it should be supported, recognized and organized to improve the output and make it more plannable. (Høyrum, 2010)

Employees are often in close contact with customers, users, and process information and are thus a rich source of ideas, suggestions and innovations (Wihlman, Hoppe, Wihlman, & Sandmark, 2014). Innovative behavior includes the identification of problems, creating possible solutions and supporting these (Xerri & Brunetto, 2013) which are abilities, possessed by everyone (Birkinshaw & Duke, 2013; Tidd & Bessant, 2009). Creativity is a main supporter of those activities because it includes the generation of valuable ideas for the work process, procedures, products, and services by individuals or groups (Martins & Terblanche, 2003). The circumstances that the service in healthcare organizations has often a high task complexity, task interdependence, and requires cooperation between the employees and patients increases the potentiality for improvement suggestions and thus makes the approach particular important in healthcare organizations (Hyde, Harris, & Boaden, 2013). Which shows that EDI is a valuable strategy to increase healthcare organization’s innovativeness.

### 1.3 Why is creativity of importance?

To implement innovations and improvements, first of all it is necessary to come up with innovative ideas (Schilling, 2013). Thus, researchers have divided the innovation process in two phases, the creative phase, including problem recognition and the generation of new and useful ideas and the implementation phase, including idea promotion and idea realization (Axtell et al., 2000; Dorenbosch, Engen, & Verhagen, 2005; Martins & Terblanche, 2003). As mentioned before, the employee in a healthcare organization has a great potential to support the

innovation process through EDI. To assess this potential, the employee needs to be enabled to be creative in order to come up with new ideas and to participate actively in the innovation process. Thus, this research will focus on the creativity part of innovations and how to support the employee to participate.

### 1.4 How are jobs designed in the healthcare?

Healthcare organizations, such as hospitals, are often organized in a form of what Mintzberg called a professional bureaucracy. This includes a highly skilled workforce with a great autonomy and flexibility in their jobs, while the supportive tasks, as well as the control and regulation mechanisms, are standardized (Lunenburg, 2012). This indicates that the creativity limiting factors as standardized jobs in a bureaucracy (Damanpour, 1996) will apply in a hospital, but might have a different influence on the various employees since their current job designs differ to a great extent. However, the innovative ideas of each employee are of interest and thus this research will not exclude preliminary any employee group.

### 1.5 Which role does HRM play?

Tidd and Bessant (2009) concluded that the underlying abilities to be creative are possessed by everyone, but mechanisms to focus those abilities on a regular basis across the entire organization have to be found. This is in correlation to a statement by Høyrum (2010), who spoke about the necessity to support EDI by management and organizational setups and Martins and Terblanche (2003) who state that “creativity and innovation will flourish only under the right circumstances in an organization” (p.73). Research has shown that human resource management (HRM) has an influence on the innovative work behavior of employees (Dorenbosch et al., 2005) and on their willingness to go beyond their formal job description, including the suggestion of improvements and innovations (Hyde et al., 2013). Lepak and Gowan (2010) defined three main activities of HRM, and this research will focus on one of them, the job design. Which can be defined as the planning of how employees accomplish their daily tasks to add value to the organization.

Research has shown that the job design has a great influence on the employee’s performance. To support an innovative process, it is important that jobs are designed in a way that allows employees to work beyond the formal expectations (Birkinshaw & Duke, 2013; Hyde et al., 2013) since job design influences the ability and motivation of employees to be creative (Jiang, Wang, & Zhao, 2012). Furthermore, Dorenbosch et al. (2005) found that the feeling of ownership for work issues can be increased by the job design what will lead to a more innovative behavior of the employees to solve occurring problems.

In summary, we know that innovations are important for healthcare organizations. The employees and their creativity can be a major source of these innovations, and the job design has an influence on the creativity of the employees. This fosters the approach to support innovations in the healthcare through employee driven innovation. The literature misses to handle this topic. EDI in the healthcare sector is to a great extent unexplored and knowledge on how those organizations can enable their employees to be creative and thus innovative is missing. To explore this field, the main question of this research is:

*How should jobs be designed to enhance employee creativity in healthcare organizations?*

To answer this question, I will first review the literature to find:

*Which job designs potentially enhance employee creativity?*

Next, based on explorative interviews, I examine the sub question:

*Which of the identified job designs can also be applied in healthcare organizations?*

## 2. Literature review

As the previous chapter has identified, HRM can influence EDI by designing the jobs in several ways which enhance the employee's creativity. EDI, as it is defined by Høyrum (2010), got mentioned in the literature several times but was not always named coherent. Hyde et al. (2013) for example write about pro-social organizational behavior in hospitals which is defined as the willingness of employees to fulfil their formal required task and to go beyond it what includes "suggesting procedural, administrative or organizational improvements" (p. 3116). Therefore, being in this aspect very similar to EDI. Furthermore, Åmo (2006) describes a "corporate entrepreneurship program", a strategy used in Norwegian healthcare organizations "to encourage individuals within the organization to become more imaginative, creative, innovative and entrepreneurial" (p. 232). This shows that the approach of EDI to innovate in hospitals is implementable but never the less, it has to be arranged and supported. As mentioned before, the creativity of the employee is a main source for EDI and the following paragraphs define four job designs which are assessed as important by the literature to support employee creativity.

### 2.1 Job complexity

Jobs are characterized by several factors and can differ a lot in its expectable repetitiveness and intricacy. The job design has a major influence on the complexity of jobs, which includes the level of autonomy, skill variety, identity, significance and feedback (Hackman & Oldham, 1976; Jiang et al., 2012; Oldham & Cummings, 1996). While Hackman and Oldham (1976) defined the concept of job complexity to test it against workforce motivation and found a positive relationship between the factors, it got visible later on that the increasing instinct motivation has a positive impact on the creativity of employees (Elsbach & Hargadon, 2006). Further research supports the positive relationship between job complexity and creativity (Jiang et al., 2012; Mumford, 2002; Oldham & Cummings, 1996) and Martins and Terblanche (2003) highlighted the importance of freedom in the job to enhance creativity, what is also an aspect of job complexity.

Abernethy and Stoelwinder (1990), who relate to Mintzberg's professional bureaucracy indicate that a hospital has different work groups with different levels of autonomy and thus job complexity. While the autonomy and job complexity of the professionals in the leading and operating core derives from their experience, knowledge and task to serve clients, other subunits and less experienced physicians have a more standardized and formalized work behavior. This indicates that the necessity to increase job complexity might differ in the workforce units, however, it is an important aspect to increase the creativity of all employees. Based on the literature, I develop the following proposition:

P1: "A high job complexity will increase the creativity of employees in hospitals."

### 2.2 Job rotation

Next to increasing the complexity of the single jobs, the personnel could also change their field of working to enhance creativity. This will be discussed in this section. Job rotation is a practice, where employees are enabled to expand their work experience by entering different units and departments in an organization. To change the departments or the sub-departments regularly has several positive impacts on the employee. The broader job territory and the changing assignments allow them to learn new skills and meet different people. (Ho, Chang, Shih, & Liang, 2009) Dorenbosch et al. (2005) found a relationship between engaging people in different tasks and their attitude towards challenges in the company. The occupation in a greater amount of tasks can be reached by job rotation. They state that this leads employees to a further involvement in the challenges and a decreasing "that is not my responsibility attitude" (p.132). The higher engagement results in more creative orientated behavior to find solutions for the challenges (Elsbach & Hargadon, 2006). These findings already indicate the positive impact of job rotation on creativity and are further supported by Ho et al. (2009) who found next to the impact on creativity a positive relationship with higher performance, steady growth and an extending knowledge and skill base. It becomes evident that job rotation has several impacts on the employee which often result in creativity, Martins and Terblanche (2003) add to the already mentioned impacts of job rotation an increasing flexibility, which again leads to employee creativity and thus further supports the use of this job design practice. Ho et al. (2009) added that managers have to take the learning capabilities and their adjustment time into account when scheduling job rotation because a too frequent change can have negative impacts as stress. Additionally, the employee's background and their familiarity with the jobs have an influence on the optimal rotation frequency. Based on the literature I come to the second proposition:

P2: "A regular intra- and inter-department job rotation increases the creativity of employees and is thus a favorable job design to increase EDI in a hospital."

### 2.3 Reflection time

As mentioned before, the stress level of professionals is a limiting factor for creativity and has to be handled carefully, where the job design: reflection time has a great impact on. High and often chronic workload pressure of professional jobs, which might have been designed to be challenging and motivating can become instead relentlessly mindful and stress inducing (Amabile, Hadley, & Kramer, 2002) and harm the creativity of professionals (Amabile, Conti, Coon, Lazenby, & Herron, 1996). Elsbach and Hargadon (2006) describe work environments, which include mindful and challenging task in combination with high time pressure and frequent interruptions as favorable for chronically high workload pressure. Professionals for example in a hospital might be vulnerable therefor. Gelter (2003) suggested regularly scheduled free time to reduce haste and encourage reflective thinking as an active process, which is important for creativity. Elsbach and Hargadon (2006) criticized the idea of unstructured free time, because it "involve[s] engaging in behaviors that often appear inefficient to observers (e.g. (...) stare out [of] the window)"(p. 472) and furthermore employees tend to interrupt their coworkers during the coworker's free time, to receive help on their own work. To overcome these problems, they suggest to include mindless work in the professional's workday. Mindless work includes simple tasks, which are low in cognitive difficulty and

performance pressure and thus stimulate more brain functions than simple resting. Examples would be cleaning of the instruments or organizing the own work desk. These periodic tasks are fulfilled easily and thus do not utilize the full cognitive capacity, leaving brainpower to think and reflect on other things. Nor do they have a high-performance pressure, decreasing the stress level. On this way, the professional has a regular timeslot to be creative and to come up with innovative ideas. When the tasks are nevertheless necessary for the effective functioning of the company, the professional will most likely not neglect it. (Elsbach & Hargadon, 2006) Based on the discussion above, I propose the following:

P3: “The implementation of regular breaks or mindless work activities in a professional’s workday is a fitting option to increase his creativity since it provides time for reflective and creative thinking.”

## 2.4 Employee interaction

Next to the time which employees spent on their own, meetings with their colleagues are of importance to support creativity. Employee interactions can take place during officially scheduled events or during spontaneous meetings and the employee’s free time. It includes direct and indirect interactions and can have different levels of formalization. Mumford (2002) sees employee interaction as a contingent factor for other supportive job designs as job complexity because the availability of relevant information and the exchange with diverse colleagues are necessary to perform the tasks and to be creative. He is supported by Liu (2013) who states that “the exchange of knowledge and ideas between employees and their colleagues can form the basis for organizational innovation”(Liu, 2013, p. 3899). The impact of social interactions on the creativity of employees was investigated by several researchers and they agree on the positive relationship between the two variables. By using personal contact to exchange information and creative ideas, the learning abilities and the creativity of employees improve (Y. Y. Chen, Zhang, & Fey, 2011; Liu, 2013). Especially the intra-organizational interactions have a positive impact. These can be achieved by cross functional teams (Martins & Terblanche, 2003) and cross-department interaction (Liu, 2013) as well as through friendships between the employees (Y. Y. Chen et al., 2011; Liu, 2013) and an open door communication policy, where it is important to allow disagreement and discussions, since that supports the development of innovative ideas (Martins & Terblanche, 2003). Also, the job rotation increases the interpersonal exchange because people get in close contact with the employees of different departments or units (Ho et al., 2009). Trust between the employees is crucial for innovativeness because it enables knowledge and idea exchange (Liu, 2013) and people need to feel emotionally safe to act creatively (Martins & Terblanche, 2003). Consequently to enable creativity through employee interaction, the interactions need to be regularly and easily accessible (Liu, 2013). Thus I propose the following:

P4: “A high employee interaction is a valuable job design in healthcare organizations to increase the creativity of its employees”

The findings of the literature review are visualized in figure 1. The dotted lines stand for the propositions and the impact, which the job designs have on creativity.

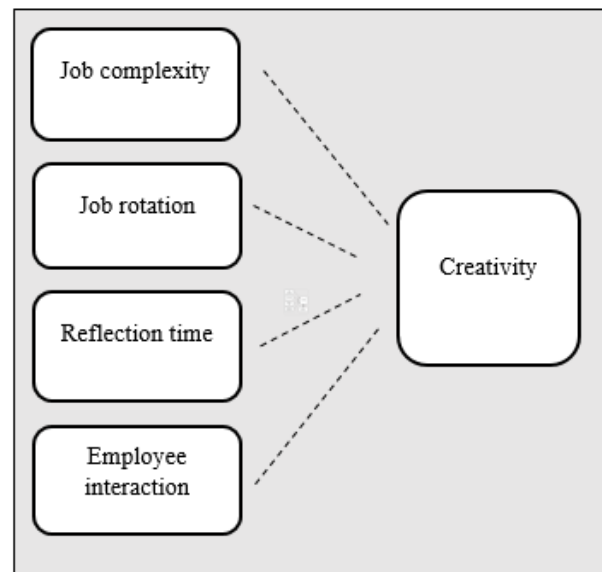


Figure.1: Visualization of the in the literature found relationships

## 3. Methodology

### 3.1 Research setting and method

To test whether the proposed framework is applicable in the healthcare sector, semi structured interviews in German hospitals were conducted. The interviews were conducted in an open form, where the interviewee had the greater amount of speaking time. The perceptions of the interviewee are of interest because they provide information and experiences about the real world, thus, the interview began with a starting question, which invited the interviewee to tell his story (Perry, 1998). To prevent a self-fulfilling question or a constraining of the interviewee, the starting question was broad and only “define[d] the boundary within which information is wanted” (Dick, 1990, p. 10). The talk of the interviewee was guided by responding to his answers thus the interview was not predetermined by pre-formulated questions, but led by topics and keywords of great interest, as suggested by Perry (1998). For the case that topics of interest were not mentioned by the interviewee themselves, open questions to introduce that specific topic were prepared, too. Perry (1998) summarized the importance of a research protocol as I used it, which should include keywords and open questions since it assists the researcher by providing the interview a direction and giving an overview of the study.

### 3.2 Data analysis

The Interviews were with permission of the interviewee recorded and afterwards transcribed. To process the collected qualitative information, the given answers of the participants were coded in the categories:

- job complexity
- impact job complexity
- applicability job complexity
- employee interaction
- impact employee interaction
- applicability employee interaction
- mindless work
- impact mindless work
- applicability mindless work

- job rotation
- impact of job rotation
- applicability job rotation
- limiting factors
- suggestions

The program Atlas T.I. was used to structure the coding more efficiently. The interview transcripts got coded according to the previously mentioned categories. With the help of Atlas T.I. an interview data base was build, which provided an organized documentation of the mass of collected data, as it is suggested by Lincoln and Guba (1985). On this way the statements of the interviewees can be compared and synthesised much better and a more complete analysis can be written.

### 3.3 Research population and sample

The interviews were conducted in the internal medicine departments of two German hospitals. Three chief physicians, and two assistant physician were interviewed. The sample was found by using the snowball sampling method, which is described by Patton (1990) as the usage of the knowledge and contacts of participants to find the further interesting samples. For this research, an employee of the hospital alpha forwarded me to a chief physician because he is known to be motivated to increase employee satisfaction. His contacts were then addressed to get in touch with the two chief physicians of hospital beta. Patton (1990) indicated that this snowball approach is well suited for interviews because they include a great amount of information exchange and thus the likelihood of finding informative and interesting cases is increased. The assistant physicians were randomly chosen within the department of the chief physicians. The secretaries provided me the contact information of all in that department employed assistant physicians to be able to find willing participants.

The chief physicians were able to give great insights on the structure in hospitals. Their experience and their knowledge concerning their department were valuable to assess the impact of implemented job designs and to assess furthermore other approaches on their usability. Since they are in the position to decide on how jobs are done they have the knowledge about enablers and limiting factors. Additionally, they function as an information hub, what means that caused by their higher hierarchical position all important information will be delivered to them.

The assistant physicians were interviewed to receive firsthand information from the people who are influenced by the job designs. On this way, the risk of misunderstandings between the chief physician and the assistants was overcome. Table 1 gives an overview of the interviewed employees and on the duration of each conversation.

Table 1, the interview participants

	Function	Duration
Respondent A	Chief physician	38 minutes
Respondent B	Chief physician	41 minutes
Respondent C	Chief physician	32 minutes
Respondent D	Assistant physician	20 minutes
Respondent E	Assistant physician	21 minutes

The interviews with the respondents A to C were held in a personal conversation in their office. The location was chosen to give the interviewee a feeling of safety and to motivate him to speak openly, what is according to Crawford (1997) positively affected by a known surrounding. The in-person conversation enriched the interviews because the spoken word, as well as the body language, got transmitted. To be as flexible as possible in responding to the time schedule of the interviewees D and E, as well as to overcome the physical distance, the interviews with those were conducted via phone calls.

### 3.4 Operationalization and measures

During the interviews questions were asked to receive information about the actual usage of the four job designs and furthermore if they would be applicable if they are not used or if they have a recognizable effect if they are used. The different constructs (job designs) were conceptualized with the sources named below. All the concepts were translated into German while preparing the interview protocol to use the mother tongue of the interviewee as suggested by Crawford (1997). The information gained during the interviews were afterwards translated back to English. A table with the conceptualisation and its sources can be found in the appendix.

During the job complexity part, concepts as autonomy, job identity, and skill variety were used. The information and definitions from several authors (Åmo, 2006; Elsbach & Hargadon, 2006; Jiang et al., 2012; Martins & Terblanche, 2003; Mumford, 2002; Oldham & Cummings, 1996) were used, as well as especially Morgeson and Humphrey (2006), who summarized and structured in their research several definitions of work characteristics.

Questions and keywords to guide the interview in the field of job rotations included next to other the way and regularity of rotations, the level of specialization of employees, and change of job assignments. These concepts were based on the articles from Dorenbosch et al. (2005), Elsbach and Hargadon (2006), Martins and Terblanche (2003) and Ho et al. (2009).

The construct reflection time was divided into two main concepts, namely breaks and mindless work. How and when breaks and mindless works are conducted by the different employees of a hospital was of interest as well as the possibilities to plan and implement mindless work for professionals got assessed by the interviewee. Keywords concerning the breaks were the kind of breaks, as meal or smoking breaks, other free time and the way these are scheduled. The usability of mindless work was questioned by cognitive easy tasks in the physician's workday and outsourced tasks. The main sources for this construct were Elsbach and Hargadon (2006) and Birkinshaw and Duke (2013).

Finally, the employee interaction is categorized among others by formal and informal information exchange, friendships between the employees and the regularity of meetings. To come up with these keywords I am referring to the articles of M. H. Chen and Kaufmann (2008), Y. Y. Chen et al. (2011), Ho et al. (2009), Liu (2013), Martins and Terblanche (2003), Morgeson and Humphrey (2006), Mumford (2002), Park-Taylor et al. (2009) and Simonton (1984).

To connect the job designs to employee driven innovation, their influence on the creativity was of interest. Creativity is conceptualized in this area as the creation of new, useful and valuable ideas. It does not make a difference if these ideas are reported to other people or already implemented in the organization, even though a not outspoken idea is harder to track. To overcome this the chief physicians as well as the assistant physicians were asked towards their ideas concerning the improvement of the products, processes, procedures and services in the organization.

### 3.5 Reliability and validity

#### 3.5.1 Construct validity

To increase the construct validity, the interview was recorded and later on transcribed in the full length. That allows sufficient citations and a cross check between the sources for particular information (Hirschman, 1986). The interviews were taken anonymously to encourage the interviewee to speak openly. The paper was furthermore reviewed several times by two external researchers during the writing phase to give feedback and spot unclear aspects, as it is suggested by Yin (1994).

#### 3.5.2 Internal and external validity

The results of the participants were compared and cross checked to assure internal coherence (Yin, 1994). Several people of different hierarchical layers were interviewed to enrich the validity of the research through triangulation (Brink, 1993). The sample was selected because the participants are able to give valuable information to later answer the research questions. With their experience the participants reported events which were otherwise not directly accessible to me, the investigator. The participants can thus be seen as experts in the healthcare sector, the field of interest. They are able to give appropriate and meaningful information, that is according to Brink (1993) important for the research validity. A possible loss of information or misunderstandings between the hierarchical layers in the hospitals were overcome by interviewing chief physicians as well as assistant physicians. To increase the validity further, the findings of the literature review were analysed critically to overcome a false positivism, where assumptions are taken for true before they are supported by the actual research (Brink, 1993). This becomes visible in the discussion and conclusion, where not all suggestions got supported.

#### 3.5.3 Reliability

To increase the reliability of the research, the full number of sources was named and observations and actions were recorded as concrete as possible (Compte & Goetz, 1982) which enables other researchers to comprehend the context (Brink, 1993). A semi structured interview protocol was used (Yin, 1994) to guide the interviews and make them repeatable. The interview was recorded mechanical what supports the quality of the conversation, because the interviewer can fully concentrate on the answers of the interviewee and the following questions.

Additionally, it decreases the loss of information (Brink, 1993). To provide an organized way of analysing the load of information, a database was generated as suggested by Lincoln and Guba (1985) with the help of the computer program Atlas T.I.

## 4. Findings

### 4.1 Job complexity

The interviews have shown that the job complexity in hospitals is high and can reach levels where it causes stress.

All interviewees agreed on a high job autonomy in the daily job of physicians.

*“The jobs are design to let physicians work independently.” (Chief physician)*

However, it strongly depends on the experience of the employee. While medical advisors only suggest treatments and physicians in their education have to report and get permission for every single therapy, this dependency on the permission of other employees decreases a lot over time. Experienced physicians have a greater amount of autonomy and only report their progress and results during the medical rounds to their supervisor. Medical rounds are collective visitations of the patient, where the treating physician as well as senior or chief physicians are present. This is seen as necessary because the jobs in the hospital are very challenging and complex. The high responsibility of physicians and the great impact of mistreatments make some control functions as well as regular feedback necessary. Next to the great autonomy, the versatility is high.

*“No patient is like the other, the symptoms as well as the treatments differ.” (chief physician) And “on the station you will see a lot of things [diseases].” (assistant physician)*

Not only information concerning the illness get exchanged. Many patients report their family status and their ups or downs in their private life. This close contact with the patients can increase the difficulty of some cases because it adds a mental connection to the patient. The physicians need to continue their education to be able to recognize even those diseases, which are not treated in their hospital since they need to forward those patients. Younger physicians regularly have to look up symptoms or treatments but even chief physicians stay in a learning process.

*“Some more routine would be nice, but on this way you stay learning.” (chief physician)*

Thus even though physicians are highly skilled people, the educational level does increase over time. How long and how often patients are visited is part of the decision freedom of the physicians. The duration of the treatments is often not plannable what makes scheduled meetings very difficult and leads to a required high flexibility of the workday. Furthermore, the interdependence and significance are high since the work of the employees directly affects the health of the patient. The employees also depend on each other to receive the right information and to ensure that the treatments are implemented. These are further indicators for a high job complexity.

On the other hand, mixed results were gained on how far people identify themselves with their job. Friendships and close contact to the colleagues were mentioned by all interviewees and even named as one of the main reasons for the few leaving employees. But physicians are not always able to perform the whole

treatment of a patient, what would increase job identity further. If the whole treatment is performed by the same physician strongly depends on the job rotation, which is discussed later in this paper.

*“If a patient was treated successfully it is a positive experience and achievement.” (Chief physician)*

These positive experiences increase the job identity. A chief physician reported that even though the atmosphere in the department is familiar, the employees prefer to leave on time to follow their private interests. Neither the vision of the hospital nor its name are perceived as important by the employees. This got visible during an employee survey, whose results were available to the chief physicians. Their job identity might be decreased further since they have the ability to change the workplace easily. This is caused by the circumstance, that in Germany most hospitals are searching for new employees.

## 4.2 Job rotation

In correspondence with the in the literature found relationship, job rotation can have a positive effect on the creativity of the employees but is strongly dependent on the duration of the rotation intervals and is furthermore limited by the level of expertise.

As acknowledged in the chapter 4.1, the jobs in a hospital require many skills, a great knowledge and a certain level of specialization. The requirements differ between the departments and limits the job rotation to an intra departmental practice.

*“The knowledge [of the physicians] is too narrow to change the departments.” (chief physician)*

It was found that a fast job rotation with changes every three days, as well as a long term job rotation with a duration of six months, are implementable in hospitals but these differ a lot in the effect on the employees. A long term job rotation plan, where physicians change within the department can have a positive impact. When physicians stay long in the sub-department, patients can get allocated to them.

*“The allocated physician is the key element in the patient’s treatment, he organizes everything, including treatments, patient discussions and the discharge letter” (chief physician).*

This increases the job identity and gives the physician the chance to feel responsible. More trust and friendships are developed if the same employees work together for a long time. To rotate every six months is furthermore perceived as a motivational learning opportunity.

*“It widens the horizon to change the sub-department from time to time.” (assistant)*

A more regular rotation, which all three chief physicians have experienced has several downsides. All of them indicated that the information loss increases rapidly. There is a considerable amount of information, which is communicated on a mouth to mouth basis, without writing it down. Even though, information systems are available and an information conservation becomes more and more important with a high rotation frequency. Furthermore, a lot of time is required to exchange information and to orient oneself in the new sub-department. The rotating physicians, as well as the not rotating (chief) physicians, have to respond to the constantly changing colleague base and an identification with the department does not take place. All this causes additional work and increases the stress level. The same negative effect of stress and dissatisfaction were observed when

physicians were employed in two departments at the same time. The regular changes, especially the rapid changes during emergencies caused stress and interrupt the workflow.

*“To work in one department is nice, but two are really a lot.” (young assistant)*

Also, the chief physician prefers employees who stay longer in one department since, as the chief physician said:

*“They know how the things are done.” (chief physician)*

That makes them more efficient. Furthermore, it is simpler to implement new habits or innovations if the employees stay longer in the sub-department because it requires a certain amount of time to do so and one can only train the people the new habits if they stay long enough.

## 4.3 Reflection time

While the interviewees agreed on the possibly positive impacts of breaks in the stressful workday, including a higher efficiency and possible creative thoughts, there are several problems to implement breaks or mindless work in the physician’s workday.

The time pressure and workload in hospitals are high since the tasks are complex and physicians are held on to send the patients home in time, because the budget per treatment is limited. As indicated in the literature review, these stressful conditions make the active implementation for reflection time even more important. The chief physicians agreed on possible positive impacts of reflection time, as a recovery from the work which could already be achieved by five to ten minutes breaks. An assistant physician indicated that time and a quiet surrounding are necessary to reflect on the workday, why he reflects during his private time.

*“I would reflect when I am home, with some distance to the workplace and a quiet surrounding.” (young assistant)*

Even though this behavior is according to the chief physician untypical since it is difficult to convince people to invest private time for further education or breaks in the workday. The fear to stay longer at work because the working hours were used differently is widely spread. Also, the acceptance for non-work related activities is limited.

*“The lunch break is the only break I take. I cannot do any relaxation exercises or yoga in my office. That would not look appropriate” (chief physician).*

Even though he is convinced it would be:

*“A good approach to pause the workday.” (chief physician)*

It seems that many employees do not have the understanding that breaks of the challenging work can increase the later efficiency and improve the end result. Furthermore, the willingness to perform reflective thinking and to suggest ideas for improvement depend, according to a chief physician, strongly on the personality of the employee. This becomes visible since feedback and suggestions are provided mostly by the same people. The hierarchical level does not have a recognizable effect on the amount of feedback, but the topics of interests differ.

*“That (the amount of suggested ideas) is not dependent on the hierarchy but on the personality of the employee. Overall I would say chief physicians have a better overview and understand thus the structural and organizational aspects better. However there are two assistant physicians who give*

*good input and who recognize possibilities for improvements.” (chief physician)*

Collective breaks once a week after the lunch, where easy sports and relaxing exercises were performed with the whole department were annulled after the testing phase because not all employees were committed to go on. Some were also scared to stay longer in the evening because the break would hinder them to finish their daily tasks. Thus, the physicians are responsible for themselves to take short breaks during the day which are, if they are taken at all likely to be connected to eating, drinking or answering emails. Furthermore, the required high flexibility of a physician makes it difficult to schedule fixed breaks in his workday.

*“Scheduled breaks would form further deadlines and cause stress since it would be hard to stick to them.” (chief physician)*

As mentioned before, the workload of a physician is high, therefore easy tasks (as taking blood or cleaning the rooms and instruments) are outsourced to mostly nurses. This has the aim to save the physician's time. Furthermore, it is cheaper for the hospital to employ a nurse than an additional physician. The financially often critical situation in German hospitals is a limiting factor for introducing doings which will cause costs. Furthermore the willingness of physicians to perform those simple tasks is low. A chief physician reported that physicians might even reject a job offer if things as taking blood from patients are not performed by other staff. However, there are times in the workday which are low in mental effort.

*“As internist you walk around a lot. You get things or look up results.” (chief physician)*

These times of physical movement are a great example for already implemented mindless work in the workday of a physician. Furthermore, some deskwork was described as easy and might also be categorized as mindless work. How high the perceived level of concentration is, depends on the experience and personality. The young assistant physician indicated a constant high concentration level, while the experienced assistant physician had higher and lower levels of mindful activities during the workday.

#### **4.4 Employee interaction**

The employee interaction in hospitals is very high. A formal as well as an informal communication takes places several times a day and the employees of one department are close to each other, which is supporting creativity. The physicians in a department meet at least twice a day during formal meetings.

*The morning session is meant to discuss the happenings of the nightshift, allocate the new patients and discuss problems, questions and further topics of interest. Upcoming events and further information are mentioned, too. The whole meeting should be finished after 15 to 20 minutes (chief physician).*

Furthermore, a second meeting in the afternoon and medical rounds are fixed meetings every day, which are also used to mention criticism, suggestions or ideas. In one hospital, all physicians of the internal medicines have an educational meeting once a week, where one of the sub-departments hold a presentation. These scheduled knowledge exchanges were perceived as informative and especially important for the younger colleagues.

Next to the physical meetings, *“all employees of the hospital are constantly reachable over their phones. This connection is*

*regularly used to get information, receive help or backup ideas for treatments.” (assistant physician)*

To ease the contact to other hierarchical layers, one department implemented an assistant representative, who functions as a fixed point of communication between the assistants and the chief physician. This methods is seen as helpful by both sides and helps to overcome the hierarchical boundary, which is anyway perceived as low.

*“You can contact everyone at all time, also senior and chief physicians.” (assistant physician)*

Additional to these interactions some chief physicians schedule regular private conversations to give and receive feedback.

The patient care information are supposed to be conserved and exchanged via databases. Electronical databases become implemented in hospitals and have the advantage to offer all important information, available from any location. Even from the private home or during the weekends the information are accessible. The effectiveness of the electronical database strongly depends on the careful documentation by every employee, what is according to a chief physician not the case in every department.

*“To add the information in the system is one way of providing them but this gets done on very varying level. I do this very strictly but other physicians are less careful. They say the information would be all in their head.” (chief physician)*

Informal communication takes place to a great extend during the meal breaks. The employees of one department mostly stay in one group during the lunchbreak but the topics range from work related as patient care too private topics as football. The lunchbreaks are seen by the chief physicians as well as the assistant physicians as important place for interaction. The employees who work together in one sub-department have an even higher interaction rate. Next to the regular meetings and breaks, they interact with each other constantly over the day what supports especially the informal chats and idea exchange. Such a personal contact is limited between the different hierarchical layers because their work places differ. The chief physician will not be the whole day in the department, where the assistant physician spends the most time. To increase the interaction of all employees, non-work related activities are organized. Hospital wide sport events are accomplished once a year and several departments make yearly excursions in their free time as hiking, cycling or climbing. The chief physician organises these activities.

*“We want to add a layer on the work relationship.” (chief physician)*

The high amount of informal contact is expected to be one enabler for the many friendships in the departments.

*“You know and trust each other.” (chief physician) And “The atmosphere is very familiar, we have close contact to the colleagues and you can build on each other.” (young assistant)*

Ideas of improvements are discussed with the colleagues before they are communicated to the chief physician. The collective opinion is perceived as very important. Next to these positive aspects of the employee interaction, there are some critical points. The contact between the departments depends to a great extent on the patient treatment. While the oncology and the surgeons have a close contact because they treat patient collectively, mostly the departments stay separated. Furthermore



a lot of information is spread verbal, what leads to a high amount of information loss. Especially in combination with a short term rotation plan this is a problematic situation.

## 5. Discussion

The interviews in the internal medicine have shown that not all of the four job designs, which are suggested by the literature to increase employee creativity are useful in hospitals.

### 5.1 Employee interaction

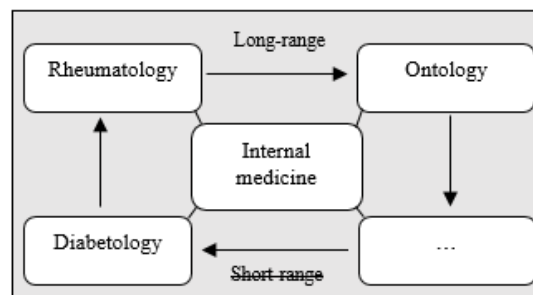
Employee interaction is extensively used in hospitals. On the one hand, the job as physician requires an extensive information exchange and makes a high interactions frequency thus a necessity, on the other hand several methods to increase the interaction are implemented in the observed hospitals. These include a physician representative or free time activities which were perceived as positive, too. The research supports the findings of Mumford (2002) and Liu (2013), namely that employee interaction increases the creativity because the employees discuss their ideas and solve problems collectively. The exchange of information between the employees, especially the discussion of ideas of improvements are closely connected to the approach of employee driven innovation. I expect these discussions to be creativity supporting. Further research should examine the difference in quality between improvement ideas, which were discussed by the employees collectively and improvement ideas which were not. Also the personal contact, as it was mentioned by Y. Y. Chen et al. (2011) to support creativity is found in hospitals. Trust and friendships, as they were suggested by Y. Y. Chen et al. (2011) and Liu (2013) are common, too and will have an influence on the open discussion between the colleagues. Only the cross functional interaction and cross functional work teams which were mentioned by Martins and Terblanche (2003) are limited in its implementability in hospitals. They take place when a patient is treated by several departments. My proposition 4 that a high employee interaction is a valuable job design in hospitals to increase the creativity of its employees is supported by the data, because this job design is already implemented to a great extent. Its positive effect got visible since the employees in the hospital discuss their ideas with each other and help their colleagues to solve problems. Employee interaction is thus seen to support creativity and employee driven innovation in hospitals.

### 5.2. Job rotation

The usefulness of job rotation depends to a great extent on the timeframe between the rotations. A too regular rotation causes stress and none of the in the literature mentioned positive effects can be observed. The usage of a long term rotation plan on the other hand supports the literature findings and makes the theories expendable to the healthcare sector. Impacts like an interaction with a greater amount of people (Ho et al., 2009), the engagement in a greater amount of tasks (Dorenbosch et al., 2005) and an extension in knowledge and skills (Elsbach & Hargadon, 2006), what all has a positive impact on the creativity was observed in the hospitals. The job rotation could correlate with the employee interaction because the employees in the hospitals meet and interact with a greater amount of people. This could increase the previously mentioned positive effects of employee interaction. Future research should examine whether these two job designs (job rotation and employee interaction) have a greater impact on the creativity of employees if they are used in combination.

I suppose that the negative effects of a three day rotation plan stand in a relationship with the anyway high job complexity in hospitals. While I proposed based on the literature (proposition

2) that a regular intra and inter department job rotation increases the creativity of employees and is thus a favorable job design to increase EDI in a hospital, the praxis has shown that an inter departmental job rotation is only possible if it takes place between the same disciplines, for example internal medicine 1 and 2. This is caused by the high degree of specialization of physician. The intradepartmental job rotation is a useful job design method in the hospitals if it is used on a long term bases (see figure 2). As Ho et al. (2009) indicated, several things as the adjustment time and learning capabilities need to be taken into account or a job rotation will cause stress and dissatisfaction. Since the jobs in hospitals are very challenging and the risk of monotony is, caused by reasons as job complexity, low, I suggest a long term job rotation where six month seem to be a favorable timeframe. Järvi and Uusitalo (2004) who studied the impact of job rotation on the nurses in finish hospitals came to similar results and suggest a rotation duration of several month and an involvement of the employee in the rotation decision. Further research to examine the optimal rotation duration in hospitals is still needed. This research has shown that a high job rotation frequency is neither necessary nor helpful in hospitals to improve the creativeness of the employees. While a long range, intradepartmental job rotation is favorable. Figure 2 shows an example for a supportive job rotation, using the internal medicine as a sample.



**Figure 2: Sub-departmental job rotation; the internal medicine as an example**

As just mentioned, future research should further clarify the optimal timeframe for intra departmental job rotations. While this research has explored that the creativity of employees in the healthcare can be positively influenced by this job design, a more precise measurement of the optimal duration and its precisely measured impact on creativity is of further interest. To summarize the findings for this job design, I propose that a long term intra-departmental job rotation has a positive impact on the creativity of employees in hospitals.

### 5.3 Job Complexity

The positive impact of an increased job complexity, as they were mentioned next to others by Hackman and Oldham (1976), Jiang et al. (2012) or Martins and Terblanche (2003) were not found in hospitals. The jobs seem to have a too high complexity what causes a stressful and exhausting workday. Since most aspects of a complex job are meet by a physician some more routine would be welcomed by the employees. In fact, the high load of information processing and the always changing and challenging tasks as well as the constant need to educate oneself can become exhausting but are part of the physician's work. The high workload and an external pressure to treat patients quickly increase the stress level. Thus, the expected positive effect of job

complexity on employee creativity was not found in the hospitals workday because it tends to be overcome by stress. This U-curved relationship of job complexity and in their case motivation was also recognized by Morgeson and Humphrey (2006) who indicated that “certain jobs are already high on (...) motivational characteristics and that additional increases (...) will have negative effects on satisfaction” (p.1334). They are supported by Amabile et al. (2002) who warned that too challenging and complex jobs can have negative impacts on creativity, what is according to my research the case in hospitals. Thus, I have to reject my proposition 1 that a high job complexity will increase the creativity of employees in hospitals because the complexity tends to be on a stress causing level. That is why I come to a new proposition, which should be tested by future research. The job complexity in the healthcare sector should not be higher than a moderate level to increase employee creativity.

### 5.4 Reflection time

Reflection time would be a possibility to interrupt the stressful workday in hospitals but the scheduled free time, as it was supposed by Gelter (2003) is not implementable in hospitals. The time to include them in the workday of a physician is missing. The implementation of planned breaks or additional mindless work in the schedule of a physician would require additional staff to perform the tasks. The difficult situation in the German healthcare system leads to the problem that neither the money to pay additional employees nor fitting applicants are available. Thus, the approach from Elsbach and Hargadon (2006) to add mindless work to the professionals workday is problematic, too. After interviewing the physicians I found support for my proposition 3 that the implementation of regular breaks or mindless work activities in a professional’s workday is a fitting option in hospitals to increase the employee’s creativity, since it would provide time for reflective and creative thinking. However, the willingness of physicians to participate in those is very limited, especially if unconventional methods as relaxation training are used. The high workload in hospitals leads to the fear of wasting the time and it seems to be difficult to convince the employees about the positive effects of breaks which can increase the efficiency as well as the creativity of the employee. The required flexibility in the workday makes fixed schedules in hospitals unlikely to workout. I conclude that instead of planning additional breaks and mindless work for the physicians, their everyday work should be analyzed on further mindless activities as periods of physical movement between the treatments. The leading person, expectably the chief physician, should motivate the other employees to use this time for creative and reflective thinking. Further research to indicate low mentally demanding activities during the workday in a hospital could have a high practical value and support the implementation of employee driven innovation in the healthcare business. I propose that the usage of already implemented mindless work for reflective and creative thinking can support the employee driven innovation in healthcare organizations.

### 6. Conclusion

To answer my main research question of: *How should jobs be designed to enhance employee creativity in healthcare organizations?* I suggest a decrease in job complexity to be able to capture the possible positive effects of this job design. The employee interaction should be held at such a high level and hospitals which might have a lower interaction rate should engage in increasing this because the positive effects on the

creativity as well as on the overall climate in the department became visible. When a job rotation plan is used, the duration of the rotation should not be chosen too short ranged. If the timeframe is appropriate, it should be included in the job design in hospitals to increase employee’s creativity. The same holds true for reflection time, which is due to the high workload difficult to implement, but never the less a useful approach to support employee-driven innovation in hospitals. It might be included in the phases of mindless work, which are already part of the physicians work day. The research shows that EDI is a useful approach to challenge the growing required innovativeness of the healthcare sector. The approach to include the employees and their ideas in the development of the organization should be further supported. Here further research should help to generate more knowledge about this topic and the organizations should become more aware of the available potential, which their employees carry. Figure 3 combines the results of the literature review and my research and summarizes the findings of my paper.

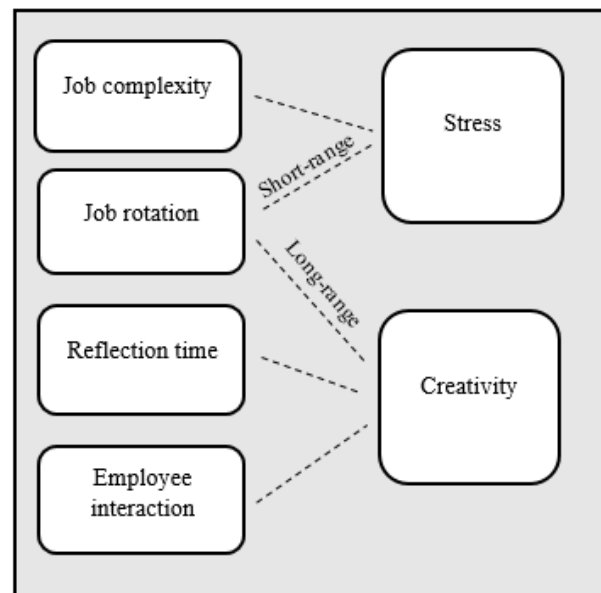


Figure 3: Visualization of the impact of job designs in hospitals.

### 7. Scientific and Practical implications

This research helps to develop the literature on employee-driven innovation by entering the rarely researched field of EDI in healthcare organizations. The not questionable influence of human resource management on the employee’s innovativeness gets supported by highlighting the impact of job designs on the creativity. Furthermore, the in the literature review indicated theories of supportive job designs are taken to the field of the healthcare sector. It got visible that the four job designs: job complexity, job rotation, reflection time and employee interaction, which are all useful to increase employee creativity in other environments, are not completely transferable to the healthcare. These findings should sensitize further researchers to test and assess human resource management practices on their implacability and usefulness in the healthcare sector with the goal to support EDI. When the job designs in hospitals are changed in a way to enable EDI, the organizations can gain valuable outcomes from the employee’s ideas.

## **8. Limitations and recommendations**

The generalizability of the findings has to be limited to hospitals, even though the initial scope has been health care organizations in general. Hospitals were taken as one of the main actors in this environment but further research is needed to assess the applicability of those job designs in other healthcare organizations as the elderly care. To meet the timeframe of a bachelor thesis I was not able to conduct validity tests as the test-retest method. Furthermore, the impact of the personality of the employee on the creativity and the willingness to participate in employee-driven innovation was not considered. This is interesting for future research since the interviews indicated a possible relationship. Also other topics of human resource management which were not taken into account in this paper, as the recruitment and motivation strategies could have an influence on the creativity of employees and the participation in employee-driven innovation.

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## 11. Appendix

## 12. Operationalization

Construct	Definition	Concepts	Sub concepts		
Job complexity	Job complexity refers to the extent to which the tasks of a job are complex and difficult to perform. They are “characterized by high levels of autonomy, skill variety, identity, significance and feedback” (Oldham & Cummings, 1996, p. 610) Work that involves complex tasks furthermore requires the use of numerous high-level skills and is more mentally demanding and challenging. A high autonomy and a low repetitiveness further characterize complex jobs and it normally requires a high effort to fulfil them.	Autonomy (A1)	Decision freedom Ability to decide on treatments Required permissions from higher level employees		
		Repetitiveness (A2)			
		Skill variety (A3)			
		Identity (A4)	Following the whole treatment process Felt connection to the department		
		Significance (A5)	Effects on other people		
		Task difficulty (A6)			
		Problem-solving (A7)	Collectively On the own		
		Feedback (A8)			
		Level of expertise (A9)			
		Challenging tasks			
		Variety of tasks in one function			
		Routines in the workday			
		Job rotation	Job rotation is a planned movement of employees between a number of jobs and environments to give the employee the opportunity to develop a variety of skills, experiences and to increase their knowledge and the job satisfaction.	Task variety, caused by several jobs (B1)	
				Skill variety caused by several jobs (B2)	
Changing job assignments (B3)					
Frequency of rotations (B4)					
Size of job territory (B5)	Inter-departmental rotation Intra-departmental rotation				
Level of specialization of employees					
Reflection time	Reflection time is the space in the employee’s working day for creative thoughts and reflection on the work. It is about taking time away from what the employees are officially being paid to do, in order to try	Mindless work	Cognitive easy tasks of physicians (C1)		
			Outsourced tasks		
			Scheduled and unscheduled		
		Breaks	Performed tasks, not mentioned in the job description (C2)		
			Kind of breaks Free time		

	something that offers uncertain payoffs, at some time in the future. (Birkinshaw & Duke, 2013)		Scheduled and unscheduled Activities during the free time
Employee interaction	Employee interaction describes the different ways the people in or around an organization exchange information. These can include a wide range of topics, from job related to private and is necessary to improve the collective innovativeness of an organization.	Social contact	Inter-departmental (D1) Intra-departmental (D2) Outside the organization (D3)
		Feedback (D4)	
		Trust (D5)	
		Knowledge sharing (D6)	
		Interaction frequency (D7)	
		Friendships (D8)	
		Open communication (D9)	
		Formal contact	
		Informal contact	
		Barriers of communication	
		Room for interactions	
		Hierarchical differences	
Creativity	In this research creativity is seen as the creation of new, useful, and / or valuable ideas to improve products, services, processes, and / or procedures to build the foundation for employee driven innovation.	Suggested ideas	The amount The variety The kind of suggestion
		Constructive criticism	
		Non outspoken ideas	
		Spontaneity of ideas	Ideas appear Active process

(A1) (Jiang et al., 2012; Morgeson & Humphrey, 2006; Mumford, 2002; Oldham & Cummings, 1996)

(A2) (Jiang et al., 2012; Oldham & Cummings, 1996)

(A3) (Jiang et al., 2012; Morgeson & Humphrey, 2006; Oldham & Cummings, 1996)

(A4) (Jiang et al., 2012; Morgeson & Humphrey, 2006; Oldham & Cummings, 1996)

(A5) (Morgeson & Humphrey, 2006) (Jiang et al., 2012; Oldham & Cummings, 1996)

(A6) (Morgeson & Humphrey, 2006)

(A7) (Elsbach & Hargadon, 2006; Morgeson & Humphrey, 2006)

(A8) (Jiang et al., 2012; Morgeson & Humphrey, 2006; Oldham & Cummings, 1996)

(A9) (Elsbach & Hargadon, 2006)

(B1) (Dorenbosch et al., 2005)

(B2) (Elsbach & Hargadon, 2006)

(B3) (Ho et al., 2009)

(B4) (Ho et al., 2009)

(B5) (Ho et al., 2009)

(C1) (Elsbach & Hargadon, 2006)

(C2) (Birkinshaw & Duke, 2013)

(D1) (Y. Y. Chen et al., 2011; Liu, 2013; Martins & Terblanche, 2003; Simonton, 1984)

(D2) (M. H. Chen & Kaufmann, 2008; Y. Y. Chen et al., 2011; Ho et al., 2009; Liu, 2013; Martins & Terblanche, 2003; Morgeson & Humphrey, 2006; Simonton, 1984)

(D3) (Y. Y. Chen et al., 2011; Morgeson & Humphrey, 2006; Simonton, 1984)

(D4) (Morgeson & Humphrey, 2006)

(D5) (Liu, 2013; Martins & Terblanche, 2003)

(D6) (M. H. Chen & Kaufmann, 2008; Y. Y. Chen et al., 2011; Liu, 2013; Mumford, 2002)

(D7) (Liu, 2013)

(D8) (Y. Y. Chen et al., 2011; Liu, 2013)

(D9)(Martins & Terblanche, 2003)