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How Does Creativity Impact Business Processes?

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Abstract

Business processes that involve creativity differ from conventional business processes in many respects: they have a low level of repeatability, typically are high value-add processes, are knowledge-intensive, involve creative persons, have a high demand for flexibility and are characterized by particular (creative) risks. Consequently, for the IS discipline there arise a couple of research questions in this context. The goal of this interpretive research is to develop a theory of creativity-intensive processes that can inform organizational design and the design of information systems. The central theme of this research is the awareness that creativity must be perceived as a part of business processes – that is, part of goal-oriented acting within an organization that comprises of both creative and non-creative activities. In this paper, we introduce an initial model of the creativity-intensive process based on a qualitative exploratory study. To do so, we introduce research method and concepts as well as relationships and interactions between concepts. With this paper we aim to motivate further research on the impact of creativity on business processes and business process management within the IS discipline.

Keywords: Business process management, grounded theory, creativity, creativity-intensive process

1   INTRODUCTION

Creativity as the prerequisite for innovation is of high importance to many organizations (Amabile, 1998). It is often embedded in core processes and increases the complexity of managing these processes. In particular, processes that contain creative tasks differ from conventional business processes in many respects. They involve creative persons, have a high demand for flexibility and are characterized by particular risks. Knowledge is an important factor as there is a very close relationship between a person's knowledge and a person's capability of being creative (Guilford, 1967; Weisberg, 1999).

To initiate research in this area, we propose a model of creativity-intensive processes that reveals relevant components of these processes along with causal and intervening conditions. The goal is to introduce an appropriate explaining and predictive theory (Gregor, 2006). As Gregor states design theory and explaining and predicting theory "are strongly interrelated" (Gregor, 2006). It is sought that the theory can be utilized to inform the development of new and the adaptation of existing information systems artifacts to support processes in creative environments. The subject of the theory to be developed is the influence of creativity on business processes and business process management as an approach to model, analyze and improve business processes. Thus, it is expected that the findings will have implications on the way processes that contain creative tasks can be analyzed, modeled and supported. Therefore, this work is of relevance to both practice and academia.

The aim of this paper is to introduce a theory of creativity-intensive processes in the substantive are of the creative industries. The creative industries are commonly referred to as an industry that is focused on creating and exploiting intellectual property. The case study companies within this research have been from a particular area that can be referred to as the *Screen Business*. The Screen Business comprises all creative and business related aspects and processes of film, television and new media content from concept to production and finally distribution.

The reminder of this paper is structured as follows. The next section discusses the work related to this study. This is followed by a discussion of the research question and research design. Then a theoretical model of the creativity-intensive process together with related empirical evidence is described. The paper concludes with a summary of contributions, limitations and an outlook to our future research agenda.

2   RELATED WORK

The study of creativity has a long track record (Guilford, 1967; Hartley, 2005; Hayes, 1989; Osborn, 1957; Pratt, 2004; Williams and Yang, 1999). Most definitions of creativity concur in that something 'new' is at the core of creativity. May, for example, defined creativity in 1959 as "the process of bringing something new into birth" (May, 1959). Later definitions state that creativity is *purposeful* or *useful*. For example, DeGraff and Lawrence defined creativity as "a purposeful activity (or set of activities) that produces valuable products, services, processes, or ideas that are better or new" (DeGraff and Lawrence, 2002). Similarly Sternberg and Lubart state that creativity "is the ability to produce work that is both novel […] and appropriate […]" (Sternberg and Lubart, 1999). In accordance to this, Amabile claims that "in business, originality isn't enough. To be creative, and idea must also be appropriate – useful and actionable." (Amabile, 1998)

Creativity as the prerequisite for innovation is an important factor in contemporary organizations and part of business processes in various creative industries (e.g. entertainment, games development, etc.) but also in industries that first of all can be characterized as non-creative but that rely on creativity in processes such as marketing or product development. We seek to investigate the phenomenon of

creativity from a business process management perspective. Business process management has been defined by (Zairi, 1997) as "a structured approach to analyze and continually improve fundamental activities such as manufacturing, marketing, communications and other major elements of a company's operation." A business process consists of a number of tasks or activities that need to be carried out in order to collectively realize an organizational objective or policy goal, and a set of conditions that determines the order of the tasks (v.d.Aalst and van Hee, 2002).

Business process management (BPM) has been deployed in many organizations throughout different industries (Armistead et al., 1999; Scheer, 1996). Particularly, what is referred to as knowledge-intensive business processes is of interest (Eppler et al., 1999). This is reasoned by the awareness that there is a close relationship between a creative person's ability of being creative and her knowledge (Guilford, 1967; Weisberg, 1999). Guilford, for example, highlights the "role of information" and the "role of previous experience" (Guilford, 1967). The concept of a knowledge-intensive process is mainly concerned with the role of people, the knowledge workers, and their interaction within processes. One key point is that knowledge-intensive processes tend to demand high flexibility.

Based on a the assessment of literature on BPM and the initial findings within this research it is assumed that there are similarities between what is referred to as a knowledge-intensive process and to what we refer to as a creativity-intensive process. However, our research has shown that there are certain important aspects of creativity-intensive processes that go beyond what has been covered by research on knowledge-intensive processes and need thorough investigation. Particularly, aspects such as the characteristics of the creative product and creative person as well as the high demand for flexibility and the occurrence of particular risks have a high impact on business processes and business process management. More than this, to develop theory that can inform organizational design and the design of purposeful IT artifacts, strategies and actions must be identified that pertain to the phenomenon of creativity within business processes.

3   RESEARCH METHOD

3.1   Research question

The central phenomenon being subject to this research is the *creativity-intensive process*, that is, business processes that involve creativity. The following research question is subject to this paper:

> *What characterizes a creativity-intensive process and what are the relevant causal and intervening conditions that impact its outcomes as well as its management?*

The *management* refers to strategies and actions that may be implemented in an organizational context to deal with the phenomenon of creativity-intensive processes. Causal and intervening conditions are factors that shape the phenomenon of creativity-intensive processes and, thus, influence required strategies and actions. At this stage, the research question is quite general as we seek to ground the emerging theory in the data. As the research proceeds, different and more detailed dimensions of the research question may be identified (Dey, 1993).

3.2   Research design

Due to the lack of a widely accepted theory and the emergence of this entire research stream this research is interpretive in nature. The underlying assumption is that any access to reality is a social construction (Klein et al. 1999; Walsham 1995). The research methodology followed is that of grounded theory (Glaser and Strauss, 1967; Strauss and Corbin, 1998; Urquhart and Fernández, 2006). For data collection we have chosen organizations from the creative industries where "the process of interest is 'transparently observable'" (Eisenhardt 1989). Processes in this domain are very much

characterized by creativity. The aim is to fill the described theoretical gap through theoretical sampling (Glaser and Strauss, 1967; Strauss and Corbin, 1998).

3.2.1 Data collection, analysis and verification of the emerging theory

Within the exploratory case studies unstructured and semi-structured interviews, process modeling and analysis and document analysis have been used as means of data collection. Interview partners have been domain experts from the creative industries, particularly managers, creative workers and teaching professionals. An overview can be found in Table 1.

Organization	Approx. number of employees	Main areas	Interview partners
Case study organization I	Approx. 120	Post production: visual effects production	CEO, CTO, head of 3D, technical directors, compositors, lighter, coordinator
case study organization II	Approx. 150	Post production, TV commercials	Management, head of technical engineering, technical directors, visual effects specialist, colorist
Case study organization III	40 employees, 100 full-time postgraduate students, 5,000 students attending short courses	Higher education	Director, head of editing, producer, post production supervisor

Table 1: Case study organizations and interview partners

The process of theory-building from case study data is highly iterative (Eisenhardt, 1989) and theory and data are constantly compared (Glaser and Strauss, 1967). This process can be referred to as *comparative analysis*. Glaser and Strauss further introduce the term theoretical sampling as a process of "data collection for generating theory whereby the analyst jointly collects, codes, and analyzes his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges." (Glaser and Strauss, 1967). This work draws from this approach as we jointly collect, code and analyze data whereby we use comparisons for analyzing the data. For the analysis we distinguish within-case analysis and cross-case analysis.

3.2.2 Coding and analytical scheme

Our coding process particularly draws on the work of Strauss and Corbin who break the process of coding down into three units: open coding, axial coding, and selective coding (Strauss and Corbin, 1998):
The analysis starts with **open-coding** (Strauss and Corbin, 1998). During this process relevant categories are identified and evidence for the categories is collected. Categories are concepts that represent phenomena. Different aspects of a category are coded by using so-called properties. For example, visual knowledge has been identified as a property of customers (customers "have" visual knowledge). This makes it possible to classify particular customers (objects) on a continuum of visual knowledge from "low" to "high". Besides, categories may have subcategories that further describe a certain category. In a process that draws form **axial-coding** (Strauss and Corbin, 1998), further relationships between categories are identified. To do so, codes are classified by whether they represent (a) phenomena, (b) conditions, (c) actions/interactions or (d) consequences. That is, the conditional structure is identified, thus, structure is linked with process (Strauss and Corbin, 1998). For example, the *creativity-intensive process* is a phenomenon and *creative knowledge* [of the Creative Person] is an influential condition. Axial coding is followed by **selective coding**, where the core category, the central phenomenon of the study is identified and other concepts are related to the central phenomenon. The central phenomenon of this study is that of the creativity-intensive process. Causal conditions, intervening conditions and consequences pertain to this central phenomenon and its parts.

3.3 Sensitizing device

We have used a sensitizing device (Klein and Myers, 1999) (Figure 1) that has served two main purposes: First, it provided an initial understanding of the concept of the creativity-intensive process and guided the first interviews. Thus, it was a device to guide theoretical sampling. Second, it has supported the researchers in doing theoretical comparisons to identify relevant categories (Strauss and Corbin, 1998). It is important to note that the actual categories and their properties emerge from the data. It is sought that the sensitizing device enables the researcher to make theoretical comparisons to examine the data.
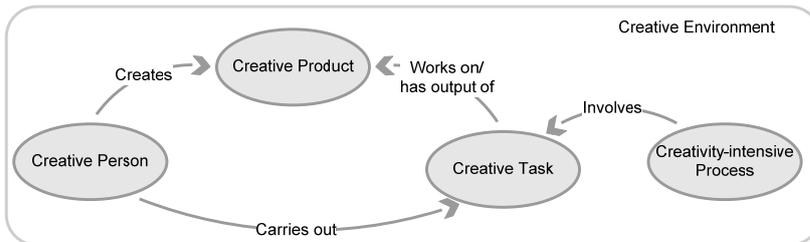

Figure 1: Sensitizing device

The sensitizing device is a framework depicting the relationship between the concepts of *creative person*, *creative task*, and *creative product*. The concepts stem from the literature on creativity. Rhodes introduced a framework that clusters the various aspects of creativity around four aspects: the creative product, the creative process, the creative person, and the creative environment (Rhodes, 1961). *Creative tasks* can be part of business processes that involve creative persons that work on (or generate) creative products. The *creative product* corresponds to the business object in a business process that is characterized by novelty and appropriateness (Firestien, 1993). Creative tasks are carried out in a *creative environment*. *Creativity-intensive processes* are characterized by the involvement of creative tasks. These processes also involve non-creative tasks like conventional business processes do. Thus, creativity-intensive processes are a subclass of business processes.

4 AN INITIAL MODEL OF THE CREATIVITY-INTENSIVE PROCESS

4.1 Core categories

We have identified a set of core categories. All of these core categories can be linked to the creativity-intensive process as the central phenomenon of this research. Table 2 provides a summary along with some exemplary evidence from the case studies.

Category	Description	Exemplary evidence
Creative product	Artifact that serves a particular purpose and is characterized by novelty. It is the output of a creativity-intensive process.	Edit decision list (EDL) as outcome of an offline-editing process, animation sequences and visual effects
Creative task	Task that is carried out to produce a creative product. Creative tasks have a high variance in process and outcome.	Offline-editing is a process that is part of the so-called post-production in film production, TV commercial production etc. The outcome of the task is the so-called edit which is a highly creative product. Several creative persons are involved in the process of offline editing.
Creative person	Carries out a creative task to create a	Offline-editor, director, producer – all these persons

	creative product	influence the creative task of offline-editing
Creative supervisor	Is responsible for a creativity-intensive process. Manages resources and creative people. Creative supervisors act as gatekeepers and build the interface to customers and business partners.	A producer or a creative director can be creative supervisors.
Creative environment	The environment in which a creativity-intensive process is carried out and into which a creative product is disseminated.	The creative environment is the business environment in that the creative tasks (e.g. offline-editing) takes place.

Table 2:   Core categories of creativity-intensive processes

As indicated, what we refer to as creativity-intensive processes is characterized by the existence of creative tasks. Creative tasks are tasks within business processes that have creative products as an outcome. The characteristics of creative tasks have been systematically compared to those of non-creative (often referred to as technical) tasks. To do so, properties of the category (a concept representing a phenomenon) have been identified and different tasks have been classified dimensionally. Table 3 provides a comparison between creative and non-creative tasks. Due to the limited space, we do not give detailed accounts of the properties and dimensions.

Non-creative task	Creative task
• pre-determined	• hard to predict
• high repeatability	• low repeatability (variance in process)
• low creativity in that the outcome is pre-determined	• high creativity in that the outcome is often hard to predict (variance in product)
• low knowledge-intensity	• knowledge-intensive, to a high degree influenced by previous knowledge
• low risk, mainly technical risk that can be mitigated through according routines	• high risk, particularly creative risks
• low level of communication-intensity	• high level of communication-intensity

Table 3: Comparison between non-creative tasks and creative tasks

4.2   Conditions, actions/interactions and consequences

Conditions, actions/interactions and consequences pertaining to the phenomenon of a creativity-intensive process are depicted in Figure 2
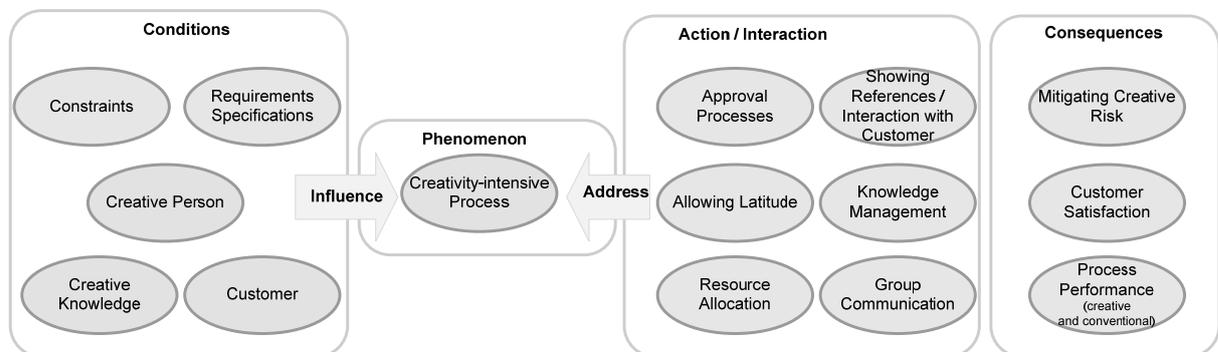

Figure 2: Conditions, actions/interactions, and consequences of creative tasks

It has to be noted, that the identification of these model elements is the result of axial coding and a key step on the way to develop theory. That is, Figure 2 is not to be seen as a graphical representation of the emerging theory but as a device on the way to identify relationships among concepts. In the following we provide descriptions and exemplary empirical evidence for the different concepts.

Conditions are those variables that lead to and influence a phenomenon (Strauss and Corbin, 1998). Table 4 provides an overview of conditions of creative tasks.

Condition	Description	Influence	Exemplary evidence
Requirements specifications	Specifications of the creative product to be created. Usually, requirements specifications originate from the customer but are discussed with creative persons.	Requirements specifications influence creative tasks in that the creative person carrying out that task has lower latitude to alter the product. Very detailed requirements specifications lead to lower creativity. At the same time, communication with the customer (approval steps etc.) gets more important if there are no detailed requirements specifications.	A design coordinator stated that "in a lot of TVCs [TV-Commercials] a director will come to you already with an idea of what they want and the reality is that the designers are simply doing the mechanics. They are putting visually what the director has already thought up."
Constraints	Constraints such as time and budget that shape creative tasks.	Several constraints influence creative tasks in various ways. Particularly relevant are time and budget: The allowed *time* influences the technical equipment that can be used and limits the time creative persons have to come up with truly creative ideas. *Budget* influences creative tasks in several ways. For example, the equipment that can be used to realize a creative product depends on the budget. This, in turn, may influence the creative quality of a product and, thus, customer satisfaction.	A design coordinator stated that "…a lot of the time it's [the creative task] dictated by time and budget. Unfortunately, that's just the way it is and as much as we like to have that whole creative process as an important core thing, it often doesn't work out that way, things are compromised"
Creative person	Carries out a creative task to produce a creative product.	The expertise and skills of a creative person influence efficiency and outcome of a creative task.	Often, several creative persons are involved in creative tasks. Examples are directors, animation artists etc.
Customer	The customer or client is the recipient of a creative product. She specifies the requirements and interacts with the creative persons.	The customer influences creative tasks in different ways: Particularly relevant is what can be referred to as the customer's *visual knowledge*. This concept refers to the customer's ability to assess creative artifacts and influences at what stage the customer can be involved into approval processes.	A creative director said: "And I think a lot of the time you are dealing with people who aren't very visual so the more stimulus you give to them at the beginning, the more style frames, the more references, the more able they are to see what you are trying to tell them…"
Creative knowledge	Knowledge needed by creative persons to carry out creative tasks.	Knowledge is closely linked to creativity. In many cases creativity means putting together pre-existing things.	Creative director: "Everything you draw on, everything I draw on in my creativity comes from somewhere. So it's already been created somewhere…"

Table 4: Conditions

Actions and interactions are purposeful activities that address the phenomenon and lead to consequences (Strauss and Corbin, 1998). As Strauss and Corbin state, actions and interactions "are purposeful or deliberate acts that are taken to resolve a problem and in so doing shape the phenomenon in some way." Strauss and Corbin distinguish strategic actions/interactions and routines where the former are purposeful and deliberate acts and the latter are "more habituated ways of responding to occurrences in everyday life such as having an established protocol…" Table 5 provides

an overview of actions/interactions that are applied to deal with the phenomenon of creativity within business processes.

Action/interaction	Description	Exemplary evidence
Approval processes	Approval processes are a means to ensure that the creative product meets the requirements. It can be distinguished between quality assurance (technical aspects) and creative reviews (does the product meet the creative expectations).	Creative tasks within post-production processes are usually followed by internal and external approval steps. For example, the so-called offline-editing is usually followed by a screening involving the different stakeholders (editor, director, post-production supervisor, producer).
Showing references / interaction with customer	This action/interaction is similar to that of approval processes. Showing references to the customer is an action to facilitate communication with the customer and to make sure that the customer's expectations are met.	Design coordinator: "Trying to give as much visual reference, whether that's style frames that we can actually do ourselves or, if time and budget don't allow it, we then find the next best alternative which is, you know, style frames, references, all that sort of thing. So that they get an idea of what you are thinking before you actually put it into work."
Allowing latitude	Giving creative people latitude means to grant them the right to alter product and process.	Creative director: "I have to give everybody enough rope to be creative with what they do, but we have to constantly meet and make sure that we are all heading in the right direction."
Resource allocation	Allocation of resources (time, budget, technical equipment) to carry out creative and non-creative tasks within business processes.	In the case study organizations, resources are allocated based business goals as well as for creative reasons. Particularly creative tasks need to be allocated with sufficient resources, otherwise creativity is compromised.
Knowledge management/ asset management	As (previous) knowledge is an important factor that influences creativity, knowledge management is a strategy to make explicit knowledge available to fulfill creative tasks.	Design coordinator about artifact libraries: "As we do jobs, and we need to get reference and people say 'oh, have you seen that ad that Mercedes did' or whatever, we get the ad, we put it in a, like a reference library, and you can put it under 'cars' or whatever ..."
Group communication	Often, different creative (and non-creative) actors are involved in creative tasks. Thus, communication is essential.	The creation of an animation involves different creative and non-creative people, such as the director, animation artists, producer etc. that are often located in different places. Thus, communication is essential as everybody may have their "own creative agenda" but the project team must be working towards one aim.

Table 5: Action / interaction

Consequences are both intended und unintended results of actions/interactions. Table 6 provides an overview of consequences of creative tasks respectively the actions/interactions that are performed to deal with creative tasks and its intervening factors.

Consequence	Description	Exemplary evidence
Mitigating creative risk	Mitigating risk is a consequence of applying actions such as approval processes and showing references. Creative risks may result in creative errors that occur if the creative product does not meet the customer expectations.	A creative director said "I've seen customers come in and see things that weren't quite what they wanted and being unhappy with it, that people have come up with. But that's sometimes a gamble…"
Customer satisfaction	Customer satisfaction is a consequence of meeting or exceeding the customer expectations based on capturing requirements and	A creative director on the role that communication plays to reach customer satisfaction: "[my goal is] not only try and fulfill

	communication with the customer along with high product quality.	a brief in a creative sense for a client but also help them to think of things they haven't thought of already."
Process performance	Can be split up in creative performance and conventional process performance. Creative performance pertains to the creative output whereas conventional process performance pertains to classical process measures such as time and budget.	Referring to time, a creative person has, a design coordinator said: "it really depends on how much they are given as to how much they then give you in the end…"

Table 6: Consequences

4.3   Relationships and interactions between categories

As indicated, not the notions of conditions, actions/interactions and consequences are important, but the relationships among categories. The classification above is no more than a device that has helped us to systematize the process of theory building. In fact, what can be a consequence under certain circumstances may become a causal or intervening condition under others. Our findings suggest that there is a complex interplay between various conditions that shape creativity-intensive processes. Creative supervisors and creative persons apply actions/interactions in response to this as they aim to (a) reach process performance by meeting constraints such as time and budget (conventional process performance) while (b) still being creative and generating products that satisfy the customer expectations (creative performance). In the following we discuss the categories and their relationships and interactions. Thus, we explain what actions/interactions are used in response to what conditions with what consequence. To do so, we have classified actions/interactions into three groups: *actions/interactions for communication with customers*, *actions/interactions for internally managing creativity-intensive processes*, and *supporting creativity-intensive processes with information technology*.

4.3.1   Actions/interactions for communication with customers

Creativity-intensive processes are characterized by *variance* both in *process structure and outcome*. This variance is caused by different conditions. *Requirements specifications* to the creative product vary on a dimensional range from vague to very detailed. Vague requirements specifications lead to a high variance in the outcome. This implies high creative potential (the potential to create a product that is characterized by novelty) but also high risk as high variance in the outcome may lead to unwanted consequences such as customer dissatisfaction. Moreover, different *creative persons* solve the same problem in different ways which also contributes to the unpredictability of the process and its outcome. A creative director put it as follows: "Some people would just get a skeleton from the library and modify, other people would make a fantastic skeleton that does all sorts of amazing things and that's creative and that's not. So the same task in two different people's hands is different ..." In response to this, creative organizations apply actions/interactions such as *approval processes* that involve the customer to make sure that the product meets the requirements. Similarly, the action of *showing references* is used to facilitate communication with the customer and to create a mutual understanding of process goals. The (intended) consequences of these actions are *customer satisfaction* and *risk mitigation*.

To decide on where within the overall process particular actions/interactions are applied, it is necessary to understand where *customer tipping points* are within the process. Customers particularly need to be involved in the more creative parts of the process. These are the sections where decisions are made that massively impact the overall process and its outcome. This tends to be the case in the early stages of creativity-intensive processes (for example, in the beginning of the production process of a particular visual effect or animation). Our study further suggests that the abilities and the professional background of the customer are of high relevance to creativity-intensive processes and,

therefore, have to be considered when managing these. The interaction with the customer is influenced by what can be referred to as the customer's *visual knowledge*. Whereas some customers are capable of seeing where a process is heading very early, other customers need to be shown a nearly finished product. Thus, the creative supervisor has to decide where and how the customer can be involved in the process – that is, where and how actions such as *showing references* or *approval processes* are implemented. Another condition that influences customer tipping points is the *type of job* as a property of the creativity-intensive process. A creative director put it as follows: "Sometimes it's a job where it's very, very easy to make something, prototype something very quickly. And there is sometimes a job where there's thousands of computing hours involved …" In the first case the organization can show the customer a prototype very quickly. In the latter one, to facilitate communication with the customer, the organization could work with references to previously created artifacts or with style frames of the artifact under development.

4.3.2   Actions/interactions for internally managing creativity-intensive processes

In the previous section we discussed actions/interactions that are applied by creative organizations to interact with customers. Now we discuss actions/interactions that are applied to manage creativity-intensive processes internally. There is an intimate connection between the two groups and both types of actions/interactions are simultaneously used to manage creativity-intensive processes.

The creativity or creative freedom associated with a creative task is restricted by *requirements specifications* as well as *constraints* such as time and budget. However, particularly when creative teams are working together the creative supervisor has to make sure that everybody works towards one goal. In some cases this requires the creative supervisor to encourage people to be more creative (that is, to generate products that significantly diverge from what has been done before) whereas in other cases creativity needs to be restricted. One supervisor put it as follows: "... everybody has their own creative agenda. They are trying to push sometimes on their job so you have to try and stem that somehow; you have to give people latitude to be creative, but not that creative that everybody is driving a project in different ways and it falls over." Thus, the action/interaction of *allowing latitude* varies on a dimensional range from restricting creativity to encouraging people to be more creative.

Approval processes are not only used for communication with customers but also internally for quality assurance (technical aspects of creative products) and creative feedback. Likewise to external review processes the intended consequences are to meet requirements specifications and to mitigate risk (for example, by recognizing errors early in the process). Particularly where high latitude is granted, both internal and external approval processes are needed to avoid unwanted consequences.

Another important action is that of *resource allocation*. Creative supervisors have to decide what resources are allocated to what task. Often, resources are allocated to tasks with particularly high creative impact. If there is a lack of resources for a creative task, this can compromise creativity. A creative director said: "... it really depends on how much they are given as to how much they then give you in the end."

4.3.3   Supporting creativity-intensive processes with information technology

As our data from all three case organizations suggest, information technology plays a prominent role in supporting creativity-intensive processes. Knowledge-related technologies as well as group-communication systems are used to support different actions/interactions.

Knowledge management systems can be used to support communication with the customer (by showing references) as well as to provide stimuli for creative persons (artifact databases) or to provide creative people with procedural or technical knowledge on how to use required equipment and software, for example. For this last purpose case study organization I, for example, uses a wiki. Both case study organization I and case study organization II use an asset management system that enables creative people to draw on existing artifacts for their creativity.

Our study suggests *that group communication systems* can be used to support communication within creativity-intensive processes to positively influence process performance. What communication strategies can be applied and where they can be applied, highly depends on the situation as well as of the involved persons. Actions/interactions such as approval or review cycles, for example, may have to be done face-to-face in a screening room in some cases. In other cases, the artifact to be reviewed can be sent electronically and feedback from the customer can also be received electronically.

Creativity-intensive processes are characterized by a high demand for flexibility. Thus, there exist particular challenges for modeling and supporting these processes. As indicated, the process flow usually is not predetermined. Due to the creative nature of the processes, required resources are often not known in advance. Moreover, the variance in outcome of creative tasks has to be considered when modeling processes as actions for risk mitigation need to be implemented. The study suggests that flexible process support systems can enhance process performance of creativity-intensive processes.

4.4   Discussion of practical implications

Due to the limited space, here we can only start a brief discussion of the practical implications of this research. The following example illustrates how the emerging theory can inform the design of creativity-intensive processes: The theory suggests a relationship between requirements specifications with creative potential and creative risk. Requirements specifications have a dimensional range from "detailed" to "vague", creative potential has a dimensional range from "low" to "high". Creative Risks are a property of the creative task. Thus, requirements specifications as a causal factor shape the concept of a creative task in a certain way. Consequently, a business process can be designed in response to this, as approval steps (action/interaction) following creative tasks (phenomenon) may help to avoid / mitigate creative risk (consequence). That is, actions/interactions to handle a particular business process are implemented contingent upon properties of a creative task.

Summarizing, the study suggests that creativity increases the complexity of managing business processes. Creative supervisors have to consider a complex interplay of creative persons, customers, and organizational resources to pursue both conventional process performance (such as cost and process efficiency) as well as creative performance.

5   CONCLUSIONS

With this work we contribute to the IS body of knowledge by developing a theory of creativity-intensive processes. It is sought that the theory can be utilized to inform the development of new and the adaptation of existing information systems artifacts to support processes in creative environments. Such a theory supports the understanding, design and re-design of processes that are characterized by creative tasks, persons and products and can inform the design of IT-infrastructures including adequate process support and tools to support creative tasks as parts of the processes. It is sought to generalize our findings by including case study companies from different domains into our research design. The goal is to eventually move to a more general substantive theory (Urquhart, 2001). Moreover, we are planning to engage with existing formal theory as this may also result in a more general substantive theory (Orlikowski, 1993).

This research has some limitations. Due to its interpretive nature, the emerging theory may lack potentially relevant concepts and/or relationships between concepts. Nevertheless, this exploratory study seeks to gain an initial understanding of a new-topic area and therefore is a starting point for further research on theory building and theory testing. So far, case study partners have been organizations from the screen business as part of the creative industries. Consequently, the findings are limited to a particular domain.

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