

# Creative Personality and Business Process Redesign

Kathrin Figl<sup>†</sup>, Barbara Weber<sup>‡</sup>

<sup>†</sup>Vienna University of Economics and Business (WU Vienna)

kathrin.figl@wu.ac.at

<sup>‡</sup>University of Innsbruck

barbara.weber@uibk.ac.at

**Abstract:** The purpose of this article is to discuss the influence of creative personality on process redesign. Building on creativity theories stemming from the field of cognitive psychology, we identify important individual factors during process redesign, and hypothesize their contributions to creative process design using a modelling tool. We present an integrated research model and illustrate how we seek to test the model using the Cheetah Experimental Platform.

## 1 Introduction

It has long been recognized that business process redesign and innovation can lead to improved processes and better business performance and customer satisfaction. Process improvement was the number one item for top management according to the Gartner Group in 2010 [Gro10]. In practice, process models are used for analyzing, documenting and improving business processes. They help to identify process weaknesses as well as possible improvement opportunities. An important factor for process improvement are the employees working with the process models. For creating novel and valuable ideas for process redesign human creative ability is needed. Cook describes creativity as “source of competitive strength within organizations” [Coo98, 179]. Companies have to identify their creative potential to enable business innovation. Identifying individual creative potential is relevant for assembling teams and deciding who should be part of a process redesign team. Additionally, creativity training can be of relevance for teams working on processes.

Despite increasing consciousness about the need to consider creativity in researching business innovation, most research up to now was undertaken in the field of product innovation. The business process management community has barely recognized the importance of creativity and little research has been undertaken to improve and understand the relationship between creativity and business process redesign. There are few exceptions as for instance Seidel et al. [SR08] who discuss the concept and management of creativity in business process management.

Given the high practical relevance of creative process redesign, the aim of this paper is filling that gap by investigating the relationship between individual creativity and business process redesign. More specifically, we address the research question how creative

personality style and creative capacity influence creativity in process redesign tasks.

## 2 Theoretical Background

**Business Process Redesign.** Business process reengineering and continuous process improvement constitute two different ends on a continuum of business process redesign. *Business process reengineering* refers to “fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measure of performance, such as cost, quality, service and speed” [HC93]. Thereby, business process reengineering largely ignores the existing process and in the most extreme case follows a *clean sheet* approach creating the redesigned process from scratch. *Continuous process improvement*, in turn, typically takes existing processes as a starting point and gradually improves them in an incremental manner [Dav93]. While both approaches differ in their focus, both aim at the redesign of existing business processes and lead to a transformation of the original process model (i.e., AS-IS process) into a redesigned version (i.e., TO-BE process) improving one or more performance measures. To achieve this transformation different redesign patterns can be used as for instance cutting non-value adding tasks, changing the order of tasks or automating tasks [RLM05].

**Creativity and Creative Personality.** Creativity and creative problem-solving form the basis for business innovation and process redesign [MM02]. Similarly to other design activities, there is no single solution and no clear path to a solution in a process redesign task. A creative solution is defined as being both original and novel as well as relevant and valuable in the specific context [Ama83, 358]. When researching creativity three main aspects are relevant: the *creative person*, the *creative process* and the *creative product* [Ama83]. In our study we intend to include all three aspects and examine how creative personality influences the solutions to a process redesign-task (*creative product*) using a modelling tool (*creative process*). One of the most influential personality models in the context of creativity is the Adaption-Innovation theory by Kirton [Kir76]. While adaptors tend to “doing things better”, innovators are likely to be “doing things differently” [Kir76, 622]. Adaptors work out few, but realizable solutions, they pay attention to details and work out the solution incrementally with well-known techniques [FH92, 967]. In contrast, innovators propose more, but less realistic solutions and might ignore rules and existing paradigms. This distinction directly relates to the continuum between continuous, incremental improvement [Dav93] and radical redesign of processes [HC93].

## 3 Research Model and Hypotheses

Having laid out the relevant theoretical foundation related to creativity and business process redesign, we will now draw several propositions to suggest which factors will influence business process redesign. Concerning person-related characteristics creative style and creative capacity are two independent dimensions [Kir78, 697] which are both rel-

evant for solutions to process improvement tasks. Besides person-related characteristics there are two more factors contributing to the creative process [Ama83]: domain-relevant skills and task motivation. We summarize our expectations about relevant influence factors in light of the theoretical considerations in the research model shown in Figure 1.

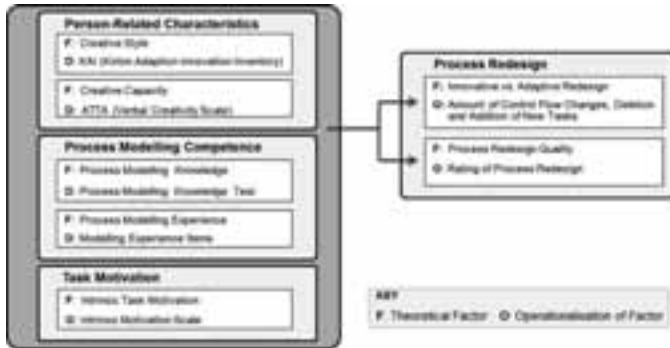


Figure 1: Research Model

The model proposes that the quality of a redesigned model in a process redesign task will be a function of person-related characteristics (style and capacity), process modelling competence (domain-relevant skills) and task motivation. Concerning the influence of creative style we anticipate the following effects: In contrast to innovators, adaptors perceive “boundaries less elastic and permeable” [Kir78, 697]. Therefore, we expect adaptors to make only small, continuous improvements to the model, innovators to radically change the process and do a complete reengineering. Innovators are more likely to “break existing patterns” [Mud95, 167]. As innovators do not pay as much attention to details they might make more syntax errors, but produce more innovative ideas. We state:

**H1:** Higher innovative style is positively associated with the amount of model changes.

**H2:** Higher adaptive style is positively associated with the correctness of model solutions.

According to [GT02, 1] there are two basic indicators of creativity: *fluency* is defined as “the ability to produce quantities of ideas which are relevant to the task instruction” and *originality* as “the ability to produce uncommon ideas or ideas that are totally new or unique”. We expect creative capacity to positively influence both criteria. Therefore:

**H3:** Creative ability is positively associated with originality and fluency in the redesign.

Next, we consider process modelling competence and task motivation. We speculate both factors to contribute to the creative quality of process redesigns in terms of fluency and originality. While lower modelling experience might hinder creative persons from fully unfolding their capacity to provide creative ideas, high task motivation might foster creativity.

**H4:** Process modelling competence is positively associated with originality and fluency in the redesign.

**H5:** Task motivation is positively associated with originality and fluency in the redesign.

## 4 Planned Empirical Study

For answering these research questions we are currently conducting an empirical study using the Cheetah Experimental Platform [PZW10]. Cheetah guides participants through a variety of questionnaire parts, offers a tutorial on process modelling and a process modelling tool for the redesign tasks, which logs every modelling action (e.g., adding and deleting of activities) to enable later analysis. The next paragraphs introduce main parts of the experimental design.

### 4.1 Measurement of Independent Variables

**Creative Style: Innovative vs. Adaptive Problem-Solving Style (KAI (Kirton Adaption-Innovation Inventory)):** The Kirton Adaption-Innovation Inventory [Kir76] measures individual problem-solving style relating to the quality of problem solutions. Respondents have to rate themselves on 32 items. It measures three different scales: sufficiency of originality, efficiency and rule governance.

**Creative Capacity: Abbreviated Torrance Test of Creative Thinking (ATTA):** The Torrance Tests of Creative Thinking (TTCT) measures divergent thinking and assesses the quantity and quality of creative ideas. It is a widely used (by over 2000 studies) instrument [GT02]. For the purpose of our study we use the verbal subscale of the abbreviated test version as a screening indicator of creative thinking abilities. The scores in the test are based on fluency (number of ideas) and originality (unusualness of ideas).

**Process Modelling Competence:** Participants are asked about the extent to which they have previously been involved with modelling in education and work. Additionally, we use a test on theoretical knowledge of process modelling developed by [MS08].

**Task Motivation:** For measuring intrinsic motivation we use three items derived from a scale by [DBW92]. An example item was: 'I found the tasks of providing improvement ideas for the processes to be enjoyable.'

### 4.2 Measurement of Dependent Variables: Process Redesign

**Experimental Redesign Tasks** In our experiment participants are asked to work out improved TO-BE models for two given AS-IS process models. We use 2 measure-invoked redesign tasks [SK10] targeting the measure- (customer) quality for the construction of creative redesign tasks. The two AS-IS models were selected from different domains such that we could expect that they are understandable with no special domain knowledge. In the first task we ask participants to optimize a new check in and guidance service of an airline to best support costumers as well as business interests. The second task asks for a process redesign of a coffee shop service to foster customer satisfaction.

**Measurement of Process-Redesigns** For analyzing the process redesigns we intend to use

quantitative as well as qualitative measures.

- **Change Distance:** The amount of process changes can be measured as the number of change operations needed to obtain the redesigned TO-BE process model from the original AS-IS process model. Thereby, this measure considers operations related to the insertion or deletion of activities/edges.
- **Correctness** is assessed in terms of syntax as well as execution semantics. In particular, we measure whether syntactic requirements imposed by BPMN are met, and whether the model is free of behavioral anomalies such as deadlocks. To this end, we apply the soundness criterion for syntactically correct models [van98].
- **Creativity of Redesign Ideas** is assessed by a team of independent experts according to originality and fluency. We deploy an iterative consensus-building process to ensure validity and reliability of our assessment.

## 5 Example of Preliminary Analysis

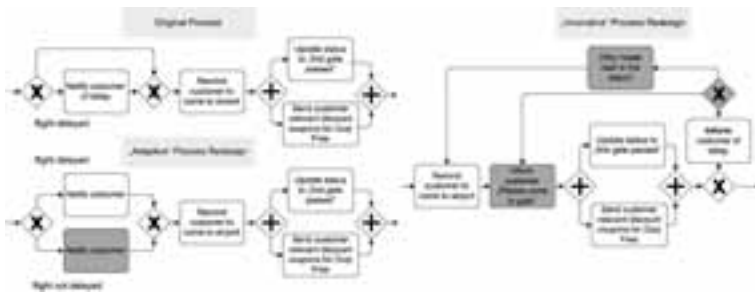


Figure 2: Detail of Airport Model and Exemplary Redesigns

Data collection is still ongoing and participants are being recruited from modelling courses. We would like to discuss two redesign examples of a process snippet, as can be seen in Figure 2. The study participant with the ‘adaptive solution’ scored low on the Adaptive-Innovative continuum (2.60 on a scale from 1 to 5), the participant with the ‘innovative’ solution scored high (3.49). In the redesign solution we can see, that the ‘adaptor’ simply added one activities to notify the customer if the flight is not delayed, demonstrating incremental improvement. The ‘innovator’ added two activities and he reengineered the complete order of the process. This example would support hypothesis 1, but further data collection and detailed analysis will be needed to test hypotheses.

## References

- [Ama83] T. M. Amabile. The social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology* (1983), 45(2):357–376, 1983.

- [Coo98] Peter Cook. The creativity advantage - is your organization the leader of the pack? *Industrial and Commercial Training*, 30:179–184, 1998.
- [Dav93] T.H. Davenport. *Process innovation: reengineering work through information technology*. Harvard Business School Press, Boston, MA., 1993.
- [DBW92] Fred D. Davis, Richard P. Bagozzi und Paul R. Warshaw. Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology*, 22(14):1111–1132, 1992.
- [FH92] Gordon R. Foxall und Paul M. W. Hackett. The factor structure and construct validity of the Kirton adaption-innovation inventory. *Personality and Individual Differences*, 13(9):967–975, 1992.
- [Gro10] Gartner Group. Leading in Times of Transition: The 2010 CIO Agenda (EXP Premier Report No. January 2010). Bericht, Gartner, Inc., 2010.
- [GT02] Kathy Goff und E. Paul Torrance. *Abbreviated Torrance Test for Adults (ATTA). Manual*. Scholastic Testing Service, Bensenville, Illinois, 2002.
- [HC93] M. Hammer und J. A. Champy. *Reengineering the Corporation: A Manifesto for Business Revolution*. Harper Business Books, 1993.
- [Kir76] M. J. Kirton. Adaptors and innovators: A description and measure. *Journal of Applied Psychology*, 61(5):622–629, 1976.
- [Kir78] M. J. Kirton. Have adaptors and innovators equal levels of creativity? *Psychological Reports*, 42:695–698, 1978.
- [MM02] R. McAdam und J. McClelland. Individual and team-based idea generation within innovation management: organisational and research agendas. *European Journal of Innovation Management*, 5:86–97, 2002.
- [MS08] Jan Mendling und Mark Strembeck. Influence Factors of Understanding Business Process Models. In *Proc. BIS 2008*, Seiten 142–153. Springer, 2008.
- [Mud95] Samuel Mudd. Kirton adaption-innovation theory: organizational implications. *Technovation*, 15(3):165–175, 1995.
- [PZW10] J. Pinggera, S. Zugal und B. Weber. Investigating the Process of Process Modeling with Cheetah Experimental Platform. In *Proc. ER-POIS '10*, Seiten 13–18, 2010.
- [RLM05] H. A. Reijers und S. Liman Mansar. Best practices in business process redesign: an overview and qualitative evaluation of successful redesign heuristics. *Omega*, 33(4):283–306, 2005.
- [SK10] Avraham Shtub und Reuven Karni. Business Process Improvement. In *ERP*, Seiten 217–254. Springer US, 2010.
- [SR08] Stefan Seidel und Michael Rosemann. Creativity Management The New Challenge for BPM. *BPTrends*, 2008.
- [van98] W.M.P van der Aalst. The Application of Petri Nets to Workflow Management. *JCSC*, 8(1):21–66, 1998.