Open topics for theses - Prof. Dr. Matthias Lederer

Status: The list is updated continuously.

All topics are possible (with minor adjustments, if necessary) both as Bachelor's and Master's theses. Likewise, all topics can be written on in German or in English. All courses of study at Weiden Business School are possible. I will be happy to discuss prior knowledge/adaptations of the topic according to the student's background at the first appointment. Topics can also be reserved for a semester later.

The topics are structured according to my research interests (in the following pages):

- Process Management
- Agile Transition
- IT Management
- Design Science

Liebe Studenten, ich pflege diese Liste offener Themen auf Englisch, damit die Teilnehmer aller Studienprogramme die Chance auf eine Bearbeitung haben. Wenn Sie nicht gut englisch sprechen, lassen Sie sich bitte nicht abschrecken. Übersetzen Sie die Themen einfach oder lesen Sie Begriffe nach. Eine Bearbeitung auf Deutsch ist in jedem Fall möglich, auch wenn diese Ausschreibungen auf Englisch sind.

If you are interested, please contact me via my website (matthias-lederer.de) to arrange an appointment (self-service, there are several appointments every week).

Topics on “Process management”

Context modeling for business processes

If the environment of companies changes, this can have an influence on the design of business processes. The context consideration of business processes becomes a real competitive task in fast moving industries. The model to be created should make the context of business processes manageable and fundamentally prepare for automated context consideration.

Method: Literature analysis; Rule modeling

Result: list of context factors; model for mapping; rule system/recommendation system for process modeling

Recruitment of BPM experts in teams

In IT it is becoming more and more common that when team leaders change companies, they also take many old colleagues with them to a new employer. The purpose of this thesis is to investigate the reasons for this poaching of entire teams and whether this phenomenon can also be found among BPM experts.

Method: Literature analysis; Survey

Result: List of factors; assessment of the phenomenon

Influence of process orientation on sick days of employees

Process orientation is considered in many companies as a possibility to increase efficiency and at the same time the satisfaction of employees. Currently, the number of sick days is increasing in many companies. However, it has not yet been investigated whether and what effect process orientation has on this phenomenon. The thesis will compare the factors for more sick days with characteristics of process orientation and then measure possible effects in a survey.

Method: literature analysis; survey

Results: Factor list for disease tags; comparison with process orientation; survey analysis.

Training for Process Innovations - An Analysis of Competence Formation

Motivation: Process orientation promotes innovations and optimizations in workflows. This is typically the content of training/studies in classic seminars on business process management (BPM). However, due to the trend towards more digital workflows and increased use of tools in process optimization, acting persons no longer have this classic BPM training. Instead, these people learn about the concepts of process management through technical expertise or IT tools. This thesis is intended to show what the approach to process innovation looks like in modern companies.

Method: Survey or focus groups (preferably in/with companies)

Result: List of typical ways how competencies for process innovations are achieved (training, forms, platforms, expert fields)

Reference: S-BPM ONE 2023; Pap AF Part RG

Explainability of processes - requirements and solutions

Motivation: In an increasingly complex world, the explainability of complicated systems becomes more important. This can already be seen in the increasing importance of "Explainable AI". It has always been true for business process models that they can only provide added value if they are also understood. This thesis aims to set requirements for the explainability of process models and then contrast them with common BPM solutions.

Method: literature-based (collecting requirements & techniques, then matching) is possible; field study/experiment (testing explainability of processes) is possible.

Outcome: Consolidation of expectations/requirements for explainability in the context of BPM; then assessment of current solutions for it.

Reference: None.

Sustainability in business processes

Motivation: Demands for more sustainability are growing. Models of business processes can be used as a starting point to identify entry points for more sustainability. This thesis first derives what starting points there are for sustainability in workflows in general and then shows how these can be located in process models (e.g. BPMN). An evaluation in business practice is possible but not mandatory.

Method: Collection of sustainability efforts in operational processes (happy to restrict to specific domains, the student is most interested in); mapping to model content; demonstration of how it works for identification.

Outcome: Set of rules for identification of sustainability efforts in process models

Reference: S-B2

Gendering/gender equity and discrimination-sensitive language in process models

Motivation: Language creates images in the mind - therefore texts should reflect the diversity of a society. To date, little attention has been paid to diversity in process models (e.g., often only mentioning male forms in labels, not considering roles with disabilities for simulations, etc.). This thesis will investigate which labels in process models are particularly concerned with discrimination-sensitive description. It will also describe the status of these efforts in corporate practice.

Method: Compilation of relevant factors of discrimination-sensitive languages (literature analysis); mapping of these practices to elements of process models; survey of the status in practice (e.g. with interviews)

Outcome: Guide for process managers to pay attention to diversity in modelling/workflow simulation; comparison with the state of the art in corporate practice

Reference: BPM2

Super-Apps in Process Management

Motivation: Super-Apps provide various components that allow users to use and remove applications/parts of applications on demand. This thesis shall first distinguish the idea of super apps from the well-known BPM concepts such as SOA and workflow management systems. Then (a) a market survey or (b) a requirements definition of this new kind of software shall be done.

Method: Literature analysis; Survey

Result: Market study on super apps in process management

Reference: GA 2023/WW

Topics on “Agile Transition”

Effects of agile working on workaholics

Motivation: In Germany, it is currently assumed that about 12% of all managers suffer from being a workaholic (understood as a disease). This lowers the productivity of the company, leads to social costs and health restrictions for the employee. Among developers, the figure is significantly lower (about 6%), so the question arises whether the shift to self-organized teams (e.g. in agile techniques such as SCRUM) can counteract the negative trend of work addiction.

Method: Research on work addiction (effects, diagnosis, impact); survey of developments before and after an agile transition (e.g. interviews); derivation of effects.

Result: Quantitative evidence of positive/negative effects of agile transition on workaholics

Reference: CP 7-8/12

Agile Purchasing - Approaches and Best Practice OR Agile Production - Approaches and Best Practice OR Agility in Sales - Approaches and Best Practice

Motivation: The introduction of agile process models (e.g. SCRUM) reaches its limits in many cases. Due to specifics of the industry or the business function, the models are adapted in a small or even fundamental way (so-called tailoring). This thesis has the task to compile recognized tailoring models, to compare them and to derive principles. The student is asked to choose a suitable business function (e.g. production, sales) or an industry.

Methodology: collection, comparison, derivation of patterns/categories.

Outcome: compilation of adapted models for agile development; comparison and opportunities/risks; generalized approaches to tailoring.

Ref: 7/21-22

Design of a procedure model for rapid agile transformation – “Agile on Demand”

Motivation: In change management, many models for the transformation of companies, business models or parts of them are described. Some further developments or new creations of models exist for the agile transformation of it. These vary greatly in terms of quality, level of detail and foundation.

Method: Literature research; adaptation of models/evaluation of suitability; design science approach to own development.

Outcome: Compilation and synthesis of change management models; design of own model for agile transformation with evaluation. A particular focus will be placed on temporary organizations, in that the new model should, above all, be able to scale quickly.

Using leadership theories to develop roles in agile management

Motivation: Traditional managers are sometimes no longer necessary in agile teams, as their position/function transitions to the roles of SCRUM Master, Product Owner or Development Team. This work aims to gather good practices (i) according to which criteria and (ii) with which methods this transition of the traditional manager can succeed.

Methodology: Collection of case studies and evaluation of the use of "traditional managers"; if necessary also possible as theoretical work (e.g. literature study). The focus can be on IT companies or gladly on other domains/industries.

Result: Rule definition (e.g. if-then pattern) and hints for a good transition

Ref: D

Challenges of the temporary-agile organization

Motivation: In practice, projects or departments are often organized or managed in an agile manner. However, these structures (even though many books present them as a sustainable/ irreversible trend) are also reversed after some time. Hierarchies or rigid models are sometimes reintroduced. This presents managers with two transitions and thus with major challenges.

Methodology: Definition of temporary-agile organizations; transfer of concepts for temporary organizations (e.g. from project organization) to agility.

Result: Good practice list/model

Ref: D

Topics on “IT Management”

Virtual X - Development of criteria for the successful virtualization of products and services

Motivation: Many well-known products and services are already often virtualized today (e.g. virtual product design, virtual house inspection) and also accompanying entities are simulated in a virtual environment (e.g. virtual passengers, virtual samples). However, virtualization is used in more and more fields (e.g. virtual idols for children), which raises the question when a virtual entity is really useful.

Method: literature and case analysis; construction of patterns

Result: Research of virtualization examples; classification of suitable cases with patterns; prognosis of fields for further virtualizations of the future.

Reference: WW

Impact of modern IT trends on agile transformation

Motivation: Motivation for agile methods was and still is in a narrower sense that a transfer of necessary features from the business to the technology department has to be formed organizationally. Some developments for requirements engineering and implementation will lead to disruptions in this bridge of disciplines (e.g., low code, outsourcing, DevOps).

Method: Well-founded selection of relevant trends; scenario development with implications; adaptation of process models.

Outcome: For the major technology trends, describe how agile process models will change with all areas.

Definition of the "dirty line" in business processes

In many particularly efficient process chains, there are partners/participants who add value through precarious conditions/unethical behaviour. These are often the suppliers in platform models or often the raw material producers in SCM. This paper will define (similar to the Line of Visibility) a kind of "dirt line" and demonstrate it on typical end-to-end processes.

Method: Literature analysis/interrogation if necessary; reference modeling.

Result: own definition; example models

Topics on “Design Science”

Importance of temporary organizations

Motivation: Particularly in the context of agile developments, fast and creative organizational structures emerge that often operate detached from cumbersome large-scale enterprises. While incubators or similar constructs exist for a certain time, temporary projects (e.g., with SCRUM) are often of very short duration. Currently, however, it remains unclear what principles these organizations follow to implement agile methods.

Method: Literature analysis; construction/adaptation of a model; practical application in the form of a study on the significance in practice.

Outcome: Collection of definitions and views of temporary organizations; design of a life cycle of this form of organization; definition of good practices (e.g. transfer from insights of incubators or classical project management); measurement of diffusion in corporate practice.

Requirements of Metaverse and BPM

Motivation: The virtual representation of realities is currently an important IT trend. This thesis will investigate the impact of this technology on BPM. Thereby (a) metaverse in processes/models, (b) metaverse in BPM initiatives and/or (c) metaverse for process orientation in general will be addressed. First, a derivation of requirements is to be performed based on literature, then a mapping/adaptation of known BPM models is to be performed.

Method: Literature analysis; Reference modeling

Result: Adapted standard models of BPM/list of requirements

Reference: SB 2023/RO

Your own topic - for example in the company?

Motivation: Topics in the areas of process management/modeling, IT management, digital business and business-IT alignment are welcome. Please make an appointment during office hours.