

Overview on Seminar Topics

Winter 2016/17

Institute of Information Systems and Marketing (IISM)
Karlsruhe Service Research Institute (KSRI)

Research Group “Information Systems and Service Design”

The role of business processes in business models

BA



Supervisor: *Dominik Augenstein*

Problem Description: *Business processes are a key enabler to actually implement business models. Therefore, it should be natural, that business models also contain at least high level process elements. However, business models tend to be very static and not provide many process-oriented aspects. The question to be addressed in this seminar is the following: To what degree are process elements captured in the different business model concepts today?*

Goal of the Thesis: *The student should show, if and what process elements are included in the common business models*

Starting Literature:

- *Osterwalder, Alexander (2004): The Business Model Ontology – A Proposition in a Design Science Approach.*
- *Lindgren, Peter; Rasmussen, Ole Horn (2013): The business model cube. In: Journal of Multi Business Model Innovation and Technology 1 (2), S. 135–182.*
- *Lucassen, Garm; Brinkkemper, Sjaak; Jansen, Slinger; Handoyo, Eko (2012): Comparison of Visual Business Modeling Techniques for Software Companies. In: International Conference of Software Business: Springer Berlin Heidelberg, S. 79–93*

Supporting digital transformation through business models

Supervisor: Dominik Augenstein

Problem Description: *Digital transformation is a topic, every company has to cope with. Through new trends like the internet of things or industry 4.0, companies have to face the challenges of a transformation process. However, the used procedures are not standardized and every company goes their own way. What they have in common is to face the problem, how can the strategies, visualized in the business models be broken down to the processes. The question for the thesis student is to show, how flexible the business models are, to be able to break down the strategy to the operational level at the example of the business model canvas.*

Goal of the Thesis: *Outline the flexibility of the business model canvas when breaking down a strategy to the operational layer.*

Starting Literature:

- Osterwalder, Alexander (2004): *The Business Model Ontology – A Proposition in a Design Science Approach.*
- Lucassen, Garm; Brinkkemper, Sjaak; Jansen, Slinger; Handoyo, Eko (2012): *Comparison of Visual Business Modeling Techniques for Software Companies. In: International Conference of Software Business: Springer Berlin Heidelberg, S. 79–93*
- Töpfer, Armin; Lindstädt, Gerhard; Förster, Kati (2002): *Balanced Score Card. In: Controlling 14 (2), S. 79–84.*

Task-technology fit in the services industry BA

Supervisor: Dennis Hummel

Problem Description: *Task-technology fit is a model developed by Goodhue and Thompson in 1995 and describes “the degree to which a technology assists an individual in performing his or her portfolio of tasks.” Task-technology fit has been applied numerous times (e.g. the paper has been cited by more than 3,600 other studies) in many different contexts. Yet, it is unclear if the studies that were undertaken in the services industry reach similar conclusions as to which tasks (e.g. transfer money) are performed with which technology (e.g. ATM, online, branch, etc.). Thus, a literature review is an appropriate method to gain an overview of a potential consensus or possible inconsistencies concerning task-technology fit in the services industry.*

Goal of the Thesis: *Conduct a literature review on task-technology fit in the services industry*

Starting Literature:

- Goodhue, Dale L., and Ronald L. Thompson. "Task-technology fit and individual performance." *MIS quarterly* (1995): 213-236.
- Sousa, Rui, et al. "Customer Use of Virtual Channels in Multichannel Services: Does Type of Activity Matter?." *Decision Sciences* 46.3 (2015): 623-657.
- Hoehle, Hartmut; Huff, Sid; and Venkatesh, Viswanath, "DEVELOPMENT AND VALIDATION OF AN INSTRUMENT TO MEASURE THE SERVICE-CHANNEL FIT OF ELECTRONIC BANKING SERVICES" (2012). *ECIS 2012 Proceedings*. Paper 132.

Nudging consumers towards digital channels

MA

Supervisor: Dennis Hummel

Problem Description: *Due to cost pressure, many service companies (e.g. banks) digitize part of their business and increasingly serve customers in digital channels (e.g. online, mobile, etc.). Thus, these channels gain importance and service companies continuously extended their offerings during the last years. Yet, in some areas (e.g. insurance, banking, government services) consumers are still hesitant to choose digital channels for the purchase or use of services. Companies can decrease their costs massively by nudging consumers towards digital channels. Some scholars have examined ways to influence the channel choice of consumers (e.g. by design principles of digital channels) in the past but a coherent picture of these studies is missing. In essence, there is a gap to conduct a literature review on the possibilities and boundaries to nudge consumers towards digital channels. Thereby, the student needs to gather a deeper understanding for the fundamental concepts, such as digital channels, digital services, nudging or design principles.*

Goal of the Thesis: *By (1) conducting a literature review and (2) studying real-world digital channels (e.g. Amazon.com, booking.com) develop a mapping of principles to nudge consumers towards choosing digital channels for purchase and use of services*

Starting Literature:

- Williams, K., Chatterjee, S., & Rossi, M. (2008). Design of emerging digital services: a taxonomy. *European Journal of Information Systems*, 17(5), 505–517.
- Zarifopoulos, M. & Economides, A. A. (2009). Evaluating mobile banking portals. *International Journal of Mobile Communications*. Vol. 7, No. 1, pp. 66-9
- Bauer, Hans H., Maik Hammerschmidt, and Tomas Falk. "Measuring the quality of e-banking portals." *International journal of bank marketing* 23.2 (2005): 153-175.
- Tinworth, A. (2012). What is Digital Service Design? | NEXT Network. Retrieved from <http://nextconf.eu/2012/08/what-is-digital-service-design/>

Understanding pervasive games

Supervisor: *Benedikt Morschheuser*

Problem Description: *Pervasive games are a new form of interactive and intelligent digital service system that utilize computer technology to provide interactive, ubiquitous and augmented playgrounds in the physical world. The recent success of Pokémon Go demonstrates how pervasive games can motivate millions of users to explore physical playgrounds. However, we do know little about the design of effective pervasive games:*

- *What are the differences between gamification, pervasive games and games?*
- *Why do people play pervasive games?*
- *What are typical design patterns of pervasive games?*

Goal of the Thesis: *Aim of this study is to conduct a systematic literature review on pervasive games to identify patterns in the design and effects of pervasive games?*

Starting Literature:

- *Montola, M., Stenros, J., & Waern, A. (2009). Pervasive games: theory and design. Morgan Kaufmann Publishers Inc..*
- *Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: defining gamification. In Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments (pp. 9-15). ACM.*
- *Björk, S., & Peitz, J. (2007). Understanding pervasive games through gameplay design patterns. In Situated Play, Proceedings of DiGRA 2007 Conference (pp. 440-448).*
- *Jeger, K. (2007). Pervasive game flow: Understanding player enjoyment in pervasive games*

Utilizing Big Data Analytics in Team Research – A systematic literature review

Supervisor: *Karl Werder*

Problem Description: *Within this seminar work, the student will learn to conduct a systematic literature review. Therefore, he/she will have to define key concepts, develop and execute a rigorous search strategy. The result will be an overview of the state-of-the art research on the use of big data within team research.*

Goal of the Thesis: *The student is expected to provide an overview of the identified studies with their main data source and a list of constructs used with their respective operationalization.*

Starting Literature:

- *Müller, O., Junglas, I., vom Brocke, J., & Debortoli, S. (2016). Utilizing big data analytics for information systems research: challenges, promises and guidelines. European Journal of Information Systems.*
- *Kozlowski, S. W., Chao, G. T., Chang, C. H., & Fernandez, R. (2016). Team dynamics: Using “big data” to advance the science of team effectiveness. Big data at work: The data science revolution and organizational psychology. New York, NY: Routledge Academic.*
- *Anderson, J. C., & Gerbing, D. W. (1982). Some methods for respecifying measurement models to obtain unidimensional construct measurement. Journal of marketing research, 453-460.*

The Role of Affect in Development Teams – An Integrative Framework

Supervisor: *Karl Werder*

Problem Description: *The seminar work provides a chance to dive into the process of conducting a systematic literature review. Therefore, the student will define key concepts and familiarize himself/herself with team affect in the context of systems and service development.*

Goal of the Thesis: *As a result, the student proposes a new comprehensive framework that identifies antecedents and outcomes of affect in development teams.*

Starting Literature:

- Barsade, S.G. and Gibson, D.E. (2007), “Why Does Affect Matter in Organizations?”, *Academy of Management Perspectives*, Vol. 21 No. 1, pp. 36–59.
- Homan, A.C., Van Kleef, G. a. and Sanchez-Burks, J. (2016), “Team members’ emotional displays as indicators of team functioning”, *Cognition and Emotion*, Vol. 30 No. 1, pp. 134–149.
- Jurado, F. and Rodriguez, P. (2015), “Sentiment Analysis in monitoring software development processes: An exploratory case study on GitHub’s project issues”, *Journal of Systems and Software*, Elsevier Ltd., Vol. 104, pp. 82–89.

The Effects of Sound and Visual Stimuli on Operational Decision Makers' Situation Awareness: A Structured Literature Review

BA/MA



Supervisor: Mario Nadj

Problem Description: *The rise of the Internet of Things has increased the potential to proactively trigger notifications and subsequently make operational decision makers aware of imminent issues or breakdowns. Thereby, visual and auditory stimuli represent important facilitators of operational decision makers' situation awareness in dynamic and complex environments. Situation awareness is defined as the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future. Understanding exactly how our perception, comprehension, and anticipation change in the presence of visual and audio stimuli can potentially impact the design of notification systems, thus creating more effective systems for operational decision makers. However, despite this potential, the effects of sound and visual stimuli on an operational decision maker's situation awareness are scarcely addressed in previous studies and warrant future examination. We take this circumstances as the research motivation to study this relation in a structured literature review.*

Goal of the Thesis: *Identify variables and relationships examined in prior studies on the effect of sound and visual stimuli on operational decision makers' situation awareness*

Starting Literature:

- Paul M. Salmon , Neville A. Stanton & Kristie Lee Young - Situation awareness on the road: review, theoretical and methodological issues, and future directions
- Shamel Addas and Alain Pinsonneault - The many faces of information technology interruptions: a taxonomy and preliminary investigation of their performance effects

The Effects of Notification Frequency on Operational Decision Makers' Situation Awareness: A Structured Literature Review

Supervisor: Mario Nadj

Problem Description: *Recent advances in computing power have led to an unprecedented ability to trigger notifications at a high levels of frequency and subsequently present information when and where operational decision makers need it. Frequency is linked to the rate at which notifications are occurring, offering an up-to-date view on current situations. Having more frequent access to information is a benefit in principle. However, the flood of available information challenges the human being's ability to find what is informative or meaningful for its tasks contributing to feelings such as "information overload" or "interruption irritability". Thus, an operational decision maker's situation awareness comprises an important success factor to evaluate weather an individual perceives, understands and anticipates this flood of frequent information. However, despite these potentials and challenges, the relation between notification frequency and situation awareness is scarcely addressed in current studies and requires further examination. We take these circumstances as the research motivation to examine this relation in a structured literature review.*

Goal of the Thesis: *Identify variables and relationships examined in prior studies on the effect of notification frequency on operational decision makers' situation awareness*

Starting Literature:

- Paul M. Salmon , Neville A. Stanton & Kristie Lee Young - Situation awareness on the road: review, theoretical and methodological issues, and future directions
- Shamel Addas and Alain Pinsonneault - The many faces of information technology interruptions: a taxonomy and preliminary investigation of their performance effects

Eye-based Interaction in Computer Applications: State-of-the-Art Overview and Pros & Cons Analysis

BA



Supervisor: Peyman Toreini

Problem Description: *Today, eye-tracking is used successfully as a measurement technique not only in the laboratory but also in commercial applications, such as marketing research and usability studies. It has been thought for long that they have the potential to become important computer input devices as well. Moreover, using eye-gaze information as a form of input can enable a computer system to gain more contextual information about the user's task, which in turn can be leveraged to design interfaces that are more intuitive and intelligent. Based on recent technological advances and the advent of affordable eye trackers, there is a growing interest in using them as an input device in different types of interfaces and applications. Interaction techniques which can use gaze information to provide additional context and information to computing systems have the potential to improve traditional forms of human-computer interaction.*

Goal of the Thesis: (1) *Provide an overview of the eye-based human-computer interaction techniques and applications*
(2) *Discuss findings on the advantages and disadvantages of using this new type of interaction in applications*

Starting Literature:

- *Bulling, A., Gellersen, H.: Toward mobile eye-based human-computer interaction. IEEE Pervasive Comput. 9, 8–12 (2010).*
- *Morimoto, C.H., Mimica, M.R.M.: Eye gaze tracking techniques for interactive applications. (2004).*
- *Majaranta, Päivi, and Andreas Bulling. "Eye tracking and eye-based human-computer interaction." Advances in physiological computing. Springer London, 2014. 39-65. 1.*

Interactive Information Visualization for Predictive Analytics: A literature Review and Classification

MA



Supervisor: *Peyman Toreini*

Problem Description: *Predictive analytics is a broad term describing a variety of statistical and analytical techniques used to develop models that predict future events or behaviors. As an example, predictive maintenance refers to the intelligent monitoring of equipment to predict future failures in advance. These systems collect vast amounts of operational data about machines' conditions and use predictive analytics techniques in order to plan maintenance before the failure occurs. Supporting users of such systems with an advanced visualization is crucial to use the full potential of predictive analytic systems and their capabilities. Moreover, interactive techniques allow the users of such systems to change the representation of data, filter out subsets of transactions for further investigation, etc. and support them in their decision-making process and accomplishing their tasks.*

Goal of the Thesis: *(1) Provide an overview of the interactive data visualization for predictive analytic scenarios (2) Classify interactive data visualization techniques based on predictive analytic user's tasks.*

Starting Literature:

- Shmueli, Galit, and Otto Koppius. "Predictive analytics in information systems research." Robert H. Smith School Research Paper No. RHS (2010): 06-138.
- Gualtieri, M., and Curran, R. 2015. "The Forrester Wave™: Big Data Predictive Analytics Solutions, Q2 2015," Forrester Research, pp. 1–18 (available at https://www.predixionsoftware.com/Portals/0/Analyst Reports/The Forrester Wave_ Big Data Predictive Analytics Solutions_ Q2 2015.pdf).
- Yi, J.S., Kang, Y.A., Stasko, J., Jacko, J.: Toward a deeper understanding of the role of interaction in information visualization. IEEE Trans. Vis. Comput. Graph. 13, 1224–31 (2007).

Review on consequences of Flow in IS

BA



Supervisor: Raphael Rissler

Problem Description: Enterprise systems are intended to provide an integrated information system environment that facilitates the efficient and effective completion of business tasks. Recent advances in the field of enterprise systems combine transactional and analytical processing in a real-time environment such as demonstrated by SAP's S/4 HANA offering. This new class of real-time systems comes with various interesting capabilities. One specific capability with regards to advancing user interaction is the ability to provide real-time notification to support the user during the execution of business tasks. This new capability is able to foster a focused mental state called "flow". A well-known concept from psychology coined by Mihály Csíkszentmihály. However notifications may also interrupt the users in their current task and hence can also be considered as a form of IT-mediated interruption.

Goal of the Thesis: Conduct a state-of-the-art literature review on "flow" with the specific focus on empirical studies within the field of Information Systems (IS) and the **consequences** of flow.

Starting Literature:

- Mahnke, R., Benlian, A., and Hess, T. 2014. "Flow Experience in Information Systems Research : Revisiting its Conceptualization , Conditions , and Effects," *Thirty Fifth International Conference on Information Systems*, pp. 1–22 (doi: 10.13140/2.1.4852.0486).

Review on antecedents of Flow in IS

MA

Supervisor: *Raphael Rissler*

Problem Description: Enterprise systems are intended to provide an integrated information system environment that facilitates the efficient and effective completion of business tasks. Recent advances in the field of enterprise systems combine transactional and analytical processing in a real-time environment such as demonstrated by SAP's S/4 HANA offering. This new class of real-time systems comes with various interesting capabilities. One specific capability with regards to advancing user interaction is the ability to provide real-time notification to support the user during the execution of business tasks. This new capability is able to foster a focused mental state called "flow". A well-known concept from psychology coined by Mihály Csíkszentmihály. However notifications may also interrupt the users in their current task and hence can also be considered as a form of IT-mediated interruption.

Goal of the Thesis: Conduct a state-of-the-art literature review on "flow" with the specific focus on empirical studies within the field of Information Systems (IS), and the **antecedents** of flow.

Starting Literature:

- Mahnke, R., Benlian, A., and Hess, T. 2014. "Flow Experience in Information Systems Research : Revisiting its Conceptualization , Conditions , and Effects," *Thirty Fifth International Conference on Information Systems*, pp. 1–22 (doi: 10.13140/2.1.4852.0486).
- Finneran, C. M., and Zhang, P. 2005. "Flow in Computer-Mediated Environments: Promises and Challenges," *Communications of AIS (2005:15)*, pp. 82–101 (doi: Article).

The role of design in service research

Supervisor: Stefan Morana

Problem Description: *Design Science Research (DSR) is an important research paradigm in the Information Systems (IS) community with a rich methodological baseline. DSR comprises both, the design process (verb) applied in the research project as well as the design artifact (noun) of the research project. Service Research (SR) addresses the value-cocreation configurations of people, technology, other internal and external service systems, and information. Recently, the SR community called for more design research, but there is little methodological knowledge in the SR domain available. Thus, the DSR methodology should be adapted to the special characteristics of SR and the actually created service system (artifact). The adapted “DSR 4 SR” methodology and artifact descriptions should be used to classify existing service research and evaluated validity and usefulness of the “DSR 4 SR” methodology.*

Goal of the Thesis: *Conduct a literature review on service research and classify the identified research into the “DSR 4 SR” methodology as well as the service artifact.*

Starting Literature:

- Chandra, L., Seidel, S., & Gregor, S. (2015). Prescriptive Knowledge in IS Research: Conceptualizing Design Principles in Terms of Materiality, Action, and Boundary Conditions. In 48th Hawaii International Conference on System Sciences (HICSS) (pp. 4039–4048).
- Gregor, S.; Hevner, A. (2013): Positioning and Presenting Design Science Research for Maximum Impact. In: MIS Quarterly 37 (2), pp. 337–355.
- Kuechler, Bill; Vaishnavi, Vijay (2008): Theory Development in Design Science Research: Anatomy of a Research Project. In Eur J Inf Syst 17 (5), pp. 489–504.
- Ostrom, A.; Parasuraman, A.; Bowen, D.; Patricio, L.; Voss, C. (2015): Service Research Priorities in a Rapidly Changing Context. In: Journal of Service Research 18 (2), pp. 127–159.

You look like you require assistance

Supervisor: Stefan Morana

Problem Description: Assistance design features, e.g. decisional guidance, explanations, decision aids, and recommender, support individuals in their decision making and task execution. Most of the assistance features are either invoked manually or ever present, which might result in annoyed or dissatisfied users. A famous example for this is Clippy by Microsoft. Researchers propose to provide assistance in an intelligent invocation style. In order to provide the assistance in an intelligent fashion, the assistance system need to somehow identify the individuals' need for assistance. However, there is little knowledge and theories on which individuals' physiologic or psychological patterns, behaviors, activities, or states can be used as a reliable indication for individuals' need for assistance. This seminar thesis conducts a review on empirical as well as conceptual research investigating individuals' need for assistance.



Goal of the Thesis: Conduct a literature review on empirical and conceptual research investigating individuals' need for assistance in the information systems, human-computer interaction, manufacturing, and computer science domain.

Starting Literature:

- Gregor, S., & Benbasat, I. (1999). Explanations from Intelligent Systems: Theoretical Foundations and Implications for Practice. *MIS Quarterly*, 23(4), 497–530.
- Hold, P., & Sihn, W. (2016). Towards a model to identify the need and the economic efficiency of digital assistance systems in cyber-physical assembly systems. In 1st International Workshop on Cyber-Physical Production Systems (CPPS).
- Wandke, H. (2005). Assistance in human-machine interaction: A conceptual framework and a proposal for a taxonomy. *Theoretical Issues in Ergonomics Science*, 6(2), 129–155.

User-involved Design Practices in Digital Service Design Processes: A State-of-the-Art Overview

BA

Supervisor: Xuanhui Liu

Problem Description: *Nowadays, in the domain of digital service design, designers emphasize a lot on user-involved design processes, which does not mean users need to participate in the entire processes or in every design activity. For example, when analyzing Personas in the planning stage, real users don't need to participate in this design activity, but when applying Eyeface to do user research, users must be involved. Hence, there is a need to have an overview of user-participated design practices, which can be regarded as a basis to benefit design processes effectively and efficiently.*

Goal of the Thesis: *This seminar thesis aims to conduct a systematic literature review on user-involved design practices in digital service design processes.*

Starting Literature:

- Lasa, Ganix, Daniel Justel, and Aiur Retegi. 2015. "Eyeface: A New Multimethod Tool to Evaluate the Perception of Conceptual User Experiences." *Computers in Human Behavior* 52: 359–63.
- Slegers, Karin, and Verónica Donoso. 2012. "The Impact of Paper Prototyping on Card Sorting: A Case Study." *Interacting with Computers* 24(5): 351–57.

Conceptualization of Digital Service Design (DSD) : A State-of-the-Art Overview

MA



Supervisor: Xuanhui Liu

Problem Description: *The exist conceptualizations of design either focus on physical product design or human-based service design. However, in a digital world, digital properties cannot be overlooked when conceptualizing design. Thus, a conceptualization of DSD is needed, which is not only a standard to evaluate design outcomes but also guidance for designers to conduct practices and activities in design processes. As a result, it is necessary to summarize the exist conceptualizations that are related to digital service in the state-of-the-art literature.*

Goal of the Thesis: *This seminar thesis aims to conduct a systematic literature review to have an overview of dimensions that can be used to conceptualize digital service design.*

Starting Literature:

- Homburg, C., Schwemmler, M., & Kuehnl, C. 2015. "New product design: Concept, measurement, and consequences," *Journal of Marketing* 79, 41–56.
- Sá, Filipe, Álvaro Rocha, and Manuel Pérez Cota. 2016. "From the Quality of Traditional Services to the Quality of Local E-Government Online Services: A Literature Review." *Government Information Quarterly* 33(1): 149–60.

Gamification of Survey Designs – A Literature Review BA

Supervisor: Silvia Schacht

Problem Description: *In the IS community, the survey based data collection is more and more criticized as surveys collect purely self-reported data. In addition, conducting a survey-based data collection is related to much effort and low quality. Often, participants do not or only partly complete the survey resulting a low response rates and quality of participants' answers. Consequently, the value of the data collection is questionable. Gamification promises to motivate users of IS or participants in social networks.*

Goal of the Thesis: *This seminar thesis aims to examine the potential of gamification in survey-based designs. Therefore, a literature review should be conducted discussing the issues related to survey-based data collections and providing an overview on potential gamification mechanics that could increase the response rate and quality in surveys.*

Starting Literature:

- Downes-Le Guin, T., Baker, R., Mechling, J., Ruylea, E.: Myths and realities of respondent engagement in online surveys. *Int. J. Mark. Res.* 54, 613–633 (2012).
- Houston, M.J., Jefferson, R.W.: The Negative Effects of Personalization on Response Patterns in Mail Surveys. *J. Mark. Res.* 12, 114–117 (1975).
- Johnson, A.J., Mills, J., Dayan, Y.: You're the boss! Time to place the respondent at the forefront of our survey design. *Int. J. Mark. Res.* 50, 698–701 (2008).
- McGoldrick, P.J., Keeling, K.A., Beatty, S.F.: A typology of roles for avatars in online retailing. *J. Mark. Manag.* 24, 433–461 (2008).
- Wiseman, F.: Factor Interaction Effects in Mail Survey Response Rates. *J. Mark. Res.* 10, 330–333 (1973).