University of Cologne
Faculty of Management, Economics and Social Sciences
Information Systems Area

Bachelor Seminar on Information Systems and Digital Technology
Topic Proposals

Term: Winter 20/21

Chair for Information Systems and Systems Development (Prof. Dr. Recker)

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Digital Options and Organizational Dynamism

Advances in digital technologies provide organizations with increasing options, thus requiring a re-evaluation of their capabilities. Digital options have been suggested to influence organizational agility (Sambamurthy, Bharadwaj, & Grover, 2003) and given their increasing role in todays' products and services, these offerings are shaped more and more by their digital characteristics. For example, products and services are modular and interconnected. As a result, they become more malleable and generative (Yoo, 2010). With the increasing digital options, internal and organizational changes occur that influence organizational agility.

We suggest that these developments lead to drastic increase in organizational dynamism. In reflection of environmental dynamism, we define organizational dynamism along the speed, the unpredictability, and the hostility of internal change of the organization. Organizational dynamics or the lack thereof influences the context in which organizational capabilities are

developed (Liang, Wang, Xue, & Ge, 2017). Furthermore, organizational dynamism influences how organizational capabilities are instantiated by its members (Teece, Peteraf, & Leih, 2016). Thus, organizational dynamism impacts the degree and form of capabilities that an organization requires to succeed. Neglecting this important organizational phenomenon under conditions of contemporary digitally-enabled economies results in mismatching levels of organizational capability and ultimately threaten an organization's survival.

Fundamentals on Scientific Work

The students learn the fundamentals of scientific work via the Flipped Classroom on Scientific Work. A separate registration (and preparation) is necessary:

- https://www.ilias.uni-koeln.de/ilias/goto_uk_fold_2445676.html

Students are exempted if they have already attended the classroom session of the Flipped Classroom on Scientific Work in the context of another course. If this is the case, students should contact werder@wiso.uni-koeln.de beforehand providing the course name and semester, in which the classroom session on scientific work has been accomplished.

For more information, please visit:

- https://www.wirtschaftsinformatik.uni-koeln.de/de/studies/theses/scientific-work/

Course Activities

The seminar work consists of five main phases:

1. The students acquire the basics of conducting scientific work via the Flipped Classroom.
2. The students learn the fundamentals concerning seminar's theme and literature reviews.
3. The students plan their seminar project by developing a research cycle and study protocol that is presented and discussed.
4. The improved study protocol guides the student to collect their data and assists them in their analysis. Hence, relevant data sources are identified, data is collected and processed in order to develop a key deliverable of the seminar project.
5. The seminar project is documented in a seminar paper. Before the final work is submitted, results are presented via video presentations and shared amongst the seminar participants.

Course Grading

The course grading is threefold:

- Study Protocol (15%):
  Written report including research problem and objective, outline of the paper, and plan of research method. Assessment in accordance with clarity, consistency, and comprehensiveness.
- Final Presentation (15%):
  Video presentation about your results. The 10-minute video should convey central

parts of your research project and results. Assessment in accordance with organization of content, oral, and overall presentation.
- Seminar paper (70%):
  Written report about the research project. Assessment in accordance with evaluation scheme provided in ILIAS.

Timeline

Please note that we had to cancel our webinars in the first two weeks due to collisions with other courses. We will provide online materials instead and postpone the webinar on literature reviews by one week. Please kindly refer to the ILIAS course for the new timeline and materials.

Updated timeline (23.10.2020):

- NEW DATE:
  27 October 2020, starting at 10:00, Online Meeting: Webinar on Scientific Work
  (not necessary if you have attended the classroom session on Scientific Work before)
- 30 October 2020, 08:00, Submission of topic preferences in ILIAS
- ~~02 November 2020, 09:00-10:30, Online Meeting: Seminar Kick-off~~
- ~~02 November 2020, starting at 11:00, Online Meeting: Webinar on Scientific Work (not necessary if you have attended the classroom session on Scientific Work before)~~
- ~~09 November 2020, 09:00-11:00, Online Material: Webinar on literature reviews and developing a study protocol~~
- NEW DATE:
  16 November 2020, 09:00-11:00, Online Meeting: Webinar on literature reviews and developing a study protocol
- 07 December 2020, 09:00-10:30 & 11-12:30, Zoom: Review and discussion of the study protocols
- 08 February 2021, Submission of final seminar paper and digital presentation of the results

We use Zoom video conferencing for our Online Meetings. Log-in details will be provided via ILIAS.

Participation Guidelines

Below is a list of mandatory and optional readings. It is imperative that all read all mandatory readings before our first online meeting on 09th of November. A more comprehensive list of readings is available online through the institute's website (https://www.wirtschaftsinformatik.uni-koeln.de/sites/wirtschaftsinformatik/pdfs/teaching/Reading_List-Research_in_IS.pdf).

In preparation for the session on the 7th of December, you have to submit your own study protocol and review study protocols of your peers. Within this session, you will discuss your own study protocol and the study protocols of your peers that have been assigned to you.

Readings

Mandatory:

Bandara, W., Furtmueller, E., Gorbacheva, E., Miskon, S., & Beekhuyzen, J. (2015). Achieving rigor in literature reviews: Insights from qualitative data analysis and tool-support. Communications of the Association for Information Systems, 37, 154-204.

Kitchenham, B. (2004). Procedures for performing systematic reviews. Keele, UK, Keele University, 33(2004), 1-26.

Rahwan, I., Cebrian, M., Obradovich, N., Bongard, J., Bonnefon, J. F., Breazeal, C., ... & Jennings, N. R. (2019). Machine behaviour. Nature, 568(7753), 477-486.

Rowe, F. (2014). What literature review is not: diversity, boundaries and recommendations. European Journal of Information Systems, 23(3), 241-255.

Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. MIS quarterly, xiii-xxiii.

Optional:

Recker, J. (2012): Scientific Research in Information Systems: A Beginner's Guide. Springer, Heidelberg, Germany.

Topics:

I. Empirical Studies on Organizational Dynamism

Dynamics in the environment play an important role as they determine external change the organization has to cope with (e.g., change in technology, society, policies and laws, competitors). As a rule of thumb, the ability to cope with change has to be higher if the organization is operating in a turbulent environment. However, change can also stem from inside the organization. When changes stem from an organization's internal environment, we refer to organizational change. Organizational change can be represented by the implementation of a new performance management system, the restructuring of internal IT systems and their support, and the internal strategy that supports actively approaching mergers and acquisitions (van Oosterhout et al., 2006). Organizational change is perpetual and persistent, and concerns organizational members, routines, and structures. For example, researchers investigated the impact of organizational restructuring and reconfiguration as two specific forms of organizational change in an empirical study (Girod & Whittington, 2017). Organizational dynamics describe the degree of unpredictability and speed of alterations in the organization's members, routines, and structures. Research has so far neglected the role of organizational dynamics (in contrast to environmental dynamics) for organizational change and IT-enabled change in particular.

Introductory literature:

- van Oosterhout, M., Waarts, E., & van Hillegersberg, J. (2006). Change factors requiring agility and implications for IT. European Journal of Information Systems, 15(2), 132-145. doi:10.1057/palgrave.ejis.3000601
- Weick, K. E., & Quinn, R. E. (1999). Organizational change and development. Annual review of psychology, 50(1), 361-386.
- Porras, J. I., & Silvers, R. C. (1991). Organization development and transformation. Annual review of psychology, 42(1), 51-78.
- Girod, S. J., & Whittington, R. (2017). Reconfiguration, restructuring and firm performance: Dynamic capabilities and environmental dynamism. Strategic Management Journal, 38(5), 1121-1133.

Supervisor: Dr. Janek Richter

II. Empirical Studies on Digital Options

Digital options are "a set of IT-enabled capabilities in the form of digitized enterprise work processes and knowledge systems" (Sambamurthy et al., 2003, p.247). With the increasing digitalization, more businesses adoption and integrate digital technology. Given their unique characteristics of the reprogrammability, homogenization of data, and self-reference, digital technologies start shaping work processes and knowledge systems within organizations. Digital options help increase this effect by generating more value from existing IT capability (Sambamurthy et al., 2003). More specifically, we distinguish between reach and richness of

digitized processes and digitized knowledge. Digitized process reach helps organizations to deploy IT-enabled processes in order to increase the flow within the value chain. Digitized processes richness related to the quality of information that are available about events within the value chain. Digitized knowledge reach helps an organization to increase access and comprehensiveness of their explicit knowledge about the organization and its network, whereas digitized knowledge richness relates to the tacit knowledge about the organization, its members and their processes.

Prior empirical research on digital options has merely investigated these interactions in isolated forms. For example, when investigating digitized process options (Chen et al., 2014), for digitized knowledge options (Park, Sawy, & Fiss, 2017) and focused on specific technologies, such as ERP systems (Karimi, Somers, & Bhattacherjee, 2009). Since the seminal work of Sambamurthy et al. (2003), research is lacking an overview of research that use digital options as a theoretical foundation for empirical work.

Introductory literature:

- Sambamurthy, V., Bharadwaj, A., & Grover, V. (2003). Shaping agility through digital options: Reconceptualizing the role of information technology in contemporary firms. MIS Quarterly, 27(2), 237-263.
- Chen, Y., Wang, Y., Nevo, S., Jin, J., Wang, L., & Chow, W. S. (2014). IT capability and organizational performance: the roles of business process agility and environmental factors. European Journal of Information Systems, 23(3), 326-342. doi:10.1057/ejis.2013.4
- Karimi, J., Somers, T. M., & Bhattacherjee, A. (2007). The role of information systems resources in ERP capability building and business process outcomes. Journal of Management Information Systems, 24(2), 221-260.
- Park, Y., El Sawy, O. A., & Fiss, P. C. (2017). The Role of Business Intelligence and Communication Technologies in Organizational Agility: A Configurational Approach. Journal of the Association for Information Systems, 18(9), 648-686.
- Rolland, K. H., Mathiassen, L., & Rai, A. (2018). Managing digital platforms in user organizations: the interactions between digital options and digital debt. Information Systems Research, 29(2), 419-443.
- Sandberg, J., Mathiassen, L., & Napier, N. (2014). Digital options theory for IT capability investment. Journal of the Association for Information Systems, 15(7), 1.

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III. Secondary Data on Organizational Change

Organizations are in flux, yet struggle to create sustainable, and meaningful change. While much work has been done on organizational change since Kurt Lewin's seminar work (Lewin, 1947), practitioners often rely on popular change models that have been developed using expert opinions, rather than model that are rooted in scientific evidences (Stouten, Rousseau, & De Cremer, 2018). Likewise, scholars in organizational agility–i.e., the ability to sense and respond to changes–tend to focus on environmental changes (Werder et al., 2020). However, the change

occurring within the organization is also expected to influence organizational agility and organizational performance. Research in this seminar topic seeks to investigate and synthesize research on organizational change with a focus on secondary data, commonly used in strategic management research (e.g., Girod & Whittington, 2017).

Introductory literature:

- Girod, S. J., & Whittington, R. (2017). Reconfiguration, restructuring and firm performance: Dynamic capabilities and environmental dynamism. Strategic Management Journal, 38(5), 1121-1133.
- Stouten, J., Rousseau, D. M., & De Cremer, D. (2018). Successful organizational change: Integrating the management practice and scholarly literatures. Academy of Management Annals, 12(2), 752-788.
- Tsoukas, H., & Chia, R. (2002). On organizational becoming: Rethinking organizational change. Organization science, 13(5), 567-582.

Of particular interest are i) measurements, conceptualizations of organizational change as well as ii) its antecedents and outcomes.

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IV. Secondary Data in Information Systems Research

Given the increasing availability and accessibility of large data sources, researchers can increasingly rely on secondary that, rather than having to collect and create data solely for the purpose of their research project. Scholars can now rely on the use of large data sources that are already available, avoiding the artificial generation of new data. Examples include open source communities, such as GitHub, where all group interactions are being stored in a publicly available manner. Also, social media, such as twitter provide vast amounts of data that can be used to investigate how people interact with technology. This, in conjunction with the increasing access and simplicity to scrape website in order to process publicly available data provide information systems and management scholars with new opportunities to conduct research, answering new questions that otherwise, we would not be able to answer (George, Haas, & Pentland, 2014; Günther, Rezazade Mehrizi, Huysman, & Feldberg, 2017; Müller, Junglas, Brocke, & Debortoli, 2016; Sivarajah, Kamal, Irani, & Weerakkody, 2017).

Introductory literature:

- Hirschheim, R., & Klein, H. K. (2012). A glorious and not-so-short history of the information systems field. *Journal of the Association for Information Systems*, *13*(4), 188.
- Müller, O., Junglas, I., Brocke, J. vom, & Debortoli, S. (2016). Utilizing big data analytics for information systems research: challenges, promises and guidelines. *European Journal of Information Systems*, *25*(4), 289–302. https://doi.org/10.1057/ejis.2016.2

- Günther, W. A., Rezazade Mehrizi, M. H., Huysman, M., & Feldberg, F. (2017). Debating big data: A literature review on realizing value from big data. *Journal of Strategic Information Systems*, *26*(3), 191–209. https://doi.org/10.1016/j.jsis.2017.07.003
- Sivarajah, U., Kamal, M. M., Irani, Z., & Weerakkody, V. (2017). Critical analysis of Big Data challenges and analytical methods. *Journal of Business Research*, *70*, 263–286. https://doi.org/10.1016/j.jbusres.2016.08.001

Of particular interest are i) data sources and measured variables as well as ii) research streams and theories that are being extended using secondary data.

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References

George, G., Haas, M. R., & Pentland, A. (2014). Big Data and Management. *Academy of Management Journal*, *57*(2), 321–326. https://doi.org/10.5465/amj.2014.4002

Girod, S. J. G., & Whittington, R. (2017). Reconfiguration, restructuring and firm performance: Dynamic capabilities and environmental dynamism. *Strategic Management Journal*, *38*(5), 1121–1133. https://doi.org/10.1002/smj.2543

Günther, W. A., Rezazade Mehrizi, M. H., Huysman, M., & Feldberg, F. (2017). Debating big data: A literature review on realizing value from big data. *Journal of Strategic Information Systems*, *26*(3), 191–209. https://doi.org/10.1016/j.jsis.2017.07.003

Lewin, K. (1947). Frontiers in Group Dynamics: Concept, Method and Reality in Social Science; Social Equilibria and Social Change. In *Human Relations* (Vol. 1). https://doi.org/10.1177/001872674700100103

Liang, H., Wang, N., Xue, Y., & Ge, S. (2017). Unraveling the Alignment Paradox: How Does Business—IT Alignment Shape Organizational Agility? *Information Systems Research*, *28*(4), 863–879. https://doi.org/10.1287/isre.2017.0711

Müller, O., Junglas, I., Brocke, J. vom, & Debortoli, S. (2016). Utilizing big data analytics for information systems research: challenges, promises and guidelines. *European Journal of Information Systems*, *25*(4), 289–302. https://doi.org/10.1057/ejis.2016.2

Sambamurthy, Bharadwaj, & Grover. (2003). Shaping Agility through Digital Options: Reconceptualizing the Role of Information Technology in Contemporary Firms. *MIS Quarterly*, *27*(2), 237. https://doi.org/10.2307/30036530

Sivarajah, U., Kamal, M. M., Irani, Z., & Weerakkody, V. (2017). Critical analysis of Big Data challenges and analytical methods. *Journal of Business Research*, *70*, 263–286. https://doi.org/10.1016/j.jbusres.2016.08.001

Stouten, J., Rousseau, D. M., & De Cremer, D. (2018). Successful Organizational Change: Integrating the Management Practice and Scholarly Literatures. *Academy of Management Annals*, *12*(2), 752–788. https://doi.org/10.5465/annals.2016.0095

Teece, D., Peteraf, M., & Leih, S. (2016). Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy. *California Management Review*, *58*(4), 13–35. https://doi.org/10.1525/cmr.2016.58.4.13

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Yoo. (2010). Computing in Everyday Life: A Call for Research on Experiential Computing. *MIS Quarterly*, *34*(2), 213. https://doi.org/10.2307/20721425