

Topics BWL Bachelor Thesis 2021

1. *Software Development Practices in Startup Companies*

Startup companies may be characterized by the potential to exponentially grow and the provision of highly innovative products. Especially in the software industry startup companies play an important role. These software startups primarily focus on developing new and innovative software-intensive products or services to create business value (Pantiuchina et al. 2017). Although established software development approaches, such as agile methodologies, may be considered suitable for software startups, the developers face challenges to follow a prescriptive method (Coleman and Connor 2008). Thus, the development practices in software startups often deviate from established processes.

In your bachelor's thesis, you should review the literature about software development practices in startup companies.

Coleman, G. and O'Connor, R.V. (2008), "An investigation into software development process formation in software start-ups", *Journal of Enterprise Information Management*, Vol. 21 No. 6, pp. 633-648.

Pantiuchina, J., Mondini, M., Khanna, D., Wang, X., and Abrahamsson, P. (2017), "Are Software Startups Applying Agile Practices? The State of the Practice from a Large Survey," AH. Baumeister et al. (Eds.): XP 2017, LNBP 283, pp. 167–183, 2017.

Karoline Glaser

2. *The Growth of Software Startups*

In the recent decade, several technology startups have evolved from small new ventures to successful global companies. Prominent examples include companies such as Facebook, Spotify, or Slack. In contrast, around 90% of all startups fail due to a variety of reasons, e.g., a lacking product-market fit, or marketing issues (Failory.com). While many reasons for startup failures are well understood, the knowledge about how technology startups successfully manage the rapid growth of their company is scattered. To approach the chronological description of the evolution of a startup company, various models that follow classic life cycle models of organizational growth have been used (e.g., Kroeger 1974).

In your bachelor's thesis, you should review the literature to provide an overview of the state-of-the-art knowledge about the growth of technology startups.

Karoline Glaser

3. *Software Development of Machine Learning Applications*

The importance of machine learning (ML) applications is indisputable today. Broadly, ML uses algorithms on data to learn from experiences to derive accurate predictions or detect previously unknown patterns (Gartner 2020). ML has made tremendous progress over the past years and the market for such solutions is still expected to grow. In order to leverage this growth, software providers are required to efficiently develop ML solutions. However, the nature of ML solutions entails challenges for software development (e.g., Wan et al. 2019) and causes deviations from well-known development processes.

In your bachelor's thesis, you should provide a literature review on software development practices of ML solutions.

Wan, Z., Xia, X., Lo, D., Murphy, G. 2019 "How does Machine Learning Change Software Development Practices?," *IEEE Transactions on Software Engineering*

Gartner. 2020. "Understand 3 Key Types of Machine Learning," Smarter With Gartner.
(<https://www.gartner.com/smarterwithgartner/understand-3-key-types-of-machine-learning/>)

Karoline Glaser

4. Phishing Awareness Trainings

Phishing, the attempt to obtain sensitive information by impersonating someone else, is one of the most common attack vectors in cybersecurity and a tremendous problem for enterprises. Both in research and practice, phishing awareness training has become the dominant approach of preparing users for phishing. This often happens by using experiments with fake phishing emails and studying the impact (e.g. Kumaraguru et al. 2009, Jensen et al. 2017).

In your bachelor's thesis, you should provide a review of the scientific literature on phishing awareness trainings.

Kumaraguru, P., Cranshaw, J., Acquisti, A., Cranor, L., Hong, J., Blair, M. A., & Pham, T. (2009, July). School of phish: a real-world evaluation of anti-phishing training. In *Proceedings of the 5th Symposium on Usable Privacy and Security* (pp. 1-12).

Jensen, M. L., Dinger, M., Wright, R. T., & Thatcher, J. B. (2017). Training to mitigate phishing attacks using mindfulness techniques. *Journal of Management Information Systems*, 34(2), 597-626.

Frederic Schlackl

5. Success Determinants of Phishing Emails

Phishing, the attempt to obtain sensitive information by impersonating someone else, is one of the most common attack vectors in cybersecurity and a tremendous problem for enterprises. Yet the danger posed by a phishing email varies considerably, ranging from mass-spammed fake messages easily detected by algorithms and people alike to carefully crafted spear-phishing messages. Similarly, recipient and context characteristics play a role in how susceptible a person is to phishing (Goel et al. 2017, Moody et al. 2017).

In your bachelor's thesis, you should provide a review of the scientific literature on the success determinants of phishing emails.

Goel, S., Williams, K., & Dincelli, E. (2017). Got phished? Internet security and human vulnerability. *Journal of the Association for Information Systems*, 18(1), 2.

Moody, G. D., Galletta, D. F., & Dunn, B. K. (2017). Which phish get caught? An exploratory study of individuals' susceptibility to phishing. *European Journal of Information Systems*, 26(6), pp. 564-584.

Frederic Schlackl

6. Web Users' Interaction with Privacy Policies

Privacy policies are the usually "fair warning and implicit consent" way of communicating what happens to the data of a website visitor. Yet, privacy policies are widely recognized to be deeply flawed at actually informing users about the appropriation of their data. Yet, they still have some effect. For example, the mere presence of a privacy policy increases people's trust in a website (Hui et al. 2007) and a privacy policy's readability further enhances this (Ermakova et al. 2014)

In your bachelor's thesis, you should provide a review of the scientific literature on how web users interact with privacy policies.

Hui, K. L., Teo, H. H., & Lee, S. Y. T. (2007). The value of privacy assurance: An exploratory field experiment. *MIS Quarterly*, 19-33.

Ermakova, T., Baumann, A., Fabian, B., & Krasnova, H. (2014). Privacy policies and users' trust: does readability matter?. *AMCIS 2014 Proceedings*.

Frederic Schlackl

7. Discrimination in online environments

Discrimination is prevalent during many online interactions, such as in online communities or on ridesharing platforms. For example, racial and LGBT biases are persistent obstacles for riders on ridesharing platforms so that minority groups face higher cancelation rates (Mejia and Parker 2020).

In this thesis, you should provide a review of the scientific literature on discrimination in online environments.

Mejia, J., & Parker, C. 2021. When transparency fails: Bias and financial incentives in ridesharing platforms. *Management Science*, 67(1): 166–184.

Florian Pethig

8. Open science in information systems research

Open science has set the goal to make research accessible to all levels of society. Some fields, such as psychology, have successfully advanced this practice, however, it is not yet very prevalent in information systems research.

In this thesis, you should provide a review of open science research practices (e.g., open data, open access) in information systems research.

Florian Pethig

9. Process monitoring and simulation techniques in business analytics

Process mining provides a basic level of insights into business processes. With the help of these insights, the complicated processes of any organization can be quantified and described. Using these new parameters, researchers can enhance the existing process monitoring and simulation techniques.

In this thesis, it is expected to collect the existing literature on this topic. Eventually, the results of this literature review prioritize the research opportunities to be done in this field.

Fareed Zandkarimi

10. Studying organizational routines with process mining

Management studies and the organizational science literature advocate organizational routines as a concept to investigate “behavioural regularities, which denote recurring analytic processes embedded in firms and performed by groups of individuals”. Process mining strives to “discover, monitor and improve real processes by extracting knowledge from event logs”. It is also perceived as an effective tool to assist researchers in studying organizational routines. What both fields have in common is their emphasis on event sequences as a valuable source of empirical evidence when studying behaviour. In this thesis, it is expected to collect the existing literature on the utilization of process mining techniques in studying organizational routines.

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Fareed Zandkarimi

11. Process mining data pre-processing using event log quality measures

Process mining requires a special dataset which is called an “event log”. Like any typical data science projects, a successful process mining project requires high-quality data. Event log pre-processing (e.g., noise removal, outlier detection, trace clustering). is usually responsible for this stage. In order to ensure the quality of an event log, we extract numerous quality measures from the event log. However, we do not clearly know which measures describe which problems the best, e.g., whether low graph centrality measure indicates a need for clustering.

In this project you are given a set of measures (implemented in Python) and a few event logs which require different pre-processing actions. You need to investigate those measures that define each log’s problems the best. Having a basic knowledge of statistics and familiarity with Python’s syntax are required for this project.

Fareed Zandkarimi