Developing Applications that Use the Blockchain

Abstract

This is the abstract. | Motivation | research question | purpose of study - what the study did | design on study | major findings/contributions | summarize your interpretations and conclusions

1 Introduction

1.1 Background

DevOps, commonly accepted as a combination of development and operation, is dramatically gaining its popularity among both academic researchers and industrial practitioners in recent years (Jabbari, Ali, Petersen, & Tanveer, 2016)(Erich, Amrit, & Daneva, 2017). It is described as a culture or set of principles to improve the collaboration between developers and operators. It is usually empowered by cloud computing, containerization, automatic testing, continuous integration or continuous delivery, and primarily aims at bridging the gap between developer and operation teams (Httermann, 2012).

DevOps is not a standalone concept or method, but closely related to other concepts or methodologies in software engineering (SE), especially agile, lean, continuous delivery and continuous deployment (Lwakatare, Kuvaja, & Oivo, 2016). They are based on different ideas but can be combined in practice and benefit from each other. Though these concepts have overlaps, similarities and differences, it is important to clarify these concepts to better understand and practice DevOps in both academic and industrial area. Furthermore, different methodologies can be used simultaneously in real world software development activities and benefit each other (Jabbari et al., 2016).

Agile development method(Beck et al., 2001) has been widely adopted by software industry and is accepted as the mainstream development method by software industry. Recently it is shown to have a close relationship with DevOps and a trend of adoption of DevOps by Agile Team(Lwakatare et al., 2016). Therefore, it is important to reveal the world wide trends in practice, and, furthermore, find out whether there is any significant regional characteristic in the world.

1.2 Purpose of study

The purpose of this study is to investigate the practice of introducing DevOps into Agile development. To be more specific, this study will address the following two research

questions:

- RQ1: what important aspects are the software development practitioners concerned about in the adoption of DevOps by Agile team?
- RQ2: Is there any significant difference among different regions or cultures? If yes, what are the differences?

1.3 Structure of the report

The rest of this report is organised as follows. In Sec. 2 the background and related work are described. Sec. 3 explains in detail the research method used in this study, and sec. 4 presents the main findings. Sec. 5 discusses and try to interprets the findings in previous section. Sec. 6 concludes the report and outlooks the possible future works.

1.4 Research design

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1.5 Key terms you are using

1.6 Contributions

2 Literature Review

2.1 Other findings

There are a few publications focusing on or including the topic of DevOps and agile. In (Httermann, 2012) DevOps is described as a broadened usage of agile. In this book, project development often contains five phases, namely inception, elaboration, construction, transition, and operations. While agile software development process spans from inception to transition, DevOps covers the stages from elaboration to operations, and may include other departments such as finance and human resource (HR). In (Jabbari et al., 2016) various aspects of the relationship between agile and DevOps was revealed by systematic mapping study. DevOps can be described as an extension of agile method and can achieve agile goals in software delivery and operation stages. From the overall point of view, agile and DevOps are complementary and DevOps can benefit from agile method, though DevOps cannot satisfy all principles in agile manifesto (Jabbari et al., 2016). The similar idea that DevOps is an evolution or extension of agile software development is also identified In (Lwakatare et al., 2016), where DevOps is compared to agile, lean and continuous deployment was studied by multivocal literature review. Further more, the authors also claim that DevOps and agile are related with respect to four topics, that is, 1) origin and background, 2) adoption, 3) implementation, and 4) goals and values. It is also described that DevOps and agile software development share some common principles and are motivated by similar goals and values. In (Erich et al., 2017) the DevOps usage in practice is studied by qualitative methods, in which the term DevOps is referred

by some organisations introducing agile and lean software development methods into the operational activities.

Some researches pay attention to more realistic problems. (Elberzhager, Arif, Naab, Süß, & Koban, 2017) presents a study focusing on the strategy, organisation, goal, and benefit of introducing DevOps into agile development, by detailed investigating the practical experience at Fujitsu Enabling Software Technology GmbH (Fujitsu EST). Another case study is also conducted to explore the mechanism of collaboration and particular dependency management in large-scale agile DevOps teams (Stray, Moe, & Aasheim, 2019). Practical issues about the reason, approach and benefits of introducing DevOps are studied by interview with practitioners from a range of European software companies that already follow agile processes (Erich et al., 2017). From the profession and employment point of view, the Knowledge, Skills and Abilities (KSA) for modern web application development are discovered and how these KSAs support DevOps are investigated (Bang, Chung, Choh, & Dupuis, 2013) from three real life web projects. In another paper (Hussain, Clear, & MacDonell, 2017), the KSAs required for DevOps is discovered from local job advertisements in New Zealand, as well as the Global Software Engineering (GSE) is revealed. In (Hemon et al., 2019b)(Hemon et al., 2019a) the authors studied the skills including both hard and soft skills, roles, and pattern of collaborations in transition from agile to DevOps.

2.2 Other methods

2.3 what's investigate and what's not

2.4 Time -back or future

2.5 Summarize the findings - research gap

3 Methodology

Qualitative research

- Data collection: Collect post and comments from online forums or websites such as reddit, linkedin groups, stackexchange, hacker news, infoworld, etc. Materials in Chinese community can be found in zhihu.com, the largest Chinese QnA website.

- Data analysis: Codify the data collected in previous step, following the scheme used in (Bang et al., 2013) and (Hussain et al., 2017). Data from different regions can be codified separately, and then combined to form a unified view.

- Output: The expected output of this research is the answers to the two research question:

  - the global trends of combination or adoption of DevOps with Agile method
  - the difference in trends among different regions or cultures around the world.

3.1 Reason of using this method

3.2 Effectiveness

3.3 Limitation

3.4 Area

3.5 Explain this method and its execution

3.5.1 Data Collection

3.5.1.1 Data Source   Data are collected from four websites, namely:

- quora.com: general question and answer (QnA) community
- <devops.stackexchange.com>: QnA community focusing on DevOps and related topics
- <reddit.com>: a general interest-based online community
- <zhihu.com>: largest Chinese QnA site

The first three ones are English sites and the fourth one is for collecting data in Chinese.

3.5.1.2 Data Searching   All three English sites are searched by condition "agile" and "DevOps". For Chinese data collection, the search keywords "agile" is translated into Chinese but "DevOps" are used literally because it is used so instead of translated in Chinese software development community.

3.5.2 Data Filtering

The search result are initially filtered based on the title, and only questions or discussion threads with a title stating or implying both agile and DevOps are preserved.

3.5.3 Data Analysis

3.5.4 how conducted

3.5.5 how captured

4 Result

4.1 Data overview

In this study 0 posts are codified and analysed. Number of records from each website are listed in table 0.

data source	Number
quora.com	0
devops.stackexchange.com	0
reddit.com	0
zhihu.com	0

4.2 main findings

4.2.1 Trends in adoption of DevOps in Agile method

The main findings in this paper can be classified into __ categories:

1. concept/definition
2. organisation/collaboration
3. goal/value
4. process/methodology
5. technology/tools

4.2.2 Regional Variations

4.2.2.1 Overview of regional data

region	Number
North America	0
Europe	0
India	0
China	0
Australia	na
Southeast Asia	na
Latin America	na

4.2.2.2 Regional findings

5 Discussion

5.1 Culture and principles over technology and tools

5.2 Contrast

compare the findings with previous works

5.3 Interpretation

5.4 Implications

6 Conclusions and Future Works

6.1 summarization

6.2 Main findings

6.3 Contribution

6.4 Future work

future work

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