Positive Customer Experience is Enhanced by Effective Agile Practices

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Abstract. This paper explores the connection between agile methods and digital customer experience, aiming to identify what are the hallmarks of a good agile way of working. The research is an exploratory case study consisting of interviews and analysis. In summary, the research suggests that the hallmarks of a good agile way of working are 1) breaking down tasks into sufficiently small pieces, 2) defining tasks precisely and releasing them to production evenly, 3) continuous improvement, and 4) good planning of sprints. These good agile operating methods can be seen in the development measures as a short lead time, a short time to export to production, low errors, and a high deployment frequency. According to the findings, these metrics are linked to the Net Promoter Score (NPS), a measure of customer experience. A team with sufficient technical capabilities team that utilizes agile operating methods is able to produce the desired things for customers at exactly the right time while constantly improving, so that the NPS is positive, and its direction is improving. On the other hand, the team's bad operating methods are also visible in the NPS meter – in this case, the NPS fluctuates strongly. Teams can obtain insightful supplementary data about their own practices by keeping track of development measures.

Keywords: agile methods · project management · software development · agile organization · customer experience

1 Introduction

Agile methods are a set of different lightweight and quickly responsive methods and their tools. Agile methods share similar values and principles based on the agile software declaration, which helps to optimize project management [4]. For example, Scrum, Lean and DevOps are examples of agile methods.

These methods, often the challengers of the traditional process models, have grown in popularity as part of project management and goal-oriented management around the world, both in the IT sector and outside of the IT sector. They are marketed as methods for increasing customer satisfaction and the success rate and efficiency of projects [1, 2]. However, it is not entirely clear which customer experience measures show the benefits of agile methods. It is also not clear which agile way of working methods affect customer experience, the success rate of projects and efficiency.

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The purpose of this paper is to explore a connection between agile methods and digital customer experience. The connection is explored through thematic interviews and analysis. The representatives of the theme interviews were selected from seven different self-directed technical teams ($n = 7$). Every team, which holds a significant role in the target organization for developing interactive mobile services, were included into the study. In this research, the following research questions are answered:

RQ1: How does an agile way of working and the technical ability supporting it affect the digital customer experience?

RQ2: In which customer experience metrics and agile metrics, we can see benefits of agile way of working?

RQ3: What are the hallmarks of good agile way of working and team's technical abilities?

To address the research questions, we have collected data in three phases. Initially an open interview was held with the target organization's goal-oriented management expert, where it was explained how the organization aims to influence the digital customer experience with agile methods. Based on the interview, themes were formed, and these themes were used to guide thematic interviews that were held with representatives of seven different teams. Customer experience and agile measures data was also collected from the organization's databases. The results of the interviews were used as explanatory factors in the analysis, which utilized data from customer experience and agile measures.

The results of this explorative case study indicate that there is a connection between agile methods and digital customer experience. The results can help teams to identify the best agile way of working methods in terms of customer experience.

2 Related Work

2.1 Agile Methods and Agile Measures

Agile methods are a set of different lightweight and quickly responsive methods and their tools. Agile methods share similar values and principles based on the agile software declaration. Agile methods such as Scrum, Lean and DevOps helps organizations to optimize their project management practices [4].

Scrum is a framework based on empiricism, i.e., experience thinking, which focuses on producing a software project that meets the customer's needs through phasing and continuous control [14, 15]. Project transparency, review, and adaptation are essentials in empirical process management, and these form the basis of Scrum.

DevOps can be considered a method of operation, whose purpose is to integrate software development and operations by narrowing the silo that traditionally exists between them [6]. DevOps can be considered as a logical extension of other agile methods such as Scrum. Software development plays an important role in DevOps automation, customer orientation and operational transparency [8].

In a key role in providing services and delivery is an agile self-directed team. The faster the team is able to make changes to the services, the faster customers can be offered value, and more likely, the customer experience will be positive. It is important to measure the performance of a team that uses agile methods in order to verify possible problem

areas in developing of services and thus increase the team's performance [5, 15]. The DevOps Research & Assessment (DORA) team has identified five key agile measures that can be used to measure development team's performance. The measures are the following: lead time for code changes, time to restore service, deployment frequency, change failure rate and reliability. With the help of these metrics, teams can be classified as top-level teams or low-level teams [5]. For example, a team with a short lead time is typically at the top level. The target organization of the research uses the same measures that DORA team identified, and the teams involved in this research were selected using these measures. There are teams that are at the top level in light of these measures and there are teams that are at a low level.

2.2 Digital Customer Experience and NPS

Digital customer experience can be defined as the customer's internal and subjective reaction to a digital product or service the customer interacts with [16]. The digital customer experience consists of all the organization's offering-quality, customer service, advertising, product and service features, usability and reliability of the product or service affect the customer experience [9]. The most important characteristics of a digital service in terms of digital customer experience are speed, functionality, performance, ease of use and reliability, as well as minimal errors [7]. In an ideal situation, product developers know how to develop a product forward based on how customers use the products or services and which issues in the product frustrate customers [9].

Customer experience can be measured with, for example, the NPS (Net Promoter Score) meter. NPS measures the customer's willingness to recommend, i.e., whether the customer would promote the organization or its services to others. NPS boils down to the question "On a scale of 0–10, how likely would you recommend our services/products to a friend or a family member?" Based on the points given, customers can be divided into promoters, passives, and detractors, that is, customers who are dissatisfied with the service. NPS is calculated using the formula $\%Promoters - \%Detractors = NPS$ [16].

2.3 Connection Between Agile Methods and Digital Customer Experience

The connection between agile methods and digital customer experience has not been studied at a sufficient level. There are only a few research papers discussing this topic.

According to Aghina et al. [1, 2], customer satisfaction can be improved by up to 30 percent with the help of agile methods. However, the report does not reveal which agile way of working methods affect the customer experience.

Bambauer-Sachse and Helbling [3] have studied the connection between agile methods and customer experience in a B2B context. In the B2B context, according to authors, satisfaction with the process is a more important factor in general customer satisfaction than satisfaction with the end result of the service [3]. Thus, Bambauer-Sachse and Helbling [3] look at the issue from a different perspective as we do in our case study, where the customers are not companies, but end users of a digital product.

According to Recker et al. [11], agile methods have a positive effect not only on the customer experience but also on the product's functionality, quality and staying within the budget. The research does not so much take a position as to which agile way of

working methods affect these positive results – instead, according to authors, different development practices influence the outcome. So, even this paper by Recker et [11] al is written from different perspective than this paper.

According to Olteanu [10], projects are completed faster and with less bugs with the help of agile methods compared to the traditional waterfall model. The research states that agile methods have influence the customer relationship but does not elaborate the more detailed effects.

As evident from the above, there is noticeable void in the current literature, as no studies address the exact extent to which team's agile practices can influence the final customer experience. The results of this paper take one step towards a more comprehensive understanding related to the topic.

3 Research Approach

The objective of the case study presented in this paper is to embody the connection between agile methods and digital customer experience. Three research questions have been set for the research. These questions are answered with the help of a case study.The focus of the research is on an organization that creates mobile services with interactive features. These services are utilized by hundreds of thousands of individuals. By "customers" in this paper, we mean end-users who use these mobile services. The target organization's most important customer experience measure is NPS. In the target organization, NPS can be anything on a scale of -100 to 100.

To answer the research questions, we have used a process consisting of three steps (Fig. 1). In the first stage, an open interview was held with the target organization's target management expert. In interview, it was mapped out how the organization strives to influence the digital customer experience with agile methods. Based on the interview, themes were formed, which were used later to guide the thematic interviews.

Before phase two (theme interviews), we had to identify the teams from the organization that develop these interactive mobile services, and whose customers are end-users. The target organization reports the performance of the teams considering different agile measures. Some teams are at the top level in the measures, there are mid-level teams, and teams at a lower level. We identified seven teams suitable for the research. These seven teams develop interactive mobile services for end users in the organization. Two teams are at the top level and five at the low level in terms of agile measures. All teams have nine developers and a product owner. The teams are therefore similar in composition.

In phase two (theme interviews) we interviewed representatives of all seven teams. The representatives were the product owners of the teams. In the target organization, the product owner is responsible for maximizing the value of the product and the work of the development team, and the practical tasks include managing the product's development queue and communicating with different stakeholders. Finally, in phase three (analysis), the data collected from the interviews were used as explanatory factors for analysis that used digital customer experience measures and agile measures.

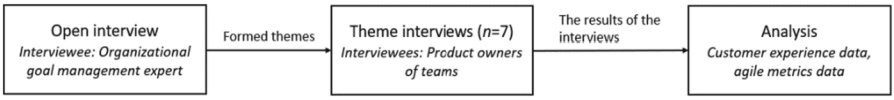

Fig. 1. Phases of the research

3.1 Data Collection

Data was collected from the previously mentioned interviews, which were eight in total – one open interview and seven thematic interviews. With the help of an open interview, data was collected on how the organization aims to influence the digital customer experience using agile methods. The purpose of the theme interview was to express and collect data on how the themes extracted from the open interview guide the team's activities and to look for hallmarks of a good agile way of working. All interviews were conducted remotely, and each interviewee gave consent for the answers to be used for research purposes. However, the answers are processed in such a way that the identity of the respondent (or the team) is not identifiable.

In addition to the interviews, data was collected from the organization's databases. For analysis, the data has been aggregated to the monthly level.

3.2 Data Analysis

The first phase of the analysis was the transcription of the open interview. After transcribing the open interview, the material was divided into themes, which is one of the work phases of qualitative analysis [13]. The material was divided into themes in Word by color-coding the written material so that sentences related to the same theme were marked with the same color. One researcher worked through the material in three rounds of iteration, re-color-coding the sentences and checking if they were still classified under the same topic. The data collection and classification were originally done as a thesis work of the main author of this article. Thematization can be considered an interpretative act [12], and in this research thematization requires subjective interpretation due to the nature of interview. Therefore, only one researcher has been involved in the thematization of the material, but the thematization was discussed with the supervisor of the work.

In the end, it was settled on the following themes: self-direction, common goals, continuous learning, continuous improvement, the ability to understand the needs of customers and the ability to get things done. These are the themes with which the organization strives towards a better customer experience. For example, the sentence.

> *"And refactoring is the choice of this model. Because we work iteratively, we are constantly in a situation where we have to build the same thing again"*
> (Organizational project management expert).

was classified under the theme continuous improvement. The sentence.

> *"At the same time, we learn all the time and are able to focus what we do in even smaller pieces more precisely on the goal"*
> (Organizational project management expert).

was classified under the theme continuous learning. The theme of the ability to get things done was classified as, for example, the sentence:

"*The work must be done in order for it to produce any value for the customer*". (Organizational project management expert).

When the theme interviews were also transcribed, we started looking for connections in the collected data. We look for a connection between Agile measures and NPS data by doing a cross-comparison by gathering all the teams in the same table. One table dealt with the emergence of agile way of working methods, agile measures, production usability, recovery from disruptions and customer satisfaction by classifying these into levels: low, average, good, high. In another table, we compiled the differences and similarities between the teams. The table covered agile measures, monitoring customer feedback, continuous learning, continuous improvement, shared goals, release to production cycle and the ability to complete sprint tasks. Finally, we started looking for explanatory power for the observations in the tables in the materials of the thematic interviews. The results are presented in the next section.

4 Results

In this section, we present the results of our case study. Based on the analysis, it is possible to identify the connection between agile methods and customer experience. Based on the results, it is also possible to compile the best practices for improving the customer experience using agile methods.

4.1 Teams at the Top Level in the Light of Agile Measures

According to the agile measures, the top-level development teams unfortunately did not fully fit in the scope of the research, as the customers are internal customers and not actual end-users. However, it is still important to address the interview results of these teams to gather the best practices that make these teams top teams. Let's call these teams A and B. The teams utilize Scrum and DevOps.

The common goals are reflected in the prioritization of the team's tasks and in directing the activities. Agreed goals are given high priority. Self-directedness is perceived as the freedom to decide on the team's ways of working and to make decisions independently.

Continuous learning is always done in teams as needed. Team B uses shared learning. One member studies a new thing. After this, the team member goes through the new issue with the rest of the team, teaching and supporting others. Team B feels that they have sufficient technical ability to solve various problems.

The teams consider continuous improvement in their operations. Technical debt is dismantled in teams by refactoring and developing new, more sustainable solutions. Time is reserved for refactoring in sprints.

In team B, the sprints are planned so that 60% of the working time is reserved for tasks that are known in advance. The remaining 40% of the working time is reserved for tasks that cannot be predicted in advance. The tasks are broken down into small enough entities so that it is possible to implement them during the two-week sprint. Each task is also defined precisely enough, and not a single task is taken up until it has been defined precisely enough.

Team B's agile way of working methods support development efficiency. According to the interview results, it is essential to maintain the team's skills and to plan the sprints accurately. When planning sprints, one should take into account 1) the available working time 2) things that cannot be prepared for in advance 3) splitting the tasks into sufficiently small entities, and 4) that everyone's task should be defined sufficiently precisely, before it is taken to the agenda.

4.2 Teams at the Low Level in the Light of Agile Measures

Five low-level teams participated in the research. However, three teams were dropped during the analyze when it was found that customer experience data (NPS) for the observation period was incomplete. Hence, this study includes the teams identified as D and E. Both teams work using Scrum. Work is controlled in teams both with the help of a Kanban board and also with product and sprint backlogs. Both teams have also features of DevOps – work is done in a customer-oriented manner with continuous improvement, software development is aimed to be automated as far as possible, and the service of each team is monitored.

Table 1 shows that the teams perform similarly to each other. The following scale is used in the table: high, good, average, low. For both teams, the measurement of customer satisfaction is increasing. In both teams, agile way of working methods is manifested at some level, but every team has a lot of room for improvement – tasks should be broken down into smaller ones, tasks should be defined more precisely, and release pipelines could be automated more. Both teams' service uptime has been 99.7% to 100% during the review period, meaning that the service has been available to customers 99,7% - 100% of the time. The generally targeted service uptime is 99% [1]. The teams are able to restore the service from disruptions to a normal state quickly.

Table 1. Cross-tabulation of teams

Team	Agile measures performance	Manifestation of agile ways of working	Service uptime	Recovery from disturbances	Customer Satisfaction
D	average	average	high	high	low, increasing
E	good	average	high	high	good, increasing

Results of the Interviews by Theme

Self-directedness. Teams have annual goals, quarterly goals and sprint goals. If necessary, changes can be made to plans and priorities even with a fast schedule - for example, critical production errors always come before planned issues.

Agile measures. Teams are familiar with Agile measures, but they do not guide the teams' activities. Teams have the ability to make a production release whenever the

defined quality criteria are met. According to agile principles, agility is ability to put code into production every day, but only make release visible to customers as needed.

Ability to understand customer needs. Customer feedback is actively monitored, and based on customer feedback, a lot of work is added to the teams' to-do lists. The teams perform customer testing if necessary. Errors reported by the customers will be corrected immediately. The teams also have real-time monitoring of their service.

Continuous learning and continuous improvement. Work time is set aside for continuous learning. New things are often learned while doing work. Teams hold retrospectives. Teams are also working to eliminate technical debt.

Ability to get things done in a sprint. Team D defines the tasks precisely - every task has a definition of done. However, the tasks are not broken down into small entities, because the team sees that it takes a lot of working time - because of this, the planned tasks are not always completed. In team E, the definition of done is defined for the tasks. The team tries to take on only tasks that can be completed during the sprint. No implementation and testing of the feature, however, is never done in the same sprint, so the set of tasks is also not completed during the same sprint.

4.3 The Connection of Agile Measures to Customer Experience Measures

Team D

Table 2 presents the key figures of the meters every six months. As Table 2 illustrates, when the development measures are low, customer experience is also low. When the indicator values are increasing in the second half of the year, also the customer experience has turned to growth at the same time.

Table 2. Team D's measures development

	Lead time	Export to production lead time	Deployment frequency	Customer experience (-100 to 100)
The first half of the year	low, 7 months (1 – 6 months)	low, 6 months (1 – 6 months)	low (once a month – once every 6 months)	low
The second half of the year	low, 2 months (1 – 6 months)	low, 1 months (1 – 6 months)	average (once a week – once a month)	low, increased by ~ 50 units

In the first half of the year, development was done on the previous application platform, which had deteriorated a lot in terms of quality, so development and release to production was extremely slow. With the new application platform, architecture and user interface, development had become easier and faster - it can be seen in the team's development measures as a positive development in the second half of the year. Both the old and the new application platforms contain all the backend and frontend features needed by an interactive mobile service.

Customer feedback provides a lot of work for teams' backlogs. As the team's performance increases, the team can complete new development tasks and bug fixes faster and

take them to production faster than before. When the customer's needs are met faster, the customer experience also seems to improve. The improvement of the customer experience is also influenced by the new user interface developed by the team, for which customer testing was carried out.

The team's performance would increase even more if the team reserved, for example, 40% of the working time of the sprints for unexpected tasks, such as production errors, and split the tasks into smaller entities. In this case, the tasks would be completed faster, which would reduce the lead time. The team has the ability to release to production whenever various quality criteria are met, so as the lead time decreases, new features and bug fixes could also be released to production faster and more often. Hypothetically, it is entirely possible that the team's efficiency and customer experience would improve even more if features corresponding to the customer's needs could be released more often into production. In the case of Team D, however, it can be stated that agile way of working enables the team's performance efficiency, which would seem to improve the customer experience.

Team E

Table 3 presents the key figures of the indicators every six months for team E. It can be seen from the table that the indicators of development have not developed significantly in a positive or negative direction. Is it remarkable that customer experience fluctuates by twenty units every quarter in both negative and positive directions. However, the interview material **did not provide explanation** for growth or fluctuations in customer experience, so we explored further some external factors not mentioned in the interviews. We started looking for explanatory power by listing things that affect the customer experience and excluding options one by one.

Table 3. Team E's measures development

	Lead time	Export to production lead time	Deployment frequency	Customer experience (-100 to 100)
The first half of the year	low, 2 months (1 – 6 months)	average, 0,5 months (1week – 1 months)	average (once a week – once a month)	good, fluctuates quarterly
The second half of the year	low, 3 months (1 – 6 months)	average, 0,7 months (1week – 1 months)	average (once a week – once a month)	good, increased by ~ 5 units

Seasonal Variation. First, it was investigated whether the service is related to a possible seasonal variation in the customer experience. This would be reflected in the fact that each year similar trends in the customer experience would be found around the same time. The alternative was investigated by comparing four years of customer experience data. Customer experience fluctuates by twenty units every year, but the moments of fluctuate are not the same yearly. The increase or decrease in the customer experience is therefore not caused by seasonal changes.

Increased Volume in Interactive Mobile Services. As another option, we investigated whether, for example, there could be more volume in the summer than at other times, when the processing times would be longer and this would be reflected in the customer experience as a ripple. However, this option was ruled out, because the customer experience meter in this case does not measure the customer experience from the beginning to the end of the process. So the duration of the processing times does not affect the customer experience, because the customer answers the survey before knowing how long the processing will take.

Digital Service Performance. As a third option, an attempt was made to find out whether there have been changes in the performance of the service, which would appear as a decrease in the customer experience. However, the service's uptime is 99.7%, so this is an unlikely option.

Features Published for Production. The team publishes large releases that contain many different features. These big releases are made quarterly. Production errors also fluctuate quarterly. The number of errors seems to increase in the next quarter after a big release has been put into production. With big releases, the number of production errors increases. When we reflect releases and errors in the customer experience, we notice that as production errors increase, the customer experience deteriorates. As the number of production errors decreases, the customer experience improves. Figure 2 illustrates this phenomenon.

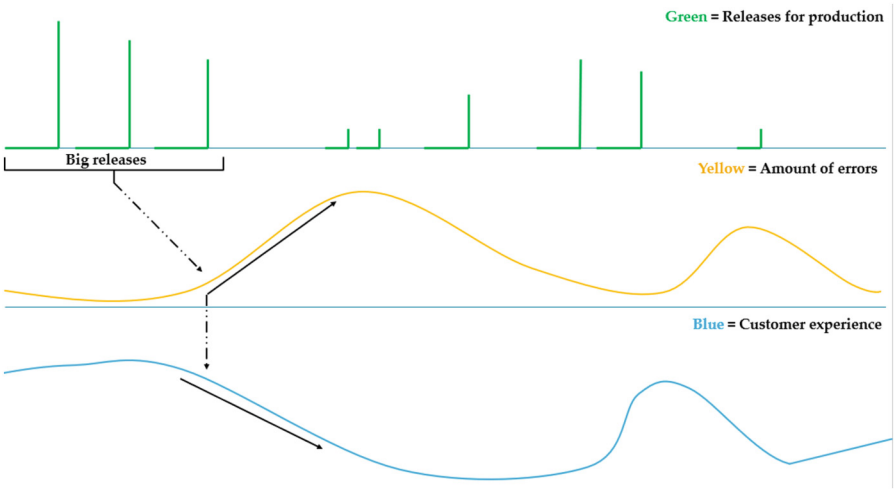

Fig. 2. Connection of the number of releases and errors to the customer experience

The working methods of the development team are the root cause of the fluctuations and improvements in customer experience throughout the year. The development team does release-driven work, i.e., releases larger entities for production at once. The way of working is reflected in production: errors, and customer experience fluctuates. Customer experience fluctuates in both negative and positive waves. Negative waves are seen when

the team has released large releases. Positive waves are seen after the team has fixed the bugs and errors in production.

Good agile way of working methods can be seen in the development measures as a short lead time, a short export to production time, low error rates and a high deployment frequency. Based on the case study, these measures have a connection to the NPS measure of the customer experience. A technically capable self-directed team is able to produce the desired things for customers at exactly the right time while constantly improving, in which case the NPS is positive and in an improving direction. Bad working methods of the team are also visible in the NPS meter - in this case, the NPS fluctuates strongly.

Based on the interviews, the development team could release to production whenever the quality criteria are met - for one reason or another, however, they do not use this ability. Furthermore, the development team never carries out feature implementation and testing during the same sprint – this is not in line with agile ways of working, as this causes the lead time to increase.

If the team used their ability to release to production every time the quality criteria are met and did the implementation and testing of the feature during the same sprint, the lead time and export time to production would be shortened. In addition, with a steady pace of releases to production, potential errors would be distributed more evenly, and they could be corrected more efficiently - there would not be so strong fluctuation in customer experience. The increase in customer experience during the second half of the year is probably not due to the efficiency of the team's work, but due to the fact that the development team has corrected errors in production.

5 Discussion

5.1 Key Findings

The purpose of the research is to demonstrate the connection between agile methods and digital customer experience. Based on this research, it can be suggested that the implementation of agile methods appeared to have a positive impact on customer experience. However, further research is needed to confirm this assertion.

RQ1: How does an agile way of working and the technical ability supporting it affect the digital customer experience?

When the tasks are precisely defined and broken down into small enough pieces, they can be completed faster, which reduces the lead time, and the team has an opportunity to release to production more often. If this option is used, the deployment frequency of the team will also improve. These enable the customer's needs to be met more efficiently and thus improve the customer experience. In addition to being efficient and technically capable, the teams must be able to take into account the customer's needs and react to them, as well as be able to quickly correct possible production errors.

RQ2: In which customer experience and agile metrics, we can see benefits of agile way of working?

Good agile way of working methods can be seen in the development measures as a short lead time, a short export to production time, low error rates and a high deployment frequency. Based on the case study, these measures have a connection to the NPS measure

of the customer experience: a technically capable self-directed team is able to produce the desired things for customers at exactly the right time while constantly improving, in which case the NPS is positive and in an improving direction. Bad working methods of the team are also visible in the NPS meter - in this case, the NPS fluctuates strongly.

RQ3: What are the hallmarks of good agile way of working and team's technical abilities?

Hallmarks of a good agile way of working are breaking down tasks into small enough pieces, defining tasks precisely and releasing them to production evenly, continuous improvement and good planning of sprints. These hallmarks are best practices as well. When planning a sprint, one should also consider things that cannot be prepared for in advance by reserving, for example, 40% of the sprint's working time for unexpected things. In addition to agility, the team must also be technically capable so that the team can produce a high-quality and reliable service or product for the customer.

The Importance of Agile Measures

Teams could have paid more attention to agile measures, as they can provide valuable additional information about team operations. A long lead time can indicate that the task sets are too large. A low deployment frequency can indicate that the team is not using its ability to release features and bug fixes to production optimally.

5.2 Limitations

A limitation of the research is the small sample size ($n = 7$). However, in this case all the teams that play key roles in the target organization in developing interactive mobile services were included in the research. The final amount of analyzed ($n = 4$) teams was also small, since otherwise suitable teams had to be dropped from the study due to the lack of customer experience data. With lack of customer experience data, it would have been impossible to make a reliable analysis.

The NPS metric is not designed to provide actionable insights into problems in digital customer experience [16]. To get more detailed information about different problems, other metrics are needed for support.

Another limitation is that the teams in this research work in a narrow sector. Thus, the generalizability of the results to other sectors is not guaranteed without further evaluation.

6 Future Research

With the help of the findings of the research, topics were found that require further research. These topics can significantly improve the optimization of agile methods.

Before and After Optimization Using Best Practices

In the future, the connection between agile methods and customer experience could be studied in more detail over a longer period of time. It would be meaningful to include a period before in the study optimizing and post-optimizing agile team practices. After this, the customer experience could be more closely reflected in the team's operating methods and agile measures.

Optimizing the Size of the Release from the Point of View of Customer Experience
Our results show that releases that are too large lead to more errors, resulting in decreased customer experience. It would be important to study what is the optimal publication size so that it affects the customer experience positively. The research should also identify the effects of too large releases.

Taking Open Customer Feedback into Account
Open customer feedback could be used in future research. The research could analyze how the customer experience develops when the team implements the wishes and needs expressed in open customer feedback.

Replicating the Research on a Larger Scale
Replication of the research would bring significant value to the software industry. The research would be done on a larger scale, so the results of the research can be generalized. In addition to NPS, the research would also use other customer experience metrics, such as CES and FCR.

7 Conclusions

Agile methods are widely used around the world. They help development teams work efficiently and react to changes quickly. Optimizing agile methods could help organizations improve customer satisfaction continuously. Optimization should always start by looking at the numbers of agile measures and analyzing the reasons for those numbers. Based on this research, the best practices from the point of view of agility have been listed, which help to improve the customer experience. They are as follows: breaking down tasks into sufficiently small ones into pieces, precise definition of tasks and steady release to production, continuous improvement and good planning of sprints.

References

1. Aghina, W., Handscomb, C., Salo, O., Thaker, S.: The Impact of Agility: How to Shape Yor Organization to Compete. McKinsey & Company (2021)
2. Aghina, W., Handscomb, C., Ludolph, J., Róna, D., West, D.: Enterprise Agility: Buzz or Business Impact? McKinsey & Company (2021)
3. Bambauer-Sachse, S., Helbling, T.: Customer satisfaction with business services: is agile better? J. Bus. Ind. Market. **36**(8), 1389–1402 (2021)
4. Beck, K., et al.: Manifesto for Agile Software Development (2001)
5. DeBellis, D., Peters, C.: 2022 Accelerate State of DevOps Report. Google/DORA (2022)
6. Ebert, C., Gallardo, G., Hernantes, J., Serrano, N.: DevOps. IEEE Softw. **33**(3), 94–100 (2016)
7. Grisham, P.S., Perry, D.E.: Customer relationships and extreme programming. ACM SIGSOFT Softw. Eng. Notes **30**(4), 1–6 (2005)
8. Kim, G., Humble, J., Debois, P., Willis, J., Forsgren, N.: The DevOps Handbook: How to Create World-Class Agility, Reliability, & Security in Technology Organizations (Second). IT Revolution Press (2021)
9. Meyer, C., Schwager, A.: Understanding customer experience. Harv. Bus. Rev. **85**(2), 116–126 (2007)

10. Olteanu, C.G.: IT Agile Transformation. Econ. Inf. **18**(1), 23–31 (2018)
11. Recker, J., Holten, R., Hummel, M., Rosenkranz, C.: How agile practices impact customer responsiveness and development success: a field study. Proj. Manag. J. **48**(2), 99–121 (2017)
12. Saldana, J.: The Coding Manual for Qualitative Researchers. Sage, London (2009)
13. Sarajärvi, A., Tuomi, J.: Qualitative research and content analysis. Tammi (2018)
14. Schwaber, K., Beedle, M.: Agile Software Development with Scrum. Upper Saddle River: Prentice-Hall, New Jersey (2001)
15. Srivastava, S., Trehan, K., Wagle, D., Wang, J.: Developer Velocity: How Software Excellence Fuels Business Performance. McKinsey & Company (2020)
16. Wiedenhoefer, L.: The Importance of Acting Today: Getting digital experiences right is not optional. In: Wiedenhoefer, L. (ed.) Digital Customer Experience Engineering: Strategies for Creating Effective Digital Experiences, pp. 1–3. Apress, Berkeley, CA (2021). https://doi.org/10.1007/978-1-4842-7243-5_1