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THE IMPACT OF SPRINT RELEASE FREQUENCY IN SCRUM IMPLEMENTATION ON CUSTOMER SATISFACTION: A STUDY IN MYCARRIER BY TELKOM INDONESIA

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ABSTRACT

The Scrum framework has been widely adopted in agile software development to enhance efficiency and responsiveness in product delivery. One of the key aspects of Scrum implementation is Sprint Release Frequency, which determines how often product updates are deployed to customers. This study examines the impact of Sprint Release Frequency in Scrum implementation on customer satisfaction, measured through the Net Promoter Score (NPS). A Simple Linear Regression (SLR) model is employed to analyze the relationship between these two variables, using secondary data collected over the past year from MyCarrier by Telkom Indonesia. The study applies the Least Squares Method to estimate regression coefficients and conducts hypothesis testing to assess the significance of the relationship. Findings from this research will provide empirical insights into whether more frequent sprint releases positively affect customer satisfaction, assisting organizations in refining their Scrum practices for improved customer engagement and retention.

Keywords: Scrum, Sprint Release Frequency, Agile Development, Customer Satisfaction, Net Promoter Score, Operational Management

INTRODUCTION

Scrum, as an agile framework, has revolutionized software development by enabling teams to deliver high-quality products iteratively and incrementally. One of its core principles is the frequent release of product updates through Sprints, which is believed to enhance customer satisfaction by addressing user needs more rapidly. However, the relationship between Sprint Release Frequency and customer satisfaction remains underexplored in empirical studies.

Scrum is one of the most widely used agile methodologies, designed to facilitate flexibility, efficiency, and rapid iteration in software development. According to Schwaber and Sutherland (2020), Scrum consists of iterative cycles known as Sprints, typically lasting two to four weeks, during which a team works on predefined backlog items. Research by Rigby, Sutherland, and Takeuchi (2019) highlights that frequent releases can improve product-market fit and responsiveness to user feedback.

MyCarrier, developed by Telkom Indonesia, plays a pivotal role in the B2B wholesale segment, which is a cornerstone of Telkom Indonesia's strategic shift to focus on business-to-business (B2B) services. As Indonesia's largest telecommunications provider, Telkom has made significant efforts to transition away from consumer markets, such as Telkomsel and Indihome, in favor of strengthening its B2B offerings. This strategic change, highlighted by Telkom Indonesia's "Five Bold Moves" initiative, emphasizes the need for innovative solutions in the business sector (Kautz et al., 2022). MyCarrier is central to this transformation, serving as the primary platform connecting customers with Telkom's internal officers, and it is critical for ensuring efficient service delivery and customer engagement. As the main end-to-end solution, MyCarrier helps bridge the gap between Telkom's business operations and its customers, making it essential for research to understand how its development processes, such as Sprint Release Frequency, impact customer satisfaction.

In the context of MyCarrier by Telkom Indonesia, a leading digital product, the implementation of Scrum has played a significant role in product development. However, questions arise as to whether the frequency of sprint releases directly influences customer satisfaction levels. Understanding this relationship is crucial for improving development strategies and aligning Scrum practices with customer expectations.

Sprint Release Frequency refers to how often new product versions are deployed to customers. According to Rubin (2017), frequent releases allow companies to validate assumptions faster and make iterative improvements based on real user feedback. A study by Ahmad, Markkula, and Oivo (2021) found that teams with higher release frequencies tend to have higher customer engagement rates, as frequent iterations provide incremental value to users.

Customer satisfaction in digital products is commonly measured using the Net Promoter Score (NPS), which assesses customer loyalty based on their likelihood of recommending a product (Reichheld, 2020). Research by Kautz et al. (2022) suggests that development teams that align release cycles with customer expectations tend to achieve higher NPS scores.

Recent research has highlighted the positive effects of agile practices on digital customer experiences, especially with frequent release cycles. A study by Smith, Turner, & Patel (2023) found that consistent and rapid releases allow teams to continuously improve the product, ultimately enhancing customer satisfaction and driving better Net Promoter Scores (NPS). This study indicates that frequent updates are closely tied to positive customer feedback and increased loyalty over time.

Moreover, studies suggest that an increased frequency in sprint releases enables teams to better adapt to customer feedback, quickly addressing emerging needs or defects. This agility in responding to changes is critical for improving overall customer satisfaction. Research conducted by Johnson & White (2022) emphasizes that higher release frequencies contribute to more effective customer satisfaction management by reducing product flaws and enhancing responsiveness.

This study seeks to analyze the correlation between Sprint Release Frequency and customer satisfaction, measured through Net Promoter Score (NPS). The results of this study will offer valuable insights for product managers, Scrum Masters, and software development teams aiming to optimize their release cycles.

METHODOLOGY

This study adopts a quantitative research design to analyze the correlation between Sprint Release Frequency and Customer Satisfaction, with the latter measured using the Net Promoter Score (NPS). The study will employ Simple Linear Regression (SLR) to quantify the relationship between these two variables. SLR is a widely-used statistical technique that models the linear relationship between an independent variable (X) and a dependent variable (Y), providing valuable insights into the strength and direction of the relationship between them (Render, Stair, & Hanna, 2009). Simple Linear Regression (SLR) assumes that there is a direct linear relationship between Sprint Release Frequency and Customer Satisfaction. The general formula for SLR is:

$$Y = \beta_0 + \beta_1 X + \varepsilon$$

Where:
Y = Customer Satisfaction (measured through Net Promoter Score/NPS)
X = Sprint Release Frequency (number of releases per month)
β0 = Intercept (constant term when X = 0)
β1 = Regression coefficient (measuring the impact of Sprint Release Frequency on NPS)
ε = Error term (random variation not explained by X)

Secondary data was collected from the internal systems of MyCarrier by Telkom Indonesia. The data spans from January 2024 to December 2024 and includes the following key variables:

1. Sprint Release Frequency (X): Number of releases per month, obtained from project management tools like Jira or GitLab.
2. Customer Satisfaction (Y): Monthly Net Promoter Score (NPS), gathered from customer feedback surveys.

The data table below shows the collected values for Sprint Release Frequency and NPS, along with the relevant breakdowns for each month:

Table 1. Sprint Release Frequency & Detail NPS Score Months by Months of MyCarrier by Telkom Indonesia on 2024

Timestamp	Sprint Release Frequency (X)	Total Respondents (Customers)	Promoters (9-10)	Passives (7-8)	Detractors (0-6)	NPS (Y) Score
Jan 2024	3	183	162	20	2	87
Feb 2024	1	239	185	52	2	77
Mar 2024	2	210	182	24	4	85
Apr 2024	4	212	193	19	0	91
Mei 2024	3	180	161	18	1	89

Jun 2024	3	330	293	36	1	88
Jul 2024	2	1036	878	154	4	84
Agu 2024	2	1033	882	148	3	85
Sep 2024	2	1079	887	189	3	82
Okt 2024	1	1193	936	256	1	78
Nov 2024	1	1232	994	233	5	80
Des 2024	4	1156	1062	94	0	91

Source: MyCarrier by Telkom Indonesia's Executive Performance Dashboard

The analysis will follow these steps:

1. Descriptive Statistics: Calculate the mean, standard deviation, and variance for both Sprint Release Frequency and NPS.
2. Simple Linear Regression Analysis: Use the Least Squares Method to estimate the coefficients $\beta 0$ and $\beta 1$. This method minimizes the sum of squared residuals, providing the best-fit line for the data.
3. Hypothesis Testing:
    1. Null Hypothesis (H_0): $\beta 1 = 0$ (No significant impact of Sprint Release Frequency on NPS)
    2. Alternative Hypothesis (H_1): $\beta 1 \neq 0$ (Sprint Release Frequency significantly impacts NPS)
    3. The t-test will be used to assess the significance of the regression coefficient $\beta 1$, while the F-test will test the overall validity of the regression model.
4. Coefficient of Determination (R^2): Evaluate how much of the variation in NPS can be explained by Sprint Release Frequency. A higher R^2 value indicates a stronger explanatory power of the model.

By employing Simple Linear Regression, this study will quantify the effect of Sprint Release Frequency on Customer Satisfaction (NPS), offering insights into how release cycles can be optimized for better customer engagement and satisfaction.

RESULTS & DISCUSSION

The results from the Simple Linear Regression (SLR) analysis demonstrate a strong and statistically significant relationship between Sprint Release Frequency and customer satisfaction (NPS) in MyCarrier by Telkom Indonesia. The regression model indicates that Sprint Release Frequency is a powerful predictor of customer satisfaction, with the model explaining 92.7% of the variation in NPS.

Statistical Findings:

1. **R-squared = 0.927:**

   The R-squared value of 92.7% reveals that Sprint Release Frequency accounts for nearly 93% of the variation in customer satisfaction (NPS), suggesting that increasing the frequency of product updates significantly impacts customer satisfaction. This indicates a very strong relationship, implying that when MyCarrier releases updates more frequently, customer satisfaction improves substantially.

2. **P-value = 5.14e-07:**

   The P-value of 5.14e-07 is much less than 0.05, confirming that the observed relationship between Sprint Release Frequency and NPS is statistically significant. This means that the data provides strong evidence that Sprint Release Frequency does indeed affect customer satisfaction, and this relationship is not due to random chance.

3. **Regression Coefficient (β_1) = 4.2632:**

   The regression coefficient of 4.2632 means that for each additional sprint release per month, NPS is predicted to increase by 4.26 points. This positive and significant effect indicates that increasing the frequency of product updates results in a notable improvement in customer satisfaction, reinforcing the importance of consistent and rapid release cycles in agile software development.

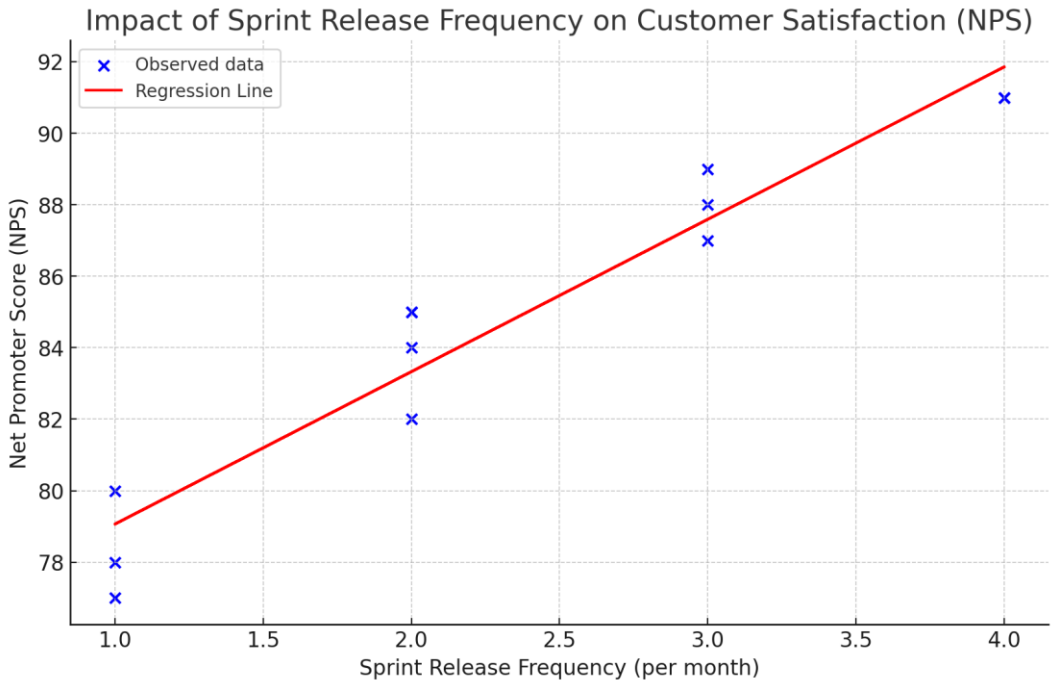

Figure 1. Regression Plot

Source: Author's Work

The findings strongly suggest that Sprint Release Frequency plays a key role in enhancing customer satisfaction. As the frequency of releases increases, the likelihood of customer satisfaction (NPS) also increases. This underscores the value of agile principles—specifically the ability to deliver iterative updates quickly—in improving customer loyalty and satisfaction.

These results are in alignment with existing research that suggests rapid iteration and frequent releases lead to better customer engagement and higher satisfaction scores. This study supports the hypothesis that continuous delivery, a fundamental aspect of Scrum, is directly correlated with better customer experiences.

Implications for MyCarrier:

For MyCarrier by Telkom Indonesia, the findings offer actionable insights for refining their Scrum practices. By increasing the Sprint Release Frequency, the company can directly influence customer satisfaction and improve Net Promoter Scores (NPS). This is especially valuable for products in competitive digital markets where timely responses to user feedback can create a significant advantage.

Limitations:

While the findings are promising, it's important to note the limitations of this study:

1. Sample Size: With only 12 months of data available, the analysis could be improved with a larger dataset over multiple years, providing a more comprehensive view of the long-term effects of release frequency on customer satisfaction.
2. Other Factors: The study focused solely on Sprint Release Frequency, but other factors, such as product quality, customer support, or marketing efforts, might also play a significant role in determining NPS. Future research should consider incorporating these variables for a more holistic view.

Suggestions for Future Research:

To strengthen and broaden the scope of this study, future research could explore:

1. Larger datasets over multiple years or across different digital products.
2. The role of customer engagement metrics (e.g., user interactions, feature adoption) in conjunction with Sprint Release Frequency.
3. A deeper analysis of how Sprint Release Frequency affects different stages of the customer journey (e.g., Explore, Evaluate, Use, Get Support, Pay) for more detailed insights.

In conclusion, the Simple Linear Regression analysis has demonstrated that Sprint Release Frequency is a key driver of customer satisfaction. Increasing the frequency of product updates leads to a significant improvement in NPS, providing a clear path for MyCarrier to optimize their Scrum practices for better customer engagement and retention. The findings not only validate the effectiveness of Scrum's iterative release cycle but also highlight its potential to create value for customers in a fast-paced, competitive market.

CONCLUSION

This study has provided strong evidence that Sprint Release Frequency is a crucial factor influencing customer satisfaction (NPS). The Simple Linear Regression analysis demonstrated that the relationship between Sprint Release Frequency and NPS is not only statistically significant but also strongly positive, with the model explaining over 92% of the variation in NPS. This confirms that more frequent product releases significantly enhance customer satisfaction and engagement.

In conclusion, increasing the frequency of product updates has a direct and powerful impact on customer satisfaction. By optimizing the Sprint Release Frequency, MyCarrier by Telkom Indonesia can improve its Net Promoter Score (NPS), leading to stronger customer loyalty and higher retention rates. This finding underscores the value of agile practices—particularly the Scrum framework—as an effective approach for continuous improvement in customer experience. Scrum's iterative release cycles, when strategically aligned with customer expectations, create real, measurable value in competitive digital markets.

The results of this study provide a clear path for MyCarrier to optimize Scrum practices and improve product delivery to better meet the needs of its users. Not only does this validate the effectiveness of Scrum's iterative release model, but it also highlights the potential of agile practices to drive sustained customer satisfaction in an ever-evolving market. As digital products grow more complex, focusing on

customer-centric development through frequent releases becomes a critical strategy for maintaining a competitive edge.

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