Feedback Driven-Development

Impact of Feedback Systems On The Enhancement of Software Applications

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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INTRODUCTION

Feedback can be defined by "information about reactions to a product's performance of a task which is used as a basis for improvement." In this case, we look at feedback specifically about technology-based products from the user to the admin in charge of the app that can contribute to the betterment of the company it entails. Feedback takes on various forms, and in our increasingly technological era, electronic feedback forms offer the best avenue for collecting valuable insights. This digital shift allows administrators to efficiently gather and analyze data, ultimately contributing to holistic improvements within the company. In contrast to traditional forms, digital allows easier access to data, faster analysis of data, less physical space, and easier consolidation of information. As Abraham et al. (2022) aptly noted, feedback serves as a compass, guiding the establishment of desired standards of proficiency in tasks. This clarity allows organizations to identify gaps in understanding and areas for refinement. Viewing technology from the creator's perspective, it becomes evident that identifying errors and improvement opportunities can be challenging, making user feedback an invaluable source of information.

The integration of a traditional feedback system, however, can only take us so far. To adapt to the demands of the digital age and increase in user call volume, we must explore alternatives. Electronic feedback tools and systems offer a promising path, ensuring that feedback is readily available at the user's fingertips. This idea aligns closely with the insights from Bakerson et al. (2012), who highlighted statistics showcasing that accessibility, timeliness, legibility, and quality are key drivers for promoting electronic feedback. Students, for instance, receive feedback faster when electronic, and the data collected is not only more legible but also easily analyzable.

As the user base of platforms like Sage grows significantly, we must find innovative ways to make feedback accessible. My solution was to create a user-friendly feedback form and search feature, which was developed during my internship at Capital One under the guidance of Matthew Ford, a Senior Software Engineer. In tackling a significant challenge within the Sage environment, our goal was to create a single space to retrieve user questions and concerns.

Technical Project

In tackling a significant roadblock in the Sage platform, which boiled down to the need for an easier way for users to share their thoughts and requests, I took the initiative to create a feedback function for Sage. The idea was straightforward in creating a simple set of questions to retrieve information from users. I came up with a user-friendly feedback form that sat at the top of every screen. It had three main components: a dropdown to pick a subject, a space to type in feedback, and a rating system. It improved user life and also gave admins information to analyze for future improvements. Recent research has been buzzing about the importance of user-friendliness in feedback systems. I added a feature that allowed us to search through all the feedback I gathered and sorted it out based on various criteria such as feedback data, datetimes, and topics. Data management was made smoother and that helped me decide which feedback to prioritize. Data aggregation tools are important for getting the true perspective from user feedback. For added security and data control, I decided to limit access to the tool to admin-related users. I made sure that I could protect user data while also giving admins the insights they needed. So, this approach I took has been a hit with different teams in the Capital One Card Tech Space, and I am excited to keep editing and expanding this solution in the future, all while keeping up with the latest research and keeping users at the forefront of our minds.

While the user base of Sage, a call quality platform leveraged by US Card, increases to 16,000+, I must find a way to democratize the ability to give feedback on the application. My solution was creating feedback form and search features for displaying feedback. I developed the front-end using technologies for easier use such as Tailwind, Vue.js, and an internal GUI (Graphical User Interface) tool known as Connex. For the back end, which connects the side visible to the customers to the storage system, I developed two eAPIs (Electronic Application Program Interface) using technologies such as Typescript, AWS (Amazon Web Services) Lambda, Node.js, and storing the data in an AWS OpenSearch storage index. I was able to deploy both the UI (User Interface) and eAPI to QA (Quality Assurance) and received praise from various teams in the Capital One Card Tech Space. Future work would include modeling different statistics from the feedback data and utilizing machine learning algorithms to classify and sort through submissions with specific issues and solutions. My final goal would be to deploy both UI and eAPI to Prod, the final stage of the software development cycle, after achieving 100% code coverage with testing.

As I continue to improve this solution, I want to leverage machine learning algorithms to classify submissions with specific issues. Ultimately, this approach serves as a testament to the enduring importance of feedback mechanisms in software development, driving the creation of more effective and user-friendly applications.

STS Project

Feedback systems play a pivotal role in the enhancement of software applications, with their influence extending across various aspects of development and maintenance. Through these processes, these systems facilitate continuous improvement, driving the evolution of software to meet evolving user needs. They introduced feedback mechanisms that allowed developers to

receive input on both the functional and non-functional aspects of web applications from users and stakeholders. As such, we bring up the question of "how does the democratization of user feedback and the utilization of feedback in a business sense contribute to the enhancement of software applications and user satisfaction?" This is quite a wide question, so we can answer this in many ways.

We'll analyze this using the Actor-Network theory, which puts a focus on the shifting networks of relationships. We'll use the people who submit the feedback as the actants. This topic has a wide range of actor groups it affects such as customers, front facing employees, software developers, and company higher-ups. This network theory states that, even though the focus on technology is the product, it is important to analyze the people who it affects. That is where feedback comes into such importance because that is the voice of the people. We'll look at how through research, it is shown that these actor groups interact in such a way to produce the reasoning behind digital feedback and democratization of such. As Haleem et. al (2022) says, digital technology is increasing in prevalence throughout the world. With that comes many new issues and the only significant method to tackle them is through providing new methods for people to communicate through. Web applications developed with continuous feedback exhibited improved user satisfaction, better performance, and enhanced functionality. Looking specifically at positive customer feedback, we see that it has a large effect on front-facing employee lines. "For the managers, the real value of the customer feedback lies in that it provides guidance for improvement: "feedback is useless unless you're doing something with it"" (Alkire et al., 2014). We can see that through applying the Actor-Network theory, we know that it is important to be aware of customers when working on a product and be active in retrieving feedback from these actor groups. Furthermore for these actor groups, many are scared of giving feedback in fear of

negative response from administration. "Study 1 confirms that attributional disagreement is prevalent in the workplace and associated with the rejection of negative feedback." (Gnepp, 2020). This paper talks about how feedback forms decrease fear of negative feedback as there is no specific recipient of the information upon first glance.

Feedback is useful as long as we make changes using it, and that is what feedback forms are for. Customer insight is paramount for companies to improve and cater to the general needs of the public. Otherwise, investments and interest in the company would significantly decrease. We see that indeed the interaction between customers and front-facing employees is a relationship that affects the importance of feedback in a company-wide setting. As Rai and Shah (2022) say, satisfaction is the most important part of a company's success. Before profits begin rolling in, customer satisfaction should be understood first. You need to build a customer base to even think about gaining a profit. Customer satisfaction not only lays the foundation of a company but also contributes to its market value. In a business sense, individuals who retrieve goods and services tailored to their needs and desires, are the lifeblood of any market. These customers seek products that align with their financial goals and rely upon companies to provide services. In doing so, businesses can expand their customer base and build stronger relationships. Furthermore, satisfied customers can become advocates of the company, sharing their positive experiences with others. This satisfaction hinges on a person's sense of fulfillment when interacting with a company. However, gauging this satisfaction is not a simple task.

In today's competitive global markets, businesses work hard to set themselves apart. By offering a stronger line of products, companies can effectively capture the attention of customers. Once satisfaction is achieved, loyalty follows suit. These concepts are important for success, emphasizing the relationship between customers and businesses. Businesses are able to easily

respond back to customers in a shorter amount of time. This translates directly to the importance

of feedback mechanisms in the software development life cycle.

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