User Research to Inform Product Design: Turning Failure into Small Successes

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Abstract
A product team launched a new type of product, an interactive data dashboard. They were designed and built because customers had asked for them, but once launched, customers were not using them. Our user experience team offered to help the product team investigate the issue of low usage and, after getting the full support from the product executive, we collected customer feedback, identified core user personas, and made recommendations for next steps and design approaches. While this work led to some changes and one new dashboard, the impact on the overall product was minimal. Why? This case study explores the underlying issues of why user research done right does not always influence product software development.

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ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

When a new cloud-based software product was struggling to obtain sustained usage with customers, our user experience team conducted user research for the product team: we had created personas, usage scenarios, and technical and design requirements for improving the product to align with customers' needs and goals. The personas had a huge impact: the team posted the persona print outs around the offices, the company utilized the persona as an exemplar of how to create personas within an externally published report, and the product marketing director asked for us to create more personas for marketing the other products.

Yet the recommendations for changes to the product fell short of our expectations. The one product success point was a developer followed the general principle of designing the dashboard around a user task, to create a new dashboard. Within six weeks of launch, this dashboard had the highest usage rate over all the dashboards and double the retention rate of the 2nd most popular dashboard. While this is an enormous change, the team's approach to creating dashboards did not change, and this particular dashboard had some remaining issues of usability.

What we felt should have been a successful story of using user-centered design principles to improve a product [1, 2], was not. We convinced the leadership, we followed the methods, we got the head nods around the room, but the output of the product did not change.

The Background

We were working with a mid-sized research firm that collects market data and sells the analysis and insights via various products. The data product line, prior to introducing interactive dashboards, primarily produced reports summarizing data analysis and offered customers custom data cuts and analysis services.

The customers of the data products did not "self-serve" to get their data insights, but relied on Data Advisors (DAs). These DAs were intimately familiar with the data, and could provide exactly the data snapshot and interpretation customers asked for, and the service included DAs creating presentation slide decks summarizing findings for customers. This level of service, while extremely valuable to customers, was not scalable to more customers and missed the opportunity to serve customers who needed simpler analysis and on-the-fly data points. Customers were asking for interactive tools where they could self-serve and get their own information without having to pick up the phone. Therefore, the business investment was made to create an interactive dashboard offering.

The team building the interactive dashboards was relatively new: it had grown from one to five people within a year, with skills in software engineering and graphic design, specializing in data analysis. The team members did not have a background in user interface design or user experience. The dashboards created by this team were informed by multiple product managers providing requirements for each of their different customer bases. Because these product managers referenced speaking to customers frequently, their requests for features in the dashboards were taken at face value by the dashboard team as the design requirements.

Before the interactive dashboard product was available, the product group published articles as a means of

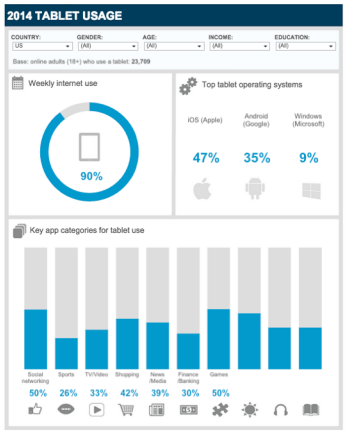

Figure 1: Example of one of the original dashboards: a snapshot of available data, but no user task supported, no industry or demographic comparison, and no point of reference for the user.

delivering data analysis, so it was with this mindset that the product managers requested dashboards that functioned as data snapshots, rather than enabling unique data exploration through interactivity. Additionally, whenever new data was made available to the team, this required a new dashboard to be created, rather than updating an existing one. Figure 1 shows an example of one of the dashboards produced by the dashboard team. Along the top of the dashboard, users can select different demographic profiles to narrow the display down to a relevant customer segment.

We had been working with the head of the product line to conduct market research: interviewing customers about the value proposition of the entire product line. After the launch of the interactive dashboards, when customers were not using them as much as the product group had hoped, we saw an opportunity to help by introducing the concept of user-centered design, and by expanding our market research interviews into a more formalized user research approach, to inform the design requirements for the dashboards.

As HCI professionals, we saw a lot of low-hanging fruit in the designs such as poor labeling and usability, but knew that with some user feedback we could suggest bigger ways the dashboards could be redesigned to support tasks, supporting the user goals [3]. Therefore, we proposed that we conduct semi-structured interviews. By taking a user-centered design approach, our proposal to the team was to "create a beginning-to-end experience so that every dashboard addresses a pain point for your customers, satisfies their desires, and has them returning for more." The head of the product line welcomed the offer and we set off on our research.

Research Approach

We developed a plan for qualitative research to understand the context of use: how people were using the dashboards now; what their goals were; and what other tools they used to accomplish their tasks. We conducted one hour interviews with six current dashboard users (from a total of 46 users who had visited the dashboard page at least once in the previous month). Using a semi-structured script, we interviewed customers in via screen-sharing web sessions. As part of the interviews, we asked participants to share their screens and walk through their process of finding information in the dashboards, using a recent example from their own work context.

We invited the dashboard team members and product managers to observe the sessions. Team participation was good -- at least two dashboard team members and the product manager attended two or more sessions. Observers were asked to record their observations on post-it notes, one per note. Each participant was assigned a different color post-it so we could identify the participant later on during our affinity analysis. Before a session, observers were briefed on the difference between an observation and an insight (what the participant did or said vs. the observer's take-away) and to focus on direct observation. At the end of each session, there was a 15-minute debrief to capture the highlights of that interview. Finally, all observers were asked to attend a final debrief session to discuss the findings and identify themes.

It was difficult to schedule time for that many busy people, so we kept the final debrief meeting to an hour by preparing an initial affinitization of the post-it notes beforehand. That way we had a structure to begin and

could focus on the main points. The goal was to hear from all members of the team and gain a common understanding of what we observed in the interviews.

The Findings

The findings were consistent across participants. Everyone reported having the same expectations for what an interactive dashboard would provide them, and had generally the same needs for data insights. Everyone we interviewed:

- Had difficulty finding the right data nugget amongst the many published snapshots
- Wanted to see data for their industry, split out by different demographics
- Wanted to compare segments and industries
- Wanted to see trends and changes over time

The one quantifiable question we asked was "On a scale of 1 to 5, how important are the dashboards, as they are today, to your work?" and five of the six interview subjects said they were not important to their work. Their reasoning for this is that the current dashboards were organized around topic, not around their industry or the customer population they were focused on. So to find useful information, they needed to jump between numerous dashboards.

What We Recommended

We collected the observations and our findings both with the team and separately, and presented our recommendations formally to the product lead, along with the product managers and dashboard team. We came to them with four recommendations:

- Create dashboards by industry, not by topic and time, because customers had a focus on their industry and wanted to remove all other industries from their exploration
- Structure each dashboard around comparing demographic segments, because customers commented they didn't know what values meant unless there was a baseline to compare it to
- Customers did not expect so many dashboards and expressed frustration not knowing where to look for the latest. Our suggestion was to update existing dashboards with new data, rather than creating a new data. This would eventually enable dashboards to show trends, another customer request.
- Finally, instead of focusing on creating newer and better dashboards, remove the existing ones and launch a finite set that are iteratively improved. So overall, have fewer dashboards.

As our next step, we planned to create user personas from the findings, which would lead to user scenarios, to guide the team on creating this new style of dashboard.

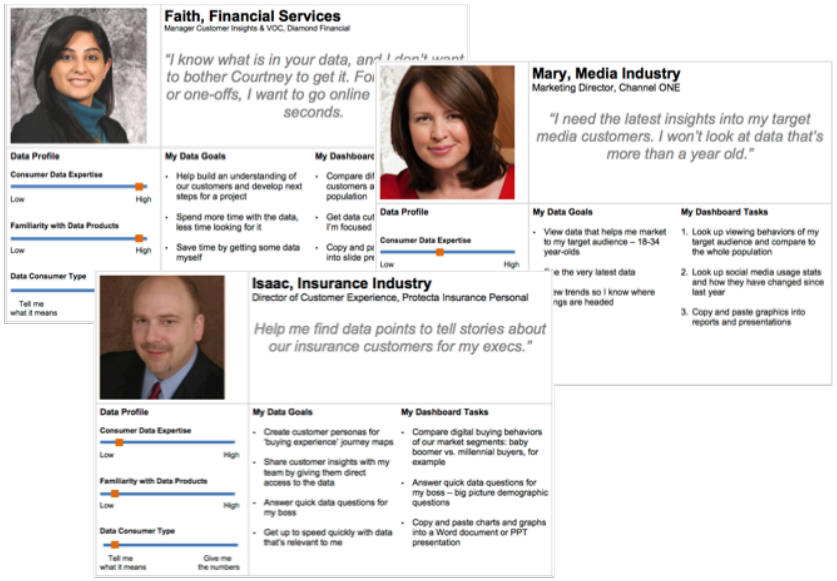

Figure 2: The three data dashboard personas

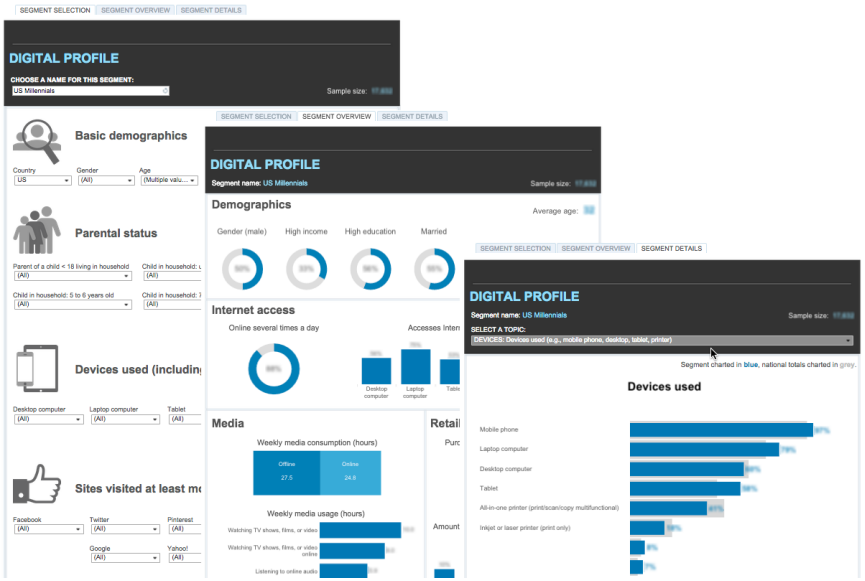

Figure 3: The three screens of the new dashboard supporting comparing demographic segments

At the conclusion of the findings presentation to the product leadership team, it was clear that not all of the team members were enthusiastic about the plan, and there was some lively debate about next steps, but with the nods of approval around the room, particularly from the head of the product line, we planned to continue with our plan to create user personas.

Then, A Setback

As we prepared to build out user scenarios, we considered the research stage complete because of the consistent feedback from all the interview subjects. Meanwhile, a product manager asked the dashboard team to perform a comparative usability test at an upcoming customer conference, by showing two different example dashboards they had been developing. The dashboard prototypes in progress had been designed without working with us or taking advantage of our findings, so the purpose of these dashboards was very difficult to articulate. Looking at the dashboards, we were unclear what could be learned from additional interviews.

As the dashboard team was gearing up to do these studies, we discussed with them how to conduct a user interview, since they had not conducted user interviews before. We offered to help them conduct the study and created a plan, script, and recruited customers. At the

conference we interviewed six customers, showing them rough prototype dashboards. The interview comments were essentially the same as our previous interviews, but this time we had even greater confidence that customers wanted to do comparisons within the dashboard, and that labeling in dashboards can be very confusing for customers on their first time use.

We made another pitch to assist with next steps of creating user scenarios, with the same issues identified.

When we asked the dashboard team about timelines for our next steps, they turned to us and said they were under pressure to deliver new dashboards under a tight deadline, in the old model, and feeling very stressed. They explained they felt too many people were telling them what to build, and we were yet another voice adding to the noise coming at them.

We took stock in the situation and realized our voice, not aligned with other voices, was a confusing message and adding to the stress in the process. We made the decision to state our recommendations when asked, but otherwise withdraw from the team to let them execute on their work without our advice.

To wrap up our deliverables from the research, so that we could move on to other projects, we completed the intended personas, user scenarios, and went a step further and documented our opinion on how the user scenarios translated into technical requirements. Rather than presenting findings as a presentation deck, we took care to document the depth of the findings and specific recommendations for each scenario, so that the documents could stand on their own, once we were not in collaboration with the team.

The company already has a set of user personas created several years earlier by an external consulting firm. We decided to create "Data Dashboard" personas to zero in on the attributes, goals, and tasks related to the use of the dashboards and not the company's products as a whole. This idea was inspired by the concept of "mobile personas" in a business practices research report [3]. Since we discovered that data use is determined by industry, we created 3 personas representing the three industries that make up the majority of the company's user base: Financial, Insurance, and Media (Figure 2).

Each persona included a profile, a detailed usage scenario, and a set of specific requirements a dashboard must fulfill to realize the scenario. This style of persona goes beyond what is typically done, but because of the organizational circumstances we wanted to create the most robust artifacts we could. We distributed copies to the dashboard team members, product managers, and executives and considered our project done.

Unexpected Outcomes

To our surprise, the personas gave new life to the push for user-centered dashboards. The team, including the executives, posted printouts of the personas on their cube walls. When a new marketing manager joined the team, she reviewed the personas and asked for us to work with her on more personas and scenarios for marketing purposes. Finally, the personas were used as an example in a business research report published by an analyst at the company [4], an event legitimizing

the methods we used, as well as added importance to the information within them.

Then smaller wins happened. The dashboard team created one report that had some elements of our recommendations. It was not organized by industry, or structured so that new data could be added to it, but it allowed users to define, and label, a custom demographic segment, and then compare it to the general population. Shown in Figure 3, this dashboard's interaction was structured as a three-step process, that built up to the comparison screen. A wonderful outcome and confirmation this was the right direction to head is that this dashboard became the most popular one available to customers: 240% more customer visits and 33% more customers using it than the second most popular dashboard.

And small wins continued to come up, for example, another product owner within the product line approached us months later, asking us to conduct usability testing on a different set of dashboards, because he wants to validate the designs with users before releasing them online.

Lessons Learned

Working within organizations to shift a culture towards user-centered design is never going to be easy, and many user experience professionals can swap similar stories of frustration. This story has a unique arc to it in that we declared failure, wrapped up our work, walked away, and then we saw the impact over time. It has given us more conviction to keep trying, as well as a desire replicate some of the rights steps in our process.

Educate at each level of the hierarchy

Stating that company hierarchy matters is not profound, but in terms of working within the hierarchy, we found that we needed to explain and sell the benefits of user research at every level, tailored to each vantage point. Individual contributors, managers, directors, and product heads were hearing the benefits of user-centered design for the first time, so we needed to explain the benefits of user interviews and the design process in the terms that made most sense to them. For example, to the head of the product line, we explained why and how a well-regarded, much larger company had made a shift to design thinking across all their products in order to stay competitive. To the engineers, we provided marked-up screenshots to explain exactly where dashboard UIs should change, and explicitly mapped user goals to technical requirements.

The missing piece we did not do well with convincing were the product managers. These managers set incentives and specified which tasks were important for the dashboard team. Our discoveries about users were dismissed with the statement "we talk to our customers all the time." Our goal for next time is to explain how meetings with customers do not provide the same information as semi-structured discovery interviews, and also to talk about measuring of product success based on user behavior.

Pay attention to employee incentives

While we mentioned it in our first meetings with the product leadership team that the dashboard team should not be goaled on the number of dashboards created, we did not directly ask the management team to change the team goal to be focused on usage

outcomes. In this case, benchmarking developers on the number of dashboards they could create was misaligned to what business success looks like for these tools: successful adoption. Accordingly, the team spent their energy on meeting deadlines for new dashboards, rather than improving usability or utility of the existing product.

Another twist on this is that if the team had retired dashboards, as we recommended they do, they would have undone their goals. No team wants to consider previous hard work as a waste of effort, and in this case retiring old work would have made their progress stall. Our advice for this is to carefully observe how the team measures their success, and either work within that goal or explain how to reframe the goals to align with user goals.

Loudly celebrate every success

In the end, this project did not reach the transformative state we aimed for, but it did have an impact on the product and the product team's thinking about product design. So while we grumbled a bit to ourselves about the outcome, as the small successes materialized, we took them as successes and announced them to the data product team, our management team, and the peripheral stakeholders. We also praised every single collaborator on the project for the amazing contribution they made to the research and the outcomes. This public sharing of the outcomes has led to the follow on projects and a general enthusiasm across the company for more user research.

Therefore, to continually demonstrate the value of user research, we recommend calling out successes to as many people within the organization as appropriate. Provide customer quotes, link to outside references, and point out the individual contributors who are making a difference to the business by connecting to and designing for customers.

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