

UX RESEARCH

Study Notes

UX Research

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LESSON 1: KEY CONCEPTS OF UX RESEARCH

UX CONCEPTS

What is user experience (UX)?

First, let's define user experience. Wikipedia defines it as follows, "User experience or UX refers to a person's entire experience using a particular product, system or service."

When any one of us sits down in front of a computer, lift our tablet or mobile phone, visit a website or use an app, we have become users of that service. Every interaction we have with a website from our initial impressions through to leaving the site and our recollections of it afterwards, all contribute to the user experience we have had. We will revisit this and offer further interpretations of user experience in module two, UX design.

Not just the user interface

One of the most important points to note about user experience is that it doesn't refer to the user interface alone. It is important to understand that we cannot talk about UX as just a surface layer. Researching the user experience as you'll see goes far deeper than this and gets to the very fundamentals of business goals and user needs.

It's worth bearing in mind that in any UX project, research is beginning to help shape the end user experience from day one. To quickly illustrate the difference and approach between a UI, or user interface, project and a full-blown user experience project, consider what the underlying thrust of each project might be.

A UI project might ask simply, "How can we make this complex process more visually appealing to the end user?" A user experience project will go further and start earlier and ask, "How can the business manage complexity in order to offer the end user simplicity?"

We are all users now

The web has changed the nature of the study of human computer interaction. What the web created was a huge number of user behaviors that can be studied and analyzed in order to improve the experiences and offerings for end users.

"The internet has impacted all industries in ways we could not have imagined three decades ago. But nowhere has that impact been felt more so than in science research and academic publishing." This point from the Huffington Post relates to science research, and certainly applies equally as much to the science of human computer interaction.

What is UX research?

What then is UX research? According to Robert Schumacher, in his book *The Handbook of Global User Research*, published in 2009, user research is "the systematic study of the goals, needs, and capabilities of users so as to specify design, construction, or improvement of tools to benefit how users work and live." You can see from this that, just as UX itself is a far-reaching discipline, the scope of UX research is similarly broad.

As we will discuss later in the module, we are interested in behaviors, and needs, and matching those with the capabilities of digital tools, of which websites are one in order to make users tasks and as

Schumacher mentions, lives measurably better. And measurably is the litmus test for the outputs from research. We'll look at what can be measured and why, later in the module.

UX RESEARCH

Ask people what they want

It may seem a somewhat obvious approach to designing for people, to simply ask what they want. This is however, generally, a bad approach, as the nature of what people say will not necessarily align with what they need.

Design stages

Research has an opportunity to influence design and development during three key stages.

- **Research for insight:** When gathering initial requirements during needs analysis, research provides key insights into what users might use or expect.
- **Research for validation:** During design and development, while design decisions are being made often on a daily basis, validation offers confidence about decisions made up to that point. Our research can help in rolling back a design that may have taken a wrong turn since the last round of testing. In this scenario, research provides waypoints during the process, and helps to build knowledge overtime.
- **Post-launch research:** Following the launch of a product or website, research can be used to assess the success of a product. For instance, in an e-commerce website, the conversion rate might be monitored. And the conversion funnel analyzed to provide guidance on improvements or iterations. At each of these stages, research is a valuable tool in maximizing the effectiveness of a website.

USABILITY

What is usability?

One of the key factors that research will need to inform and assess is usability. This is another term which, like UI, can often be misused as an interchangeable term for UX. Usability is just one facet of an overall user experience, and a fundamental one.

“Usability: The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use.” This ISO definition is taken from a dedicated international standard, ISO 9241-11 from 1998, Ergonomics of Human-System Interaction Guidance on Usability.

Just as UX is not UI, usability is not user experience. Usability is a by-product of designing in a user-centered manner. As noted by Jared Spool of User Interface Engineering, one of the world's leading usability research training and consulting firms, usability asks whether a user can accomplish their goal whereas UX asks whether the user enjoyed the experience.

Usability promotes adoption and use

Usability is a crucial characteristic of any website or product.

The Diffusion of Innovations by Everett Rogers was published in the 1960s, and studied how innovations are new products were adopted and spread. The insights in the book were tested in more than 6,000 research studies and field tests, and they sit amongst the most reliable in the social sciences. The research elicited five principles or heuristics.

Rogers discovered that if an innovation or new product failed, it was likely to be down to one of the five factors identified in the book. Amongst these is ease of use, or what we now call usability. In short, if usability is missing from a product, the likelihood of rejection by users is increased. Usability can be tested, and usability testing is the single most effective way of assessing the usability of a website. Usability testing will fall into one of two categories, formative and summative. These terms originate in educational theory but are completely relevant to usability.

Types of testing

There are two types of usability testing:

- **Formative testing:** This can fall into the category of research for insight or research for validation. For instance, formative usability testing might be carried out on an existing website prior to identifying the areas of focus for a redesign.
- **Summative testing:** This takes place after a product or service has been launched, for assessing whether a website is performing as expected, or it might be carried out on prototypes during the development stage.

UX BENCHMARKING

What is benchmarking?

Usability testing can form a part of what is termed 'benchmarking'. This is the process of setting a standard of performance based on either external sources, such as a competitor's website, or by assessing a current website, for instance, using task times as a measure.

Prerequisites

Before any benchmarking takes place, there are two key prerequisites.

- **Clarity around purpose:** There must be clarity around the purpose of the website, that is to say, the business objectives of the site.
- **Clarity around experience:** There must be a clear understanding of what experience factors or measures contribute towards those objectives.

Without knowing what a website should be doing, it becomes very difficult to assess its effectiveness.

Hypothesis-driven design

On that second point, finding exactly what makes a website deliver on the objective set for it can be tested using a series of hypotheses. This technique is derived from Ling Methodology, and can be termed hypothesis driven design.

Using this approach, we clearly state what we believe will happen as a result of a change to a design or feature. This should be structured where cause and effect are unambiguously stated. For example,

“We believe this feature will achieve this outcome based on this metric.” So a design change or a new feature leads to an outcome signified by a particular metric. This also bears a resemblance to what is known as the Scientific Method, demonstrating cause and effect.

SAMPLE SIZE VS. MARGIN OF ERROR

Appropriate sample sizes

When undertaking any research, it is important to ensure that a satisfactory sample size is used. Requisite sample sizes vary depending on the type of research being undertaken. A larger sample size will help to ensure the integrity of the data.

To give you an illustration for sample size, let's say you're undertaking a survey on fitness, and are pulling opinion from people in the street. You position yourself in the street right across from a gym, you sample five people, three of whom tell you that they run regularly.

Based on these results you conclude that 60% of the population runs regularly. The sample size of five was insufficient and inappropriate. This demonstrates the importance not only of appropriate sample sizes, but the potential for other factors to influence the outcome of research.

Factors affecting sample size

- **Nature of the research:** The nature of the research itself is a factor in sample size.
- **Nature of the audience:** A survey should allow enough participants to contribute such that the results are reliable. Conversely, usability testing has been shown to need as few as five or six participants before the majority of usability issues have been identified through testing.

In this specific case, as the number of participants increases, the results yield diminishing returns in terms of issues identified. Whereas in a survey for instance, the greater the number of participants, the more integrity the results will have.

So the smaller a sample size, the greater the margin of error will be and vice versa. The two are inversely proportional.

WHY UX RESEARCH MATTERS

The purpose of user research

The integral nature of research to UX work is summed up by this quote from the Nielsen Norman Group, one of the world's leading authorities on user experience:

“UX without research is not really UX. The user must be represented in the design of a product or service otherwise the design represents only one view.”

What research can deliver

Research can deliver insights on key areas, all of which relate to the design of a website:

- The organization or the business itself
- The business model, based on which the business generates revenue
- The competition

➤ End users

By the end of this module we'll have covered each of these in detail.

What needs to be learned

The goals for research can be summarized by asking the following questions:

- **Who are our users?** The customers, clients, and people who interact with our business.
- **What are they trying to do or achieve?** Why are they using what we provide for them?
- **What problems are we solving for them?** Why are they coming to us, specifically? And what are their goals?

We'll look more closely in a later section at how we can turn these very basic questions into a plan for research activity.

Principles over process

When embarking on research, the sheer range of options of techniques available can be overwhelming. We may have a lot of decisions to make about which research methods we use. The important point is to ensure that the research objectives are answered by whatever means are most effective.

One of the fundamental things we need to understand is the difference between qualitative and quantitative research:

- **Qualitative:** Studies that are qualitative in nature generate data about behaviors or attitudes based on observing them directly.
- **Quantitative:** In quantitative studies, the data about the behavior or attitudes in question are gathered indirectly.

QUANTITATIVE RESEARCH

Definition

Wikipedia defines quantitative research this way:

“The systematic, empirical investigation of observable phenomena via statistical, mathematical or computational techniques.”

A simple example of this might be a survey question, with a simple yes or no answer. Results from the survey will yield two numbers, those who answered yes, and those who answered no. What we are left with is a statistic, possibly as a percentage of the sample size. Using our earlier example around fitness, we might say that 60% of respondents indicated that they run regularly. What quantitative research won't give us is the 'Why' or 'How' around the topics.

Typical methods

In quantitative studies, the data about the behavior or attitudes in question are gathered indirectly. So methods of gathering quantitative data include the following:

- **Website analytics** provides data around the movement of users onto and through a website.
- **A/B testing** provides data around what version of a page or feature has aligned most closely with the goals assigned to them.
- **Eye-tracking** can reveal where users' eyes are drawn to on a webpage and where they look for key user tools, such as navigation or product filters.
- **Email or online surveys** allow for large numbers of people to be pulled resulting in potentially large sample sizes, if the survey is distributed well enough.

QUALITATIVE RESEARCH

Definition

Qualitative research provides us with more nuanced information around topics of research. According to Wikipedia:

“This is exploratory or discovery research used to gain an insight into behavior through, and understanding of, underlying reasons, opinions, and motivations.”

Again, using our simple example of the number of people exercising, knowing how many people exercise is the job of quantitative research. Understanding why they do it or what exercise they do is where qualitative research comes in.

As Wikipedia puts it:

“This gives us our underlying reasons, opinions, and motivations.”

Typical methods

Studies that are qualitative in nature generate data about behaviors or attitudes based on observing them directly:

- Interviews allow us to ask follow-up questions about particular answers, and gauge how strongly opinions might be felt, or how sure of the answer a participant is.
- Focus groups are useful for establishing recurrent or major themes for other research to investigate in more detail.
- Usability testing, as we have seen, can uncover fundamental issues with a website or a product.
- Diary studies where users record their interactions with a product or service overtime can offer data on experiences at the point of interaction rather than at a latter point when the experience may not be so fresh in the user's memory.

COGNITIVE BIAS

How data is analyzed

Biases can make their way into research, either on the part of the participant, for instance, when offering responses to interview questions, or on the part of the researcher when analyzing the data gathered.

Here are some example biases:

- **Functional fixedness** is the inability to realize that something known to have a particular use may also be used to perform other functions.
- **A lack of foresight or imagination** on the part of an interviewee may mean that there are opportunities for innovation missed.
- **The Illusion of Validity** is a situation where a researcher over estimates their ability to accurately interpret a set of data. In particular, when the data analyzed suggests a very consistent pattern. That is, when the data tells a coherent story. Put simply, research is interpreted as fitting in with a predetermined narrative, simply backing up what was already believed.
- **The Von Restorff Effect** suggests that things that stand out from the others are more likely to be remembered. This might affect, for instance, focus groups, where a particularly vocal member of the group can make their opinions more strongly made than other members.
- **Information bias** is the incorrect belief that more information, even irrelevant information, must always be acquired before making a decision. This can be countered with a coherent learning plan.

NOTES

LESSON 2: UX AND UNDERSTANDING THE BUSINESS AND USERS

BUSINESS MODELS

Definition

Understanding a business model is a fundamental. Put simply, a business model is a definition of how your business expects to generate revenue. The Wikipedia definition is:

“A business model describes the rationale of how an organization creates, delivers, and captures value.”

The concept of value features heavily in any business model. We'll look at this side of creating a value exchange with users and customers later in this section.

Examples

To illustrate business models, let's look at three prevalent models that we encounter on the web every day.

These are:

- **The subscription model**, where a user makes a regular or single payment in return for a service
- **The free model**, where a service is offered for free in return for access to users by advertisers or access to users' data
- **The freemium model**, where a part of the service is free with additional or premium services requiring a payment.

The significance of understanding the business model is that it tells us what a user's expectations may be or it will inform what content we need to include on a website. In short, it affects what a website's proposition is and will lead to research questions around how that information should be presented to users.

Subscription examples

Here are three examples of companies which operate under a subscription model. You'll be familiar with at least one of them.

- **Netflix** charges a fee for access to its vast library of TV shows and movies.
- **Dollar Shave Club** charges a monthly fee in return for a regular delivery of razor blades.
- **Salesforce** has a stepped level of subscription for access to its cloud-based CRM software. There is a straightforward exchange taking place here, fee in return for a service.

Free examples

Here are three examples of companies which operate under a free model and, again, these will be familiar names. Facebook, Twitter, and YouTube are all social media channels of one sort or another. Billions of people around the world use these services without having to pay anything to the companies that provide them.

- **Facebook** is free only in the sense that we don't pay any monetary value for the service. However, for advertisers and marketers, access to Facebook users comes at a premium.

- **YouTube** offers advertisers the opportunity to place ads in front of millions of users each day. The users' understanding of the business model here is debatable, but there is no doubt that these are terrifically popular and successful services.
- **Twitter** has had its problems defining precisely where its value is generated, but that doesn't stop hundreds of millions of people using its services.

Freemium examples

Finally, here are three examples of companies which operate under the freemium model. The name freemium, of course, comes from a combination of the words free and premium.

Dropbox, Evernote, and LinkedIn provide various types of services, but each offers a free version of their product, while asking users to pay for enhanced features.

- **Dropbox** offers an increase in storage capacity for a paid account.
- **Evernote**, similarly, offers greater storage and unlimited document transfer.
- **LinkedIn** provides greater insights to its data and heightened contact options for a premium product.

In these cases, the business hopes that users will develop a dependency on their product over time and build it into their work routines or lifestyle, such that they will eventually want to pay for the premium service.

STRATEGY

The role of research

This quote from Sir Terry Leahy perfectly describes the role of research in UX work.

“Always look around at customers, people, their lives, their problems, fears, and hopes. Out of that empathy, the truth emerges. If you go on listening, they will give you your strategy.”

The key line here is, out of empathy, truth emerges. Empathy is one of the key attributes required by anyone working in user experience. The ability to see and understand others' experiences lies at the heart of every aspect of UX work.

Essential components

Defining a strategy for the project should be the primary objective of user experience research.

In his book, *The Elements of User Experience*, published in 2000, UX designer, Jesse James Garrett, talked about strategy as being *the alignment of business goals or objectives with user needs*. Exactly how those align will be set by the business model and what we term the value exchange that these establish with the user. But at this point, it is important that we understand that the business must benefit from the exchange.

Two main business objectives

Put simply, business objectives are likely to come down to one of two main intentions

- To **make an organization money**, for instance, from an increase in sales on an e-commerce website by increasing the conversion rate
- To **save an organization money**, for instance, by reducing the number of support calls coming into a call center, by increasing the ability of customers to solve problems through self-serve content.

While there can be many other more nuanced goals for an online project, we assume here, a commercial context.

Examples of UX KPIs

So what other factors might we need to acknowledge as we set about UX research? The next logical step is to become increasingly specific about objectives and align objectives with particular outcomes. Key performance indicators (KPIs) are factors by which companies and organizations measure business performance.

At an organization-wide level, these might be financial metrics, such as profit, sales by region, or customer orientated, such as customer acquisition cost or net promoter score (NPS).

There are, similarly, KPIs that can apply to user experience and these might include:

- **Task success rate:** whether a task has been completed
- **Task time:** how long it takes users to complete a specific task
- **System usability skill (SUS):** a perception of ease of use on the part of end users
- **Error rate:** how many errors were made attempting a particular task
- **Use of search versus use of navigation:** telling us how intuitive or usable a website's navigation system appears to end users

Each of these can be benchmarked and used for a new version of a website to be measured against later.

Success metrics

If KPIs represent the bigger picture of whether a website or digital touch point is performing at a high level, there will be *success metrics* which back up the KPI.

For example, a KPI for the success of a website might be the conversion rate. A success metric might show that more website traffic is making its way to the cart stage of check out. Similarly, another success metric might be the number of users signing up to an e-newsletter.

Think of KPIs as the broad goals for a website, and success metrics being the numbers which give us the details of how the KPIs are being achieved.

UX AND INNOVATION

Can be evolution, not revolution

As Tim Brown notes:

“Great design thinkers observe the world in minute detail. They notice things that others do not and use their insights to inspire innovation.”

It is worth noting some of the other factors and influences that may come into play or be imposed on a UX project. We hear a lot about innovation and the need to be innovative when we create something for users to interact with. Very often, this can be misinformed or misconstrued. While a broad goal for a web project may be to be innovative, sometimes this becomes a false target, and as an end in itself, it can result in much wasted effort. Innovation can appear very unassuming for users, and research can help to discover and define what innovation might represent.

What is innovation?

Here are three simple examples of innovation, each worthy as a goal on a website project.

- Making it easier for customers to self-serve can be innovative. This can be a business objective for the project. Anything that empowers customers to achieve something for themselves can be an innovation.
- For products that require a lot of configuration, putting more of that process in the hands of customers will almost certainly be innovative.
- For an online process that is usually prolonged and painful for users to complete, then removing steps in this process or condensing the process in some way, can, similarly, be an innovation.

As an example, imagine an airline booking process that improved ideas and flights where selected, making the process more delightful or enjoyable. Wouldn't that be innovative?

UX AND BRANDING

Classic definition

Here is the classic definition of branding:

“Branding is a set of marketing and communication methods that help to distinguish a company from competitors and create a lasting impression in the minds of customers.”

Brand is another factor that may have a major influence on a project as it develops. It is important because it sets consumer expectations and may also influence, even dictate, the kinds of interactions that customers can have with an organization. For the types of expectations, we're referring to, think of a global brand like Coca-Cola. Consumers have a very fixed idea of what they expect from a company or brand of that nature. You need only look at the relative failure of some new products introduced over the years, such as New Coke, to understand that a brand occupies quite a defined space in consumers' minds.

Revised definition

These kinds of incidents affect brand perception. The same principles will also apply to interactions and digital experience. This may be manifest in expectations around content, or standard of delivery, or even the range of products that will be available on a website.

More recently, increasing numbers of industry figures, both in branding and in user experience, have put forward that brand is *experience*. This quote from the Nielsen Norman Group summarizes this school of thought:

“Brand is the holistic sum of customer’s experiences composed of visual, tonal, and behavioral brand components, many of which are shaped by interaction design.”

Following this line of thought, by creating a user experience that is appropriate to our audience, business goals, and the competitive landscape, we can positively reinforce our customers’ brand experience.

DEALING WITH OBJECTIONS

Achieving buy-in

As a UX project progresses, it is not uncommon to be met with objections about the nature of the research being undertaken.

It is important to understand that changes to an end user experience can demand corresponding changes elsewhere in a business and will require the business to change in order to facilitate it. Research might, for instance, uncover inefficiencies in business processes or in the level of service being offered to customers.

As in so many aspects of professional life, it is essential to communicate the wider benefit of a project to an organization. Achieving shared goals and communicating shared benefits will help to ensure that research gains the support it needs from all aspects of a business or organization.

USER PERSONAS

Audiences and segments

When we talk about users, we are, of course, talking about customers, consumers, and humans, and it is unlikely that there will be a single type of customer or user for your project. We are likely to be dealing with a range of different audiences, each representing a different set of needs, goals, and motivations.

Personas

You may have encountered the idea of *personas* before in a marketing context. When we talk about personas in a UX context, we are more interested in behaviors rather than the demographics and segmentation that marketing specializes in. Once our research uncovers what these needs, goals, motivations, and user behaviors are, we can group them by common elements and translate them into user personas.

When authored effectively, personas can become an essential design tool. Knowing the characteristics of a persona in terms of the key criteria of needs, goals, motivations, and behaviors, design decision-making can be informed and given low-level validation from the persona.

At their worst, personas can be sketchy stereotypes which simply reflect the received wisdom throughout the organization. Personas can and should reflect research with real customers. They shouldn’t reflect the assumptions and skewed internal perspectives of the business.

Effective personas

Effective personas will have a number of key criteria:

- **Precise:** Personas should be precise. They should leave no room for ambiguity.
- **Concise:** They should be concise, containing only relevant information with no padding or superfluous detail.
- **Reflective of research:** As far as possible, what is included in personas should have emerged from research undertaken.
- **Realistic:** They should be realistic and feel authentic. They should not be the creation of the business. For instance, the ideal customer that the business would like to have.
- **Specific:** The persona should include no generalizations.

Minimum viable persona

Personas put together for a project should be capable of answering the questions that will be asked of them. There is no point in containing extraneous detail that has no bearing on the project.

When putting together a suite or set of personas for a project, the number of personas should be kept to a minimum. This is likely to be somewhere between three and six personas depending on the nature of the project. The persona set selected should represent the majority of users of the website.

It will be impossible to represent all users. The reason for this is that there will always be edge cases, even secondary or tertiary level personas, that will not bring value to the business. Remember that the goal is not to reflect all users and personas, but most users.

TASK ANALYSIS

User goals

Each of your personas will be trying to undertake certain tasks in pursuit of their goals on the website. Task analysis, the pockets of work that users are involved in on the site, will translate to a number of smaller tasks. These should be identified by research and then, ultimately, facilitated by the design.

Let's imagine you want to buy concert tickets online.

1. Your first tasks will include finding the particular concert you're interested in probably through a search.
2. You'll then need to identify the type of ticket you want to buy.
3. You may then have to or want to choose your seat.
4. Finally, you want to purchase the ticket.

You can see that each of those is still quite broad and that many smaller tasks will be involved even within those, but it's a straightforward process.

Now, think about the process of researching and booking a family holiday. Take some time to think about the tasks that you may need to carry out in order to achieve your goal of booking that holiday.

VALUE EXCHANGE

What do users expect?

A value exchange is a description of a transaction which can include, but may not necessarily be, financial in nature.

Examples of a value exchange between a brand and a customer can include:

- The trading of money for goods or services (a straightforward financial transaction)
- It may be the consumer sharing information in return for a reward, where we input data and get a service in return (such as Facebook)
- It could be the promise and delivery of a better consumer experience

The third example is a combination of the first two, where we interact and offer input over time on the understanding that what we get in return over time will improve as a result of our interactions. This might be Amazon taking feedback from users on the recommendations offered to them.

Users understand the relationship and that data is being recorded and tracked. This links back to the business model and what users are prepared to exchange for what your product or service offers. It's a story of increasing trust in the brand and the service.

NOTES

LESSON 3: PLANNING UX RESEARCH

CASE STUDY

Bank marketing website research

Introduction

This is a case study of a project in which research played a major part in the design and development of a new website.

Our client was an Irish bank who wanted to create a new version of their public-facing website. That is to say, the website which details their product and services. The business objectives for the site were to increase the number of inbound enquiries, specifically, call back requests and also to increase the number of new product applications coming through the website.

Analytics review

Our research work began with some quantitative data sources in the form of analytics. These illustrated: users who are currently making use of the website; what the most important content was; where users, typically, left the site, as well as the level of engagement; how long users spent on the site; and what the main user journeys were. We were looking for patterns of use and what that might tell us about what the new site would need to provide.

Call center listening

We were given access to the bank's customer support center. Here, we were able to listen to customers articulating issues and queries they had in their own words and what the context of the issue was. We were also able to hear how the skilled call handlers dealt with these issues, the type of information that helped to solve customer problems, and any secondary queries customers had once their primary concerns had been dealt with. From the data gathered here, we were able to build personas that reflected the needs of the customers we had heard. The authenticity so vital to effective personas was derived from these listening sessions and ensured that many of the characteristics in our personas were reflective of real issues.

In-branch customer interviews

We also had access to customers in a number of the bank's branches. This was useful in that we could talk to customers directly rather than just listening to them as in the call center. We had authored a questionnaire asking about the nature of the customer's visit to the bank. Whether the customer had sought advice for their query online and what their impression of the current website was.

Some of the quotes from these interviews were translated directly into features on the persona set, and a number of phrases we recorded became navigation labels and sections in the new site structure.

Secondary research

We conducted secondary research into the trends of banking websites globally. These reports reflected changing expectations and habits of banking customers affected by digital banking habits and attitudes to financial institutions in general. Many of the reports we identified were projecting what consumer needs and patterns might be in five or ten years' time. All of the collated research

was helpful in ensuring that what we were creating was in line with wider global trends and would not answer the needs just of the present day, but this new future also.

Sector review

We benchmarked a large number of banks' marketing websites. Again, we were looking for patterns and trends in terms of content strategy, navigation patterns, interactions, and mobile provision. Direct local competitors were examined as well as global exemplars.

It is important to broaden the sample internationally in these cases, as while local competitors are important, the exercise could become highly insular if we didn't pay attention to global trends.

User personas

As mentioned, we put a persona set together that embodied the research carried out to this point. All of the information contained in the personas was traceable to one or other aspect of the research that was carried out. We were particularly careful to keep these personas highly focused and geared towards goals that each of the users were trying to achieve, common tasks they will be required to carry out, content requirements in order to answer their particular needs. We also included an aspect about their attitude to finances.

This project was coming at the end of a financial downturn. Banks had a lot to prove in the eyes of consumers. We noted the kinds of negative attitudes that these customers were demonstrating and how the bank might overcome them by providing them with better online services.

Tree testing

When putting together the structure of the website, we undertook card sorts and tree tests to ensure, as far as possible, that the structure matched what customers would expect to find and that they would find the type of content they required, whether that was information on new or unfamiliar products or help in deciding how to proceed in a particular financial situation. This allowed us to confidently produce an information architecture that would resonate with existing customers and any new customers that would arrive at the website. We'll look at card sorts and tree tests in more detail in module two.

Click testing

As the design and development of the website proceeded, we turned to other types of research to offer validation on the design decisions that have been made to date. In this instance, draft designs of the website were put to users in a click test where tasks were set for users and they were asked where on the design they would click to initiate their task. These tests produce a form of hit map, showing users' first clicks, and offer insight into how effective an interface will be in getting users in touch with the content that they have come to the website for. What we provided throughout this process, initially, is what we might term a form of reasonable certainty about the direction the website design should take. And then later in the process, we provided reasonable confidence about how closely the website was matching both the goal set for the website and the expectations that users would have of it.

THE UX LEARNING PLAN

Components

What you will, hopefully, have seen from the case study we have just been through, is that every piece of research had a specific purpose and provided a very particular input at various junctures throughout the process.

This does not happen by chance. Research can and should be planned out meticulously. Central to this process is a learning plan. In a brief document, a learning plan can offer rationale for any proposed research to be undertaken.

Components of an effective learning plan include the following.

- **It should identify knowns:** It should acknowledge what has already been established, for instance, in previous research.
- **It should identify unknowns:** It should acknowledge what is not known and what may be assumptions.
- **The plan should identify what questions need to be asked:** How will the unknowns become known?
- **It should define methods to ask those questions:** This includes the types of activity that will be required to answer the questions above.
- **It should identify who should answer those questions:** Who will be the source of the data? For instance, will it come from inside or outside the business?

Asking the right questions

The learning plan need not be complex. In fact, it should not be so. The more simply these elements can be brought together, the better.

By laying out the purpose and goals of research, it becomes much easier to communicate to stakeholders why the research will benefit the organization as a whole. It may be that the learning plan details not only the methods of research, but the significance of the data being gathered. How will the organization be better equipped to deal with business challenges once this data is known?

So in summary, the learning plan identifies:

- Facts, assumptions, and unknowns
- Which questions should be answered by research
- What methods will be used to make the unknowns become knowns

ASSUMPTIONS IN UX RESEARCH

Received wisdom does not equate to fact

This quote from American writer, Emily Levine, summarizes where many organizations find themselves. Assumptions are counter to what UX or any research is attempting to achieve.

“When you’re surrounded by people who share the same set of assumptions as you, you start to think that’s reality.”

Generally speaking, assumptions represent the business view and should be acknowledged as incomplete knowledge and challenged by data from research. If anything, assumptions can be used to form a hypothesis, which research can either prove or disapprove. We all can tend to make assumptions about what people want or need. The very act of acknowledging what these are is a hugely important first step in establishing facts that we can work from and act on.

Establishing what facts are

Here are some simple definitions that may help when attempting to categorize the data you have before any research begins.

- **Assumptions** are made without supporting evidence.
- **Presumptions** can be based on evidence, but are unproven.
- **Facts** are supported directly by evidence or data.

What assumptions or presumptions does your business have about its customers?

GAPS IN KNOWLEDGE

The focus for research

We mentioned in the learning plan section the idea of identifying gaps in knowledge. Specifying why filling these gaps should be undertaken is important rationale for research activity.

It is important to get this agreed and supported within the business to allow the research work to proceed with confidence. By doing this, expectations are being set internally about what is being discovered.

Objections can be dealt with early on and new opportunities for research may arise out of these discussions.

SHARING THE UX PLAN

Research methodology

In the steps we have outlined, what we will have derived is a research methodology and as a sync format.

Here is a definition of research methodology:

“The methodology is the general research strategy that outlines the way in which research is to be undertaken and, among other things, identifies the methods to be used in it.”

Raising awareness

The next thing to do is to share this with stakeholders within the business.

To summarize:

- Let the project team know what research is being undertaken. That is, the specific activities, their purpose, and the significance of any outcomes.

- Invite feedback on the methodology. Are there any objections, improvements to be made, or any enhancements that could be integrated?
- Raise awareness and understanding of the goals of research. By being transparent about what the research hopes to deliver, new sources of data may be suggested.

Once support for research begins to build, it may turn into enthusiasm for research and to other areas.

Increasing support

To give this idea of sharing and consulting with a wider team about research some additional width, let's look at an example from the Government Digital Service, or GDS, team behind the gov.uk website in the UK.

These researchers and designers are setting new standards in providing online services and are increasingly referenced globally as an example of best practice for their approach to problem-solving. The GDS team's work uses systematic research to improve online public services.

John Waterworth, one of the contributors to the GDS blog, has said the following:

“On the best exemplar projects, we find that user researchers spend about one-third of their time planning and conducting research and two-thirds of their time communicating with their team and the wider organization.”

PRIMARY RESEARCH

Definition and nature

Research activity will fall into two broad categories:

- Primary research
- Secondary research

Primary research is the collection of original primary data initiated by the researcher. Broadly speaking, any research activity that gathers new data is primary research.

Advantages

Some advantages of primary research are:

- **It provides up-to-date data:** It is timely.
- **It gives the researcher full control of the activity:** It is based around the questions that the researcher wants to answer.
- **It relates to specific gaps in knowledge:** It is not, for instance, general in nature or for marketing purposes alone.

Primary research methods

We now look at a number of primary research methods that can contribute towards a research methodology, starting with focus groups.

Focus groups

A focus group is a group interview involving 8-12 individuals who discuss a particular topic under the direction of a moderator who promotes interaction and ensures that the discussion remains on topic.

With any more than 12 participants, it becomes difficult to manage the session and discussion fragments into smaller groups. Any less than eight participants, and the dynamics of group discussion can be lost, resulting in a dialog between the moderator and one or two of the more vocal of the participants.

Focus groups represent a close match to the types of users who make up the target audience for a website. The closer the match between focus group participants and the target audience, the more relevant the data gathered will be.

A single focus group is unlikely to provide reliable data on its own. Ideally, a number of focus groups should be carried out and the themes uncovered of the groups collated and aggregated.

Similarly, remember that focus groups represent only a small cross-section of users. Findings from focus groups should be corroborated with other data. As an example, some findings could be used to structure questionnaires that are centered to a much broader audience and then the results cross referenced. When trying to solve problems for users, call listening can give valuable insights into what real users are experiencing. Support calls enable researchers to hear the customer articulate problems and issues in their own words. This can be extremely useful when it comes to labels and naming conventions within a navigation system, for instance.

Call listening

As with focus groups, call listening will only yield a cross-section of customer issues and insights, but it can be a highly credible source of data as it was illustrated during the earlier case study.

Surveys

Surveys are a common tool online and we will all have had experience of being asked to answer a survey, perhaps when we arrive at a website or maybe when we go to leave the website. Surveys are an effective method for gathering quantitative and qualitative data from a large cross-section of a customer base.

Questions in an online or written survey need to be carefully worded so as not to lead or suggest a particular response to the question. When authoring a survey, it is always worthwhile asking a colleague or friend to take the survey and find out if they felt lead by any of the questions. Next time you are offered the opportunity to take part in an online survey, say yes. Proceed through the survey and ask yourself what that organization might be trying to find out and why?

Interviews

Interviews enable researchers to hold direct dialog with customers, users, and stakeholders.

Like questionnaires, interviews gather answers to pre-set questions, but offer researchers the opportunity to pursue other questions as they arise in a more natural manner. While a standard survey or questionnaire might give us answers to how or what style of questions, interviews allow us to ask why against certain responses.

Workshops

Workshops are a highly effective way of gathering insights or achieving shared understanding. When they are well structured and sequenced, workshops can ask fundamental questions in a new way and take participants away from their usual patterns of thinking. By inviting a group of people together, opportunities arise for sharing knowledge that may not otherwise exist. Due to the fact that workshops can take up a number of hours and they require participation from a number of participants, preparation and planning is paramount to ensure that they feel like an effective use of everyone's time. A number of links to useful workshop resources have been included in the speaker's notes section of this presentation.

Heuristic reviews

Heuristic reviews are also known as expert reviews. These offer a method to quickly assess an interface, say on a website or an app, based on certain criteria or heuristics. The most commonly used heuristics relate to usability, but are not strictly limited to this. The heuristics used will dictate the nature and scale of the review. There are two core sets of heuristics used for interface review.

The Nielsen Norman Group Heuristics for User Interface Design date from 1995 before the web, as we knew it, came about. The original heuristics were aimed at software interface design. However, the principle in those still apply today.

The other common set is the ISO or International Organization for Standardization Accreditation for the Ergonomics of human-system interaction. These are a more recent set of standards and have even more direct relevance to the web. Between them, these two sets of heuristics offer a way to comprehensively assess an interface for suitability to its intended purpose.

SECONDARY RESEARCH

Definition and nature

Secondary research, also known as desk research, is in simple terms inherited research. Secondary research is the process of examining pre-existing research that was not carried out directly in relation to the primary project. Secondary research can provide large amounts of data at a lesser cost to primary research, but requires resources to assess its relevance.

Types

There are two types of secondary research:

- **Internal:** Internal secondary research originates from within a business or organization. This may include, but not be restricted to, financial data, sales data, and may come from marketing or even human resources.
- **External:** External secondary research will originate from sources outside the business or organization. It may include, but not be restricted to, industry white papers, market research reports, social surveys, or economic reviews of the sector in which a business is active. Companies, such as Deloitte or PWC, for instance, offer white papers, studies, or reports online at a cost, and these are common sources of reference for industry trends or forecasting the future for industries.

Sector reviews

One effective secondary research method is a sector review. This can look at a number of different sectors.

- **Direct:** A direct sector review assesses direct competitors' websites with the same target market.
- **Indirect:** An indirect sector review assesses those in the same industry, but in a different geography or territory.
- **Lateral:** A lateral sector review assesses other industries that may have relevance to the challenges of your project.

Sector reviews offer an effective introduction into a particular industry and provide references for other research work to take advantage of. Historical industry and sector reviews can be compared and contrasted with more recent studies in order to establish trends or patterns, for example, in consumer behaviors over a period of time.

USEFUL DATA SOURCES

Proxies for user input

When it comes to research, it is worth considering all possibilities for sources of data. When direct contact with end users is difficult, for instance, where a business or organization is reluctant to provide access to customers, then proxies for user input should be sought.

We have already looked at call centers and call listening. Anywhere that customers are active can be fertile ground for gaining new insights. This might include branches, offices, or outlets, talking with sales staff for their experience. It may be social media channels, where dialog exists between customers on a business, or even web chat transcripts.

NOTES

LESSON 4: UX AND ANALYZING USER BEHAVIOR

USER BEHAVIOR

Why are users interacting with you?

When we look at user behavior, we are concerned with the underlying motivations of the user. This will be set out by their needs and goals, and their motivation will come from one of two sources:

- Intrinsic motivation
- Extrinsic motivation

Intrinsic

Runkeeper is an app that people use to track their own fitness. To set goals and record activity over time, these users' motivation is intrinsic. And while there will be some gamification of features, the real achievements occur outside the app as an individual feels progress in their fitness being made. The app cannot replicate that reward.

Extrinsic

With Groupon, people are using the app to obtain extrinsic rewards. Use of the app is based on what the app can deliver in the form of offers and discounts. Motivation comes from within the app, and outside of the individual.

Mental models

A mental model is an internal concept we hold that helps us make sense of how things work, such as websites. Our mental model of how something works sets our expectations of how we will interact with it.

Research should address and uncover user expectations about what they will be provided with in order to perform their tasks and achieve their goals. It is that important.

Analytics

Analytics offer an interpretation and representation of user behavior. But we must remember that analytics reflect current and past behavior; as such, they can reflect trends. But they are not an effective method of predicting future behavior. They can illustrate where websites are performing effectively or where users are being let down, such as drop off points in an e-commerce conversion funnel.

Analytics can provide useful pointers or guidance as to where further research should be focused. And then in that sense, analytics can raise many more questions than they answer.

USER BEHAVIOR CHANGE

Influencing and facilitating

New or improved user experiences will generally need to involve a degree of behavior change. This will typically involve a shift towards more desirable behavior, linked to business goals or objectives.

As an example, on an e-commerce site, this might be a change to the way users select and buy products. A user goal linked to this might be a way to checkout more easily. A business goal linked to the change in behavior might be that customers buy more related or associated products. However, user experience design cannot force user behavior – it can only encourage them; user experience is not coercion.

Essential components

There are models in existence that help us to encourage and facilitate behavior change.

The Fogg Behavioral Model originated in Stanford Universities Persuasive Technology Lab. In this model, its author, B. J. Fogg, puts forward three factors that together lead to behavior change.

Fogg says that, for behavior change to take place, the following conditions must be in place:

- Firstly, an **underlying motivation**, intrinsic or extrinsic, needs to be present.
- Secondly, the user must have a suitable level of **ability**; they must have the right tools or features on a website, for instance.
- Finally, an **appropriate trigger** needs to be applied to prompt action at a relevant time.

So let's think of a practical example where this model goes to work. Let's say a customer visits a website, we'll say it's for cycling equipment. They browse a number of products and add a number of those products to their shopping cart on the website. They subsequently leave the website without checking out and the products remain in their shopping cart. A number of days later, the same customer receives an email generated by the website, informing them that one of the products in their shopping cart has since had a 10% reduction in price. The user then clicks a link in the email and is taken directly to their shopping cart on the website. They then proceed to checkout, saving 10% on one of the products they had in their cart.

According to Fogg's model, the behavior, that of purchasing the products, has been facilitated in the following way.

- The customer displayed a **motivation** to purchase the products when they visited the website previously and added those products to the cart.
- The **trigger** was the email they received, telling them that there was a discount on a product.
- The business provided the **ability** to follow through, through the functionality of a link on the email and then the e-commerce facility itself on the website.

Identifying what the motivations and triggers might be in any given behavior is the role of research. This can then feed into the design, which can offer the appropriate ability through interactions and content.

SYNTHESIS AND ANALYSIS

Finding patterns

We'll now begin to look at synthesis and analysis of research.

At this point in the process, we begin to look for patterns, themes, and trends in our findings.

Where possible, we look to achieve triangulation of sources, put simply a Venn diagram of themes from research. Triangulation occurs where two or more data sources return the same findings. For example, a survey may corroborate the themes identified during focus groups. Conclusions will be more robust when one or more sources support the hypothesis put forward before the research began.

AFFINITY MAPPING

A practical technique

One very practical way of establishing patterns in data is to use Affinity Mapping. Also known as the JK Method, it is a technique introduced by Japanese anthropologist Kawakita Jiro, and provides a method to gather meaning from large amounts of data points.

The technique is designed to be a collaborative effort, allowing consensus and shared understanding to build over time as a group organizes data in common groups.

Affinity Mapping achieves a number of aims at the same time:

- It identifies patterns.
- It allows others to be involved.
- It creates a sense of shared ownership of the results.

PRIORITIZATION AND PRESENTING RESEARCH

Other models

Other models exist that assist in disseminating research.

Kano Model

One of the best known of these is the Kano Model of customer satisfaction. The Kano Model helps researchers to prioritize lists of issues according to a customer view of products.

Features and issues are placed into four main categories:

- **Performance features:** These are also known as Satisfiers. These are features where customer satisfaction increases as the quality of the feature increases. Some examples might include delivery speed, discounts on products. In a hotel this might be the quality of food in the restaurant.
- **Basic features:** These are features that a user or customer will simply expect to be present and to work perfectly. These features will never score highly on satisfaction but can take the greatest amount of effort or resources to build and maintain. Sometimes known as threshold features, these must be present to achieve even basic credibility with users or customers. Examples might include, detailed information for all products available on a website, packaging orders so that they arrive in perfect condition. In the hotel scenario, think of running hot water in a hotel room or TVs in every room.
- **Delighters:** These features will generate high levels of customer satisfaction and may act as differentiators for the product. However, if they are not present, users won't necessarily be unhappy – these may be features that are unexpected. Examples might include, very high quality product images or product videos, particularly high quality product packaging. Again

to use a hotel example, think of a complimentary drink on check-in. Delighters can be easy to provide and their effect on customer satisfaction can be pronounced. However, if Basic features are not in place, then Delighters won't have quite the same impact.

- **Indifferent features:** These are features which no matter how much is invested in them, they will never return more than indifference on the part of customers and users. These are important to identify mainly to ensure that there is never too much resources invested in them.

By aligning, let's say, features in an app with these categories, we can begin to shape a user experience based on what customers themselves see as important and allocate resources on budget accordingly.

We'll make reference to the Kano Model in the case study that's following shortly.

Research belongs to everyone

As we have noted, at many points in a research process, sharing of research is highly advisable. Other members of the project team will appreciate it if you have made efforts to summarize research findings or to make them more accessible. By putting in this effort, researchers can win further support for a project and its objectives. Where possible, research should be in an easily scanned and easily shared format. This might be as a presentation or even as an infographic.

CASE STUDY

Mobile banking app feature scoping and testing

Introduction

We'll now work through a further case study, one that brings in many of the processes and techniques that we have just looked at. In the project in this case study, we were again working with our client, a bank. Like most banks nowadays, they provide a mobile app to their customers. The current app had been in circulation for a number of years and the new app was in the planning stages. The bank had a list of proposed features they wanted to build, but weren't sure which they should prioritize. We were asked to undertake a round of research that would inform the project team of which features should take priority in the backlog.

Focus groups

The bank once again made use of its resources, and customers were at the heart of the project. The first step was to hold a round of focus groups.

In these groups, we explored a series of topics and scenarios with customers, listening to their expectations, and experiences with other apps. These groups provided us with broad themes and initial anecdotal evidence of how the bank's customers viewed their banking app. Issues of trust and security emerged, common banking tasks were investigated and whether those would be expected within an app. We discussed whether there were any key tasks that customers felt would require visiting a branch for.

Secondary research

We then carried out an amount of desk research, looking at reports from around the globe on the trends in mobile banking. With mobile use in general increasing exponentially year-on-year, it was important to ensure that this was recent research. Some of the themes that were prevalent four or five years before may not be as relevant today. We could see that adaptation of mobile banking was increasing dramatically. So we have to consider this when assessing qualitative data on attitudes to certain features or tasks within the app.

Online survey

We issued an online questionnaire to users of the current banking app. The questionnaire followed the format required to use for analysis based on the Kano Model. In this questionnaire, each participant was informed of a potential new feature and a scenario in which it would be used.

Each participant was then asked two questions:

- They were asked how they would feel if the feature was in the app.
- They were asked how they would feel if the feature was not in the app.

The possible answers to each question were identical. These are called Functional and Dysfunctional questions. By cross referencing the answers, we began to plot features in a matrix, which told us how strongly customers felt about any of the given features.

Kano Model analysis

We used a matrix to plot the features. The categories indicated by the letters represent the Kano categories of features. Gradually, we built up a picture of which features qualified as Performance features, Delighters, Basic, or Indifferent.

Feature prioritization

We began to share the research using visualizations to reflect what the research was telling us. This made it easier for a wider group to understand. The outcome was that we were able to return to the developers with an unambiguous prioritized list of features, and one that had been informed completely by customers using the Kano Model as our reference point.

User testing

Once prototype versions of the app became available, we were asked to undertake some summative usability testing, to ensure that the app was as accessible and easy to use as possible. Our sample size for these tests was ten. The sample size in this case was acceptably low as studies have shown the test with as few as five users can uncover the majority of usability issues with an app or a website. These tests provided us with qualitative data in the form of user feedback, and quantitative data in the form of task completion times and time spent on tasks. We compiled the findings of the usability test in a report, indicating where the issues occurred, and commenting on their severity. The document was succinct, readable, and sharable.

Wireframe recommendations

When it came to offering recommendations based on the research, simple wire frames were the ultimate output. These were compiled in a similarly succinct manner to allow for presentations to be made or to facilitate easier discussion around them. The overall project brought in many aspects of

research, all of which contributed to progressing the project in the right direction. The role of research meant that design decisions that had yet to be made would be informed by evidence and data. Design outputs already created were validated through research or feedback gathered that would make the designs more effective both for users and for the business. And that is the role of research in UX.

NOTES

