Problem Set 5

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Monday:

1. Starbucks wants to evaluate whether their mobile pay solutions are having a positive impact on customer service. Outline how they might collect data to answer this question using:
   1. An observational study
   2. Focus groups
   3. An online survey

Identify:

What the procedure would look like

What data you would obtain

What questions you could answer using this data.

To collect data using an observational study, they could locate a couple of different shops where people are most likely to use the mobile pay solution and document/take notes on what people’s emotions are at the time of using it. The procedure would be fairly simple since you wouldn’t have to necessarily interact with specific people. You would also have the freedom to find specific times of the day you want to measure. The data you would obtain include, demographics of who purchases the drinks/food, how quickly the process takes from ordering to payment, and what time of day people tend to use it the most- to see if it’s used for efficiency or just so people have one less thing to hold. Questions you could answer with this data include the usage of mobile apps vs. card and cash, as well as what demographic of people order Starbucks at certain points in the time and day of the week.

If Starbucks wanted to evaluate their mobile pay solutions using focus groups, they could ask their employees to sit for on a (group) interview on how they perceive their consumers are enjoying using the mobile pay solution. Because it’s essentially an in-person questionnaire, the data you would collect would be a mix between what you might expect from a survey and an interview. More specifically, you could obtain more subjective data, such as likes and dislikes about different payment methods and a “why” to their answer. You could also obtain more interview like answers that are story-based. This would be beneficial because it would allow you to create a setting and environment behind their reasoning which would allow you to see if there’s a hidden factor in mobile payments.

To collect data using an online survey, Starbucks would likely have to send it to anyone who has a Starbucks account- it’s possible that bias may occur from “gold star” members answering more than those who only purchase from Starbucks occasionally. This could also be sent out via social media platforms if they were interested in perspective buyers. A third place the survey could be sent out is via Apple products- if those are the phones that offer the mobile pay solutions the most. After analyzing the data, you could answer how many people would enjoy using the mobile app (based on a scale), demographic questions, and more numerical data.

**Wednesday:**

1. In 2014, Facebook conducted their infamous Emotional Contagion study where they manipulated users' newsfeeds to contain differing amounts of positive and negative content. Name the (a) research question, (b) independent variables, and (c) dependent variables that Facebook used in this study.

Facebook’s research question for this study would be: “How does content impact a user’s desire to continue using the site?” The independent variables would be the users’ newsfeeds that were either filled with positive or negative content, while the dependent variable was the user’s emotion towards the site itself or the emotion towards using the site.

1. What kind of data collection strategies would you use to:
   1. Determine user perceptions of a social media campaign
   2. Assess the effectiveness of a web redesign
   3. Decide whether the next iPhone will live up to its hype (and turn a profit)

Be certain to provide a sufficient justification for why you feel this method is correct.

A couple of data collection strategies you could use to determine user perceptions of a social media campaign would be a survey, focus groups, and interviews (also known as questionnaires). To assess the effectiveness of web redesign you could run a controlled experiment to measure how quickly, accurately, and efficiently people can use the new website. A data collection strategy to use to decide whether the next iPhone will live up to its hype (and turn a profit) would be a simulation followed up by an observational study. The simulation’s statistical modeling would help determine what outcomes might arise from a given set of inputs. Then, the observational study would be a follow up as an immediate source of direct information that wouldn’t be influenced by others and could help operationalize people’s behaviors with minimal disruption.

1. For the three scenarios above,
   1. describe how you would conduct each investigation (i.e., not only the type of method, but what question would you answer
   2. What procedure would you use?
   3. What kind of data would you collect?
   4. How would you analyze that data to answer your question?

To conduct an investigation via questionnaires to determine user perceptions of a social media campaign, a question you could answer is: How does a user’s perception of a social media campaign change when the campaign is shown on more than one platform. The procedure you would use to go about this includes sending out a questionnaire asking how many times has a user seen a certain campaign and on which platform(s). It could also ask how they feel about the campaign and what actions they would take after viewing the campaign. The data you could collect includes demographics, positive and negative feelings, and actions they have taken or want to take. You could analyze those to determine if there’s a certain user demographic that perceives the campaign in one way versus another demographic. That could help you re-promote the campaign and target different users. You could also use it to determine if you need a different approach in general.

To conduct an investigation to assess the effectiveness of a web redesign, you could conduct an experiment to measure how efficient a new website design is for people to use. The procedure you could take is have (20) people complete certain tasks. 10 of those people would use the revamped site and 10 could use the old site. This would help determine what worked with the old website and what’s working with the new website. If having people try the old site isn’t an option, you could also easily have all (20) people use the new site to complete the tasks to see what hiccups occur. You could use this data to also figure out what tasks are quicker and what tasks are more confusing before sending out the website!

To conduct an investigation to assess the whether the next iPhone will live up to its hype (and turn a profit), you could run a simulation combined with an observation. The question you could answer is: Will the new iPhone’s features turn enough profit? The simulation would run as a first-trial since you could statistically determine what outputs might arise from new iPhone features. The observations would be a follow up where you could allow users of different demographics to test out the new phones and observe what behaviors people are having towards the features. The data from the simulation would provide you with numerical percentages of what may occur from your users if x and y happens. Then, the observational data would provide you with new data to back up or not back up the statistical data. You could then use these to determine what people like and don’t like about the iPhone to see how much profit you could make.

1. Describe how you might use data fusion to determine how the location people are in influences the ways they communicate with others. Assume you have full access to data from all technologies that a person may be carrying with them or that may be embedded in the environment.

One way you could use data fusion to determine how the location people are in influences the ways they communicate with others is by collecting geographical data from people’s phones. This could be in the form of users sharing their location on their phones or even through things like snapmap. You could fuse that data with what app they are using to communicate the most- whether it’s facetime, calling, texting, emailing, etc. For example, you may predict that people communicate via email the most when they’re in an office building vs. on a hike where someone might call or text more frequently. Fusing your data, you’d be able to create a pattern of where people are most often, who they’re with and what they’re doing there. Through something like an observational study (and a little bit of tracking) you could easily observe people in their in situ environment.

**Friday**

Submitted in Brackets