Introduction

When working on creating a new product, everyone on the team has their own ideas and opinions on what features there should be in the product. This usually ends up with the team having too many features to consider, not knowing which feature has priority over others and subsequently not knowing where to start. Also, customers don’t really know what exactly they want vs need unless told, so we need a way to reveal the customers’ wants and needs to be able to prioritise the important features and filter out non-essential ones.

Kano Model

The Kano model, also known as the “Customer Delight vs. Implementation Investment” approach, is an analysis tool that enables you to understand how customer emotional responses to products or features can be measured and explored. A Kano model questionnaire can be used to categorise product features across two-axis scales:

A diagram of a diagram of a function

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Functionality (the horizontal axis), which goes from *the feature isn’t implemented* to *the feature is implemented very well.*

A diagram of customer satisfaction

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Satisfaction (the vertical axis), which goes from *total dissatisfaction* with the product to *total satisfaction* with the product.

Based on responses from the questionnaire, we can determine the category each feature belongs to:

A diagram of a diagram

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Where:

**A**– Attractive features – These features are not expected but are liked by customers  
**M** – Must-be features – These are must have features and customers dislike not having them  
**P** – Performance features – Features customers like having and dislike not having  
**I** – Indifferent features – Customers are neutral to the feature or can tolerate it  
**Q** – Questionable features – Conflicting responses from customers  
**R** – Reverse features – When customers like not having the feature or dislike having it

The features can then be plotted on the kano reaction graph based on its satisfaction and function level:

A diagram of a customer satisfaction

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|  |  |
| --- | --- |
| Requirements Type | Definition |
| Must Be | Expected requirements that can that can dissatisfy if absent |
| Performance | The more of these requirements that are met, the more a client is satisfied |
| Delighters | It does not cause dissatisfaction if absent, but delights clients if present. |
| Indifferent | Client is indifferent to whether the feature is present or not. |
| Reverse | Features that cause dissatisfaction. |

Given this information, businesses would know what features are necessary and essential to the customers and what aren’t.

Elicitation Techniques

Several techniques are used to elicit requirements.

Interview

Interview is a systematic approach designed to elicit information from a person or group of people in an informal or formal setting by talking to an interviewee, asking relevant questions and documenting the responses. In an interview, the interviewer formally or informally directs questions to a stakeholder in order to obtain answers that will be used to create formal requirements. The interviewer also has to ensure that the biases and predispositions of the interviewer do not interfere with a free exchange of information.

There are 2 types of interviews:

* Structured Interview: where the interviewer has a predefined set of questions and is looking for answers.
* Unstructured Interview: where, without any predefined questions, the interviewer and the interviewee discuss topics of interest in an open-ended way.

For our project, we have decided to go with a structured interview as it makes sure that our questions are aligned with the goal of the interview, which is to find out the features that are essential for the users. Structured interview also gives the additional benefit of making data collection and comparison easy as the responses are quantitative.

To carry out a structured interview:

1. First, our team predetermines several features that we think are necessary for the system. We then crafted several questions to gain insights on the importance, implementability, potential effects of the features.
2. During the interview, the interviewees are asked to state from a scale of 1 to 5 how satisfied/dissatisfied they are with the presence/absence of each feature and whether the feature is implementable.
3. While conducting the interview, the responses are documented for data analysis later.

Below are the questions we will be asking:

Questions for the campus management:

* Will improper parking reporting systems be implementable?
* Is a parking reservation system implementable? Can the reservation be short-term?
* Is a real-time parking space tracker implementable?
* If our system requires admin, is it doable
* If our system requires access to the MMU ID database, is it doable

Questions university staffs:

* How hard is it to find a parking space
* Will they use carpool if available
* How many staff are carpooling already? Will staffs start to carpool more with our app?
* Will you want to be a carpool driver?
* How many staff have reserved parking spaces? Will more staff start to reserve if app allows short-term reservation?

Benefits

-Allows interviewee and interviewer to have full discussions and explanations of the questions and answers, thus providing additional information.

- Allows interviewees to provide personal opinions in private that they may be reluctant to express in public

Drawbacks

- Can be time-consuming

- Can be hard to arrange time for the interview

Survey/questionnaire

A questionnaire or “survey” is a document containing a number of standard questions that can be sent to individuals to obtain information from a large number of people or when the people are geographically dispersed. The questionnaire may consist of open and/or closed questions. For them to be effective, the terms, concepts, and boundaries of the domain must be well established and understood by the participants and questionnaire designer. Questions must be well-crafted to avoid gathering redundant and irrelevant information.

For our project, we have decided to conduct a questionnaire consisting of only close-ended questions so that the data is quantitative and makes data analysis easier. This is done through Google Forms, and is sent to the university’s group chats. The questionnaire consists of XXX questions, with each question pertaining to a feature, and participants are asked to rate the presence and absence of each feature from a scale of 1 to 5, from extremely dissatisfied to extremely satisfied.

Questions we will be asking in out questionnaire:

* How would you feel if an improper parking reporting system is implemented?
* How would you feel if the app does not have an improper parking reporting system?
* How would you feel if the app allows you to reserve parking spots?
* How would you feel if the app does not allow you to reserve parking spots?
* How would you feel if there is an interactive campus map that shows all available parking spaces in real-time?
* How would you feel if there is not an interactive campus map that shows all available parking spaces in real-time?
* How would you feel if the app allows you to book rides in advance?
* How would you feel if the app does not allow you to book rides in advance?
* How would you feel if the app has real-time location tracking of ride and user?
* How would you feel if the app does not have a real-time location tracking of ride and user?
* How would you feel if the app has chat functionality?
* How would you feel if the app does not have chat functionality?
* How would you feel if the app has a notification system for ride updates?
* How would you feel if the app does not have a notification system for ride updates?
* How would you feel if the app has an in-app payment and wallet system?
* How would you feel if the app does not have an in-app payment and wallet system?
* How would you feel if the app allows users to sign in using their MMU ID credentials?
* How would you feel if the app does not allow users to sign in using their MMU ID credentials?
* How would you feel if admins are able to view user information and car details?
* How would you feel if admins are not able to view user information and car details?
* How would you feel if admins are able to view details of reported parking violations?
* How would you feel if admins are not able to view details of reported parking violations?
* What is the maximum acceptable load time for the app?
* What is the maximum acceptable response time for a carpool match?
* What is the maximum update frequency acceptable for the real-time parking availability tracker?
* How would you feel if help menus are included in the app?
* How would you feel if help menus are not included in the app?
* How would you feel if clean error messages are shown when errors occur?
* How would you feel if clean error messages are not shown when errors occur?
* How would you feel if the app can be accessed via web and mobile platforms?
* How would you feel if the app can only be accessed via mobile platform?
* How would you feel if the app allows you to switch between light and dark themes?
* How would you feel if the app does not allow you to switch between light and dark themes?
* How would you feel if the app has a well-structured and consistent layout?
* How would you feel if the app does not have a well-structured and consistent layout?

Benefits

- Able to gather large amount of data in a short period of time

- Answers are quantitative, and makes data analysis easier

Drawbacks

- Answers given may lack depth due to the close-ended questions.

Observation

In this approach, the analyst observes the actual execution of existing processes by the users, usually without direct interference. Seeing the environment and domain where the system will be situated in action gives additional perspectives and a better understanding of system functionalities. Observation also allows us to verify statements made in interviews and surveys to determine whether the procedures within the domain really operate as they were described.

For our project, we have decided to observe the state of campus carpark at different hours to gather insights on the parking behaviours and availability. We have also observed the parking spots to see if sensors used to track parking availability can be placed.

Benefits

- Enables verification of the accuracy of information gathered from interviews and surveys.

- Provides an accurate and realistic understanding of actual conditions.

Drawbacks

- Is time-consuming because observations need to be made at different hours to gain a more comprehensive perspective