

Sponsor Background Introduction

Media Research Consultants is a Mediacorp Enterprise which is a leading market research agency in Singapore that provides end-to-end research solutions to private and government clients. MRC is in charge for conducting the NUH In-Patient Meals Audit Survey from 2015-2017.

Introduction and Project Background

As one of the leading Medical Institutions in Singapore, NUH places great importance in inpatients perception and satisfaction towards the meals provided in the hospital.

Sodexo is the esteemed provider of meals to the inpatients of NUH and is conducting the survey to ensure that the company's high standards are maintained.

The surveys are conducted by well-trained interviewers who have been involved in hospital surveys; especially those who are familiar with NUH conduct face-to-face interviews with respondents at the various NUH wards. This may include patients only as per agreed with Sodexo.

The survey is aimed at getting a result on the importance level of a few attributes of the food and how satisfied the patients are with the food.

It is measured on a 5-point scale, where 5 is very important and 1 is not important at all, for the importance rating of all key attributes in the questionnaire.

It is measured on a 5-point scale, where 5 is excellent and 1 is very poor, for the satisfaction rating of all key attributes in the questionnaire.

Motivation and Project Scope

The analysis of this survey is conducted manually currently which is time consuming. Thus, it is important to automate the analysis process to find useful insights into the survey. Patient health is extremely important for the hospital and the meals play a very important part in curing the state of the patient/s health. There is a whole lot of mental satisfaction if the patients are happy with their meals. Thus, this project will help to gain insights into the important aspects of the meals provided to the patients and areas for improvement.

The scope of the project involves:

- To measure and evaluate customer service satisfaction based on identified attributes of meals.
- To compile and report results of all key service matrices and service indices.
- To identify specific problems from analytical insights of service performances measured as well as based on direct customer feedback / comments and provide these in a timely manner to Sodexo so that appropriate actions can be taken. This shall include the usage of both quantitative and qualitative research methods.
- Ascertain customer expectations and derive relevant service gaps for all key attributes.

MRC has asked us to make this process automated for them where they can then give an online dashboard to Sodexo and not have to do the same analysis every two months.

We are therefore supposed to implement all the above mentioned bullet points in our project, and model a dashboard for MRC to present to Sodexo.

Requirements

- Create an online dashboard to take in the data and provide interesting dashboards to Sodexo. It needs to be an automated model to provide insights to Sodexo on their food standards.
- It needs to have real time results for the client to see every month.
- Compile and report results of all key service matrices and service indices.
- Ascertain customer expectations and derive relevant service gaps for all key attributes.
- Find correlation of different attributes using the data, and do other advanced analytics to come up with interesting insights.
- Analysis by ward is needed to be done and is very important to the client.

Dataset

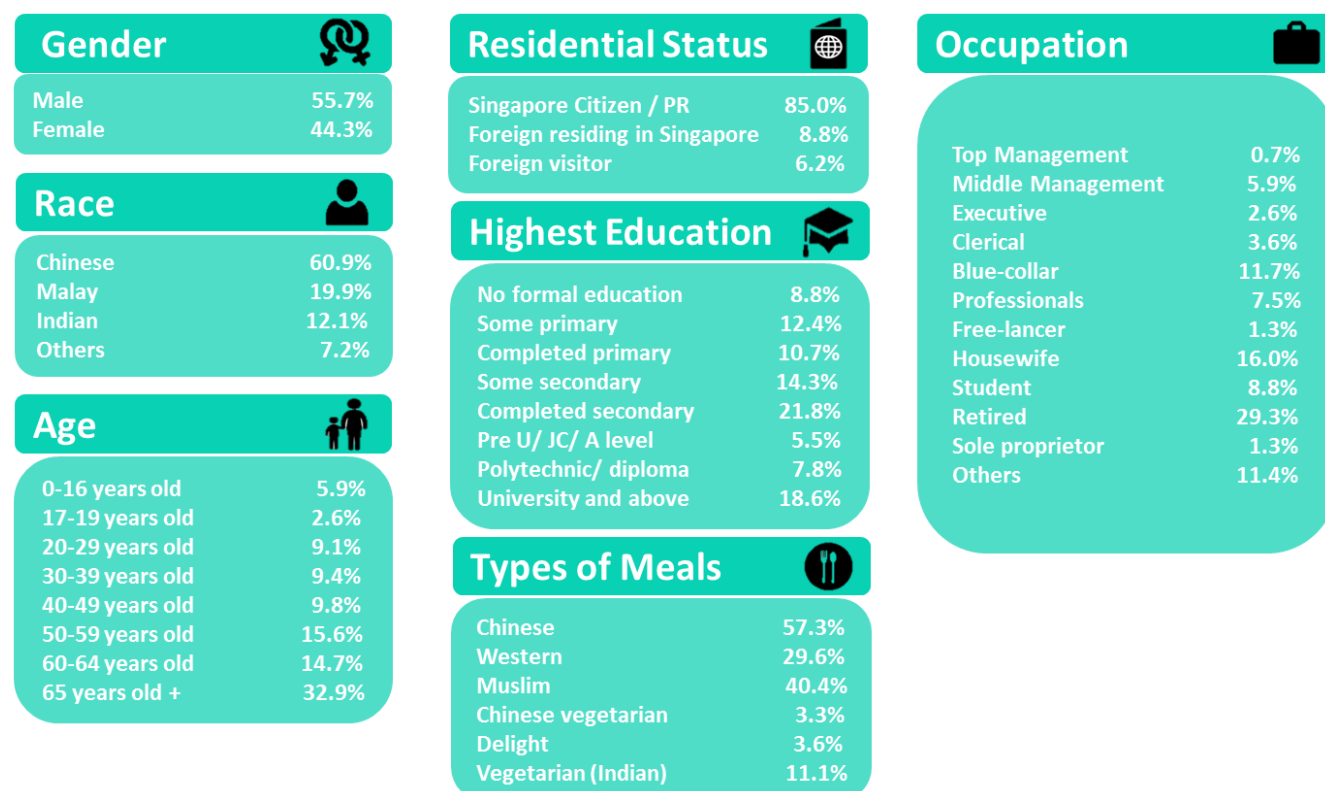
Sample size achieved n= **307** (Oct: n=150 / Nov: n=157)

Kent Ridge Wing: n= **100** (Oct: n=50 / Nov: n=50)

NUH Main Building: n= **207** (Oct: n=100 / Nov: n=107)

We have been given the data in two formats. One is the excel sheet which has all the details and is really detailed and the other is a SPSS sheet which has the data in numeric form to be analyzed. The data consists of the questionnaire answered by the 307 inpatients. It has the inpatients' details and feedback for the food provided to them according to the 8 key attributes identified (Around 80 columns).

The Demographic Profile of the patients



Ward Class n=307

A	61
B1	39
B2	86
C	121

Private / Subsidised n=307

Private	100
Subsidised	207

Location n=307

Main Building	207
Kent Ridge Wing	100
Main Special Diet	25
Main Normal Diet	182
KRW Special Diet	6
KRW Normal Diet	94

Diet n=307

Special Diet	31
Normal Diet	276
Private Special Diet	6
Subsidised Special Diet	25
Private Normal Diet	94
Subsidised Normal Diet	182

Ward Number n=307

Ward 41	5	Ward 6a	8
Ward 42	8	Ward 6A	19
Ward 43	11	Ward 6b	8
Ward 44	8	Ward 6B	3
Ward 45	9	Ward 7a	7
Ward 47	12	Ward 7A	5
Ward 48	7	Ward 7b	5
Ward 51	16	Ward 7B	9
Ward 52	12	Ward 8A	6
Ward 52Hd	2	Ward 8b	4
Ward 53	13	Ward 8B	3
Ward 54	18	Ward 9a	3
Ward 55	14	Ward 9A	6
Ward 56	12		
Ward 57	8		
Ward 58	7		
Ward 58hd	3		
Ward 5a	8		
Ward 5A	6		
Ward 61	8		
Ward 62	10		
Ward 63	13		
Ward 64	11		

Preliminary Data Analysis:

- ‘Courtesy of food service staff’ attributes – The patients were generally most satisfied with this attribute – 89%.
- Both private and subsidized patients were most satisfied with the ‘Courtesy of food service staff’ (93% and 87% respectively).
- ‘Taste of meals served’ (69%) scored the lowest satisfaction ratings among all patients- both private and subsidized. Taste is always one factor that has a big gap.
- Among private patients, the disparity between the importance they place on an attribute and the satisfaction they have with it was smallest for ‘Portion size of meals served’ (4 service gaps). The disparity was also smallest for ‘Portion size of meals served’ (4 service gaps) among subsidized patients.
- ‘Taste of meals served’ registered the highest service gap for patients both on special and normal diets. This is also true when divided into private and subsidized.

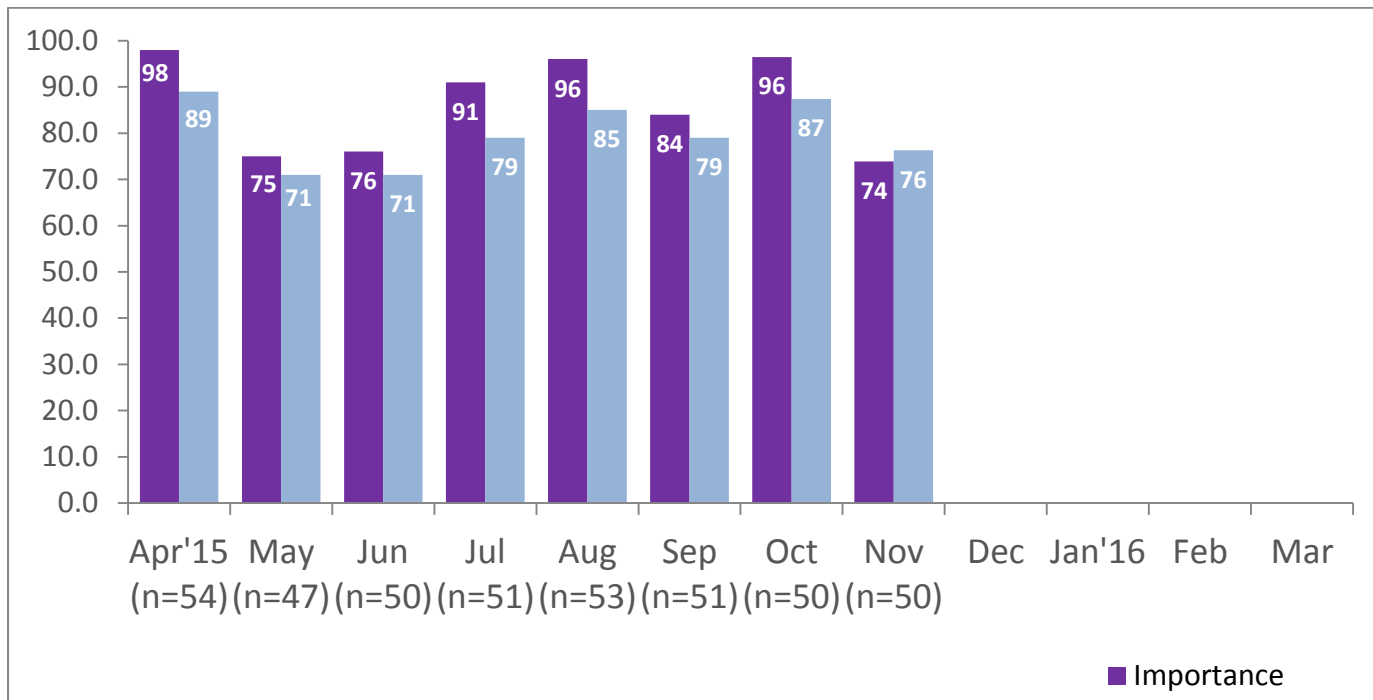
Methodology

The key aim for the project is to allow Sodexo to visualize the response of the patients to the meals they provide and understand the setbacks and areas for improvement. The dashboard should allow the users to conveniently see the feedback from the patients across the 8 key attributes where the main service gap

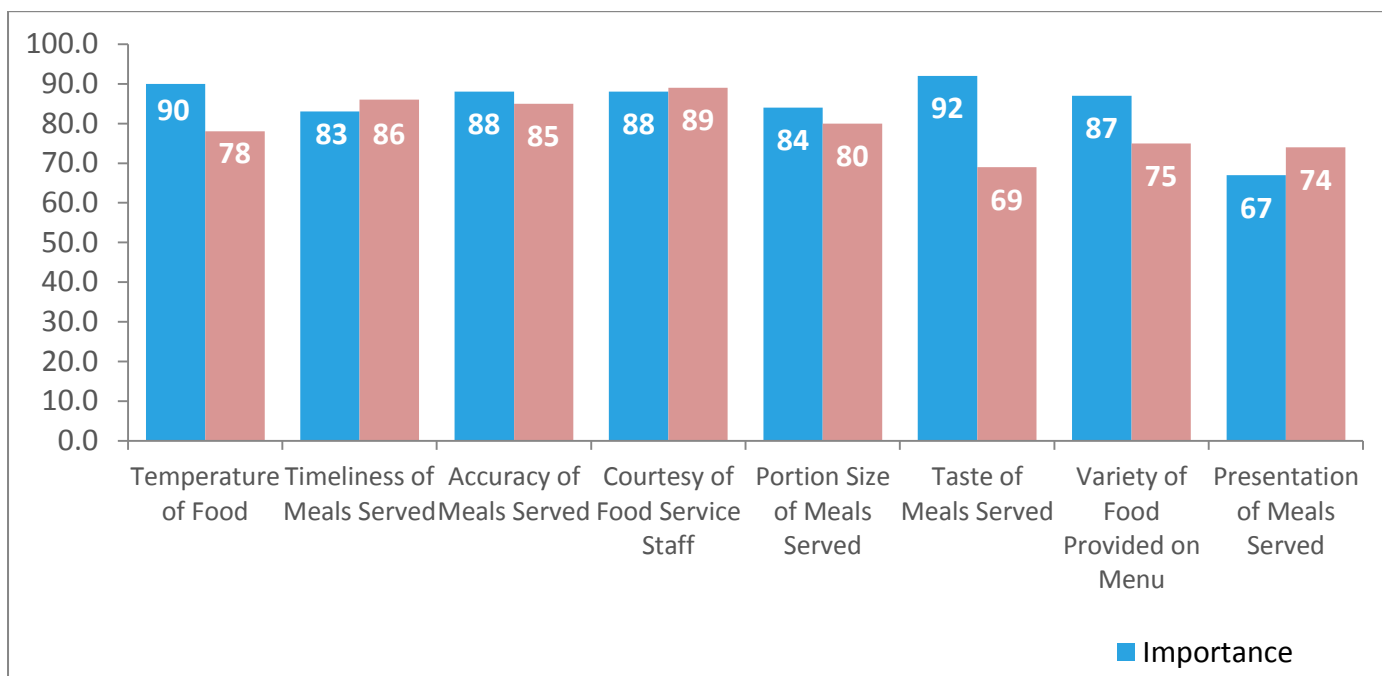
lies. Also the dashboard should show the analysis for the reason for satisfaction level to fall down and the patterns and links between the various attributes.

The dashboard will involve some simple descriptive graphs using aggregating data across the various criterions like the ones shown below:

Average Monthly Importance & Satisfaction (%)

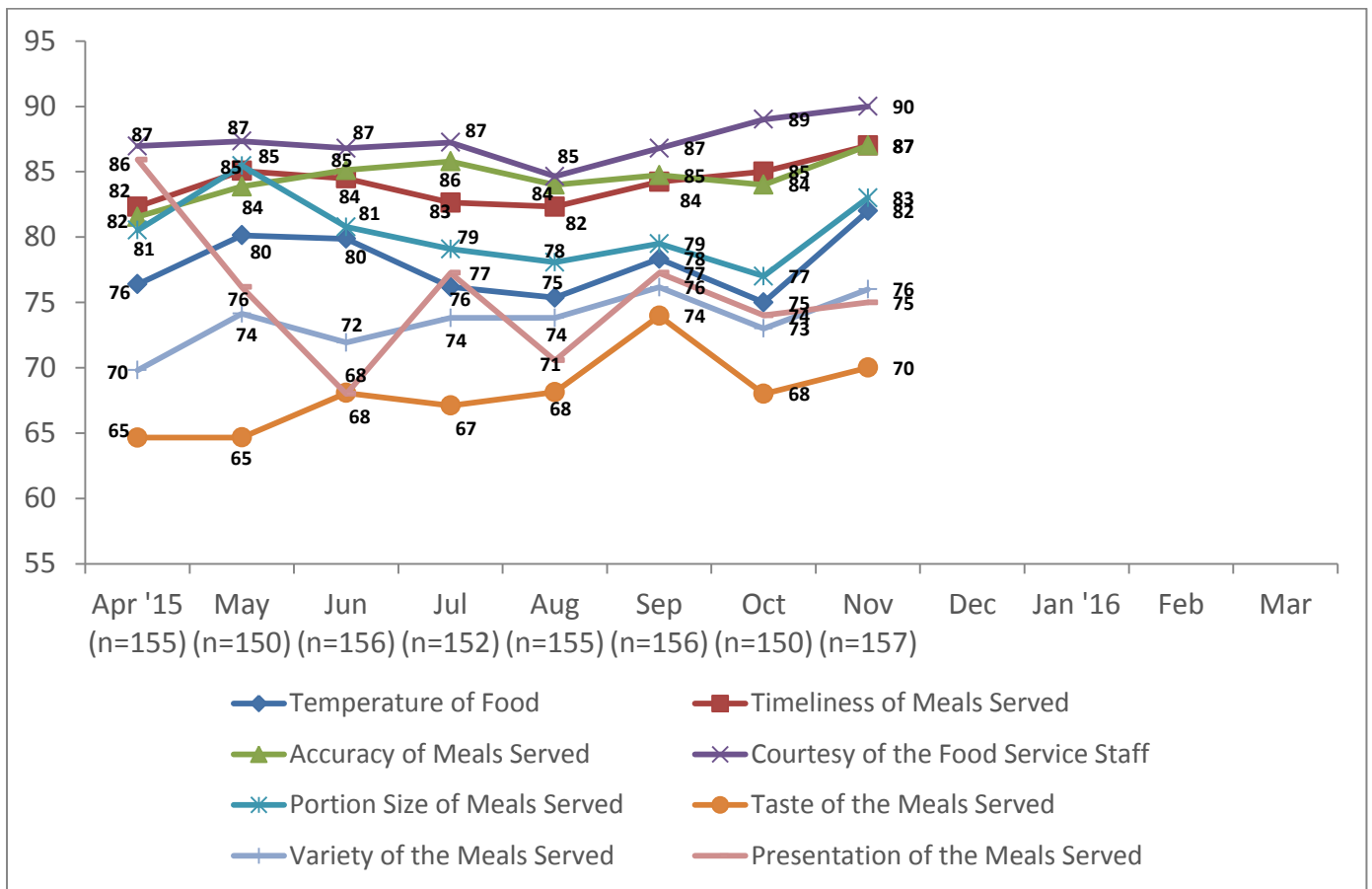


Overall Patient Importance & Satisfaction (%)



Together with this we will also use time series analysis to show the pattern of the survey for different months and display it in graphs like the one below:

Overall Satisfaction



We will also be using the data to find the attributes that tend to have a relation with each other. We will be forming a correlation matrix using the SEM technique and providing interesting insights to the sponsor regarding the correlation of the attributes.

Deliverables

- Project Proposal
- Mid-term presentation
- Mid-term report
- Final presentation
- Final report
- Project poster
- A web based dashboard

Timeline

Stakeholders

Project Supervisor: Prof Kam Tin Seong, Associate Professor of Information Systems; Senior Advisor, SIS Programmes in Analytics

Project Sponsor: Jason Soriano, MRC Mediacorp

Project Members: Akshat Agarwal; Pooja Tulsyan

Impact Analysis

Risk Assessment Metrics

		Likelihood		
		Low	Medium	High
Impact	Low	C	C	B
	Medium	C	B	A
	High	B	A	A

Risks	Level	Mitigation
Lack of expertise – as this is a new domain for the team	A	Consult with the teaching staff and the Project Supervisor for guidance and consultations Look at previous work done for similar projects or studies
UI is poor or it is difficult to use and understand	B	Keep the sponsor in a loop and run through regularly with him to fine-tune and make the dashboard better
Project delays due to unforeseen circumstances and heavy workload nearing the end of the semester	B	Have a 3 week buffer to accommodate delays and changes after the mid-term presentation

Limitations

People are there for varying amounts of time in the hospital so the data for them might be skewed. Like people who stay in the hospital for longer will be able to provide better feedback.

Also, the interviewers might be a limitation, as to whether they are right and unbiased, even Sodexo asked MRC about this limitation, but to make the interviewers unbiased and give constant surveys MRC applies a rotational policy for the interviewers in both the buildings.

Acknowledgement

We would like to thank Prof Kam for helping us find a sponsor and guiding us with the Project and the steps we should take.

We would like to thank Mr. Jason from MRC as well, who was very kind to meet us on a short notice and helped us with all the requirements and also provided us with the dataset. We would also like to thank him for his guidance on the project, the analysis and the road ahead.