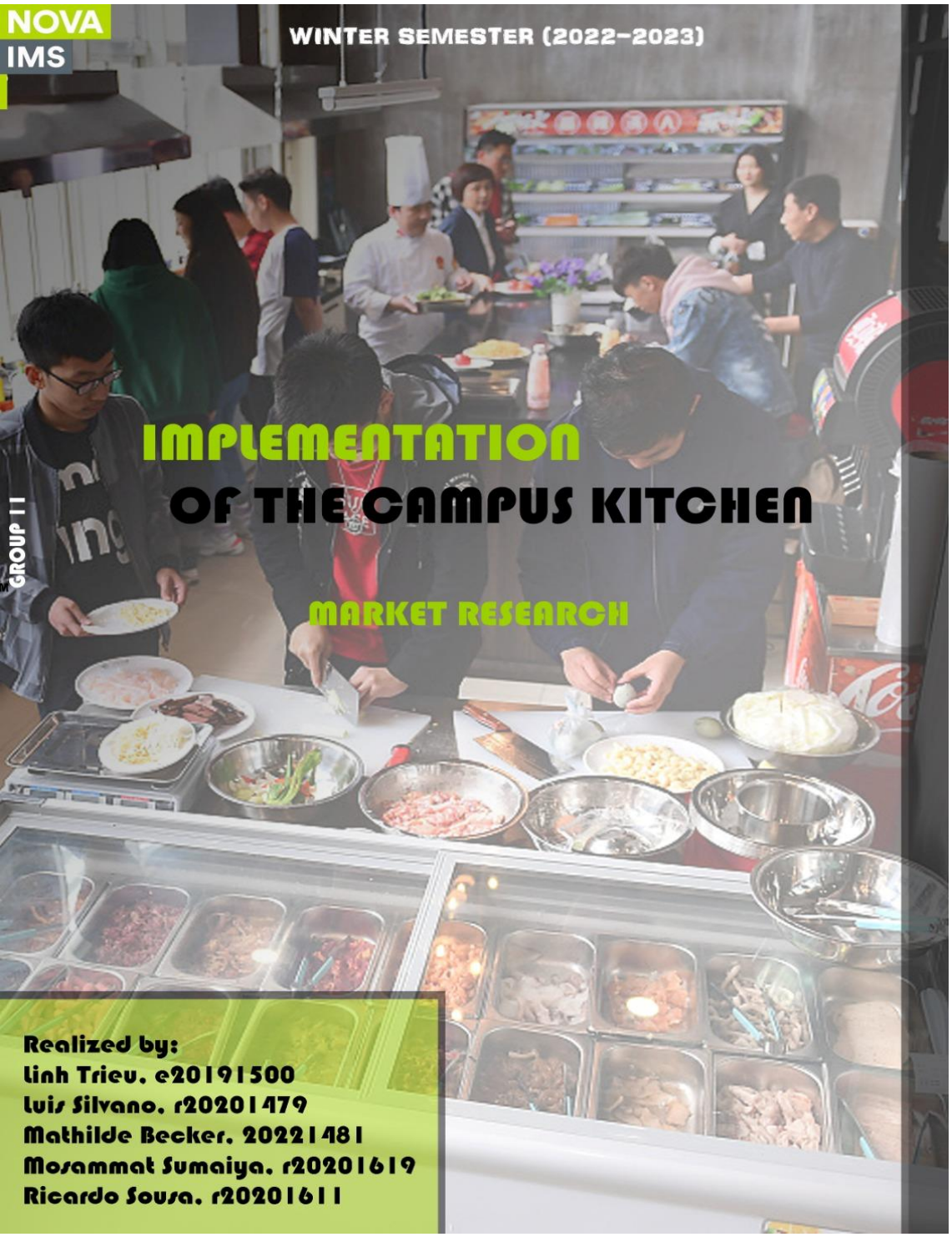

NOVA IMS

WINTER SEMESTER (2022-2023)

IMPLEMENTATION OF THE CAMPUS KITCHEN

MARKET RESEARCH

GROUP 11

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1. Introduction

The pandemic has been a time of great change and upheaval for many people. One of the things that has changed for many people is how they cook. With more people working from home and having to cook for themselves, many people have had to learn how to cook for the first time. Some people have taken cooking as a hobby and to de-stress. Others have found it to be a great way to connect with family and friends, even if it is just through sharing recipes. For some, cooking has been a way to save money and eat healthier. Whatever the reason, the pandemic has seen a surge in people learning how to cook. And who knows, maybe this is the start of a new era of home cooking!

As universities have more and more students, the campus foodservice has gained a major importance in the academic institution. Han Myung Joo, Yoon Ji Yoon, Yoo Young Hee, (Seoul, 2004) showed that University students were eating 1-4 times per week at university food service institutions and that “The reasons for not eating at University food service institutions were tasteless food and dissatisfaction with the menu”. Other research proved the correlation between campus food and students' health implications and habits. (P. Lugosi, 2019). Studies (Lei Qin, 1994) have demonstrated the beneficial effects of upgraded and effective kitchen equipment and workspace design on worker efficiency.

Learning how to cook is also growing our knowledge about quality food, variety of products and how eating can affect our mental and physical health. It is important to know what you are putting into your body. With social media, young people care more about the way they eat and how this affects their body. From our point of view, there is a possibility that nowadays many students prefer to cook their own meal rather than buying prepared food or eating at the restaurant. As well as for all the academic people involved at the university, which means students, staff, and teachers. Therefore, we decided to research the possibility of implementing kitchens at NOVA IMS.

2. Executive Resume

To improve the satisfaction of the food services at NOVA IMS, we will study in this report the decision to implement public kitchens in the campus of the university of NOVA IMS. We want to determine the impact of having a kitchen from the point of view of the academic community and to know if the community will find it helpful or not. Furthermore, we aim to understand the social impact of the plan, which is identify if new volunteering projects related to the use of the kitchen can be developed. Our hypothesis argued that the integration of the kitchen into the culture of the campus will allow students to **save time, money, eat healthier** and with **more variety, socialize, control their diet,** and **improve** their cooking skills.

To carry out our experiment, we created a questionnaire on paper (Questionnaire in appendix), and online (Qualtrics) requiring **5 minutes** to complete. The questionnaire was shared on social networks, by phone contact and by asking people at the NOVA IMS Campus.

A total of 65 people answered our study. **(64.6%** were students). We aim to identify the possibility of success in planning the implementation of a new practical kitchen on the NOVA IMS campus. Furthermore, understand other mandatory factors related to the building process and identify some social impact that can be created after the application of the common cooking space.

The results show that the satisfaction of the NOVA Community is shared. We noticed that only half of the Nova IMS Community can satisfy their diet while eating at the food services of the university. Moreover, it shows that the quality and variety have been judged to be quite **poor** (53% of dissatisfaction) meanwhile the price and the taste are stated to be reasonable enough.

Furthermore, it determines that **90%** of the respondent **are willing** to use the kitchen. Most of the respondent found benefits of having a kitchen at the NOVA IMS Campus. The major benefits that are met include **saving money and eating healthier.**

In conclusion, our study showed that the plan of implementing a common kitchen can be successfully carry out, based on the respondent cooking habits and attitudes toward the NOVA IMS food service's and new idea of cooking space.

3. Research Objectives

Nowadays the importance of good nutrition for individuals, so that they have a long life, and they are comfortable with themselves (physically and mentally) is of big importance for them to avoid possible future diseases of NOVA IMS academic community.

Considering the previous factors, the **canteen, and bar from NOVA IMS** were created to provide much-needed diverse options on cooking to the **academic community** (students, professors, and staff from NOVA IMS), they must be able to provide more quality in their food, for provide higher satisfaction on their consumers.

Our research **wants to realize if NOVA IMS could implement a practical kitchen**. Where the practical kitchen, will give the opportunity for the academic community not to be restricted to a specific dish in one day, give to the academic community the opportunity of improving their cooking skills, increase the range of the products available for community cooking (food diversity), the community will be able to follow their diets because they bring their products. The main objective of our group is to provide to NOVA IMS community with a healthy and nutritious environment, in the way the individuals can prepare meals based on their own preferences.

For answering to previous information mentioned we apply an online and physical questionnaire, to prove and justify our decisions and understand the main causes of our purposes for the study.

3.1 Problem Identification

In our research, we came across some of the reasons that lead to the dissatisfaction with the food services provided by NOVA IMS, and these were **Variety, Quality, and Price**.

When it comes to variety, university **cafeterias are often limited in the variety** of menu options they offer to academic communities. This lack of variety can be a major source of frustration, especially for those with dietary restrictions or preferences. It can create some significant impacts on the academic community especially, students' mental and physical health as they have the most workload. **Individuals who have dietary restrictions, such as vegetarians or those with food allergies, may not be able to get the nutrition they need from the limited menu** options. Furthermore, they may become bored with the lack of variety and give up on their healthy eating habits.

We reviewed the weekly canteen menu and found out that the menu had the same format throughout the week, with little to no space to vary and support different diets. For example, soup and side salad are only options for vegetarian or vegan diets, some additional side dishes can be added during the week but in major, the space for choice is very limited.

The second problem we identified was **quality**. In general, a popular opinion is that university **lunches are usually overpriced** compared to other dining options available to the academic community. Additionally, many campus food services **lack proper nutrition information** for their meals, making it difficult for consumers, especially students who are on a budget, to make healthy choices. Under the tight budgets and limited resources, not all the time the canteen can provide meals with excellent food quality and various options to satisfy the needs of buyers. As a result, in exchange, the quality of the food is often compromised to keep the prices reasonable for their target consumers. In addition, the products are often purchased in bulk, which can lead to food that is not as fresh or of good quality due to inevitable conditions.

When we reviewed the university menu for a week, we also analyzed the **prices** by comparing them with the menu options served by the food services at NOVA IMS. We observed that a plate

of rice or pasta with protein and a side dish of salad costs approximately €3.75 which is not too expensive, however, it is not the amount of food needed to fulfill the needs of some buyers. The full menu, which includes the same options but also comes with a bowl of soup and a dessert (usually a fruit or jelly) costs almost double the price. Alongside the lunch menu, academic individuals are often seen buying cups of coffee or juice and some snacks to go with it from the cafeteria or the vending machines, especially during the morning as a breakfast. Considering all these costs, an individual is spending an average of €7-10 just during the day, excluding dinner. As such, those who are under a budget constraint might find it difficult to maintain these costs daily.

4. 3.2 Main Study Goals

As seen above, the problems identified can be resolved by having an alternative solution that meets everyone's needs and requirements. Over our Exploratory Research, we confront many services issues that need to be handled from the canteen and bar from NOVA IMS, which lead our group to refine our main goals for concluding this study to obtain our initial idea (implementing a new practical kitchen for increase the satisfaction of the academic community from NOVA IMS).

Therefore, the principal objective of our group was to realize the main reasons for implementing a practical kitchen at NOVA IMS. According to our quantified results from our primary data and secondary data. The objectives of our data are:

- Determine the behavior of the NOVA Academic Community with the food services.
- Determine the satisfaction of the NOVA IMS Community with the food services
- Determine the willingness of the NOVA IMS Community to use our Practical Kitchen
- Determine the benefits that the NOVA IMS Community will get by using our Practical Kitchen

5. 3.3 Secondary Study Goals

According to a recent study from Gile, 2020, it is stated that in Portugal, “national food waste amounts to approximately 1 million tons per year, which is equivalent to about 17% of all food produced in the country for human consumption (Batista et al., 2012).” The study characterized Portugal as high consumption of meat and seafood, due to the long-lived cuisine culture and the special characteristics of national geography that more than 62% of Portugal residents live in the coastal urban areas. However, it shows that seafood and meat products result in greater pressure on the planet’s ecological assets than that on low trophic level fishes, poultry, vegetables, cereals, and dairy (Clune et al., 2017; Kim et al., 2019). Hence, food waste is a significant environmental and economic matter that we need to take into consideration before continuing with processing the project since the operation of the campus kitchen raises the surplus of food throw-away in general.

As the project is within the range of access from all students on the campus, besides encouraging the student's responsibilities toward the waste of edible food, in fact, it is nearly impossible to control the number of foodstuffs going directly to the trash. However, to define a solution to this situation, we decided to make an investment in “The Kitchen Campus Project”, which is based on the operation of a non-profit program created by the interconnection between multi-universities in the United States. We are aiming to obtain the donated food from not only the canteens and dining halls but also from the area supermarket, restaurants, and sponsors. Participants can go to the kitchen campus at a designated time to pick up the unserved and left-over usable food, make a meal using the donated foodstuffs and deliver free meals to individuals and agencies in the school's neighboring community in need of food assistance. Volunteer students can also join to form a healthy nutrition cooking class, food education, and culinary job training for children and unemployed individuals.

We also came across one of the Portuguese projects that can be applied to our current research, which is “Fruta Feia - Ugly Fruit” where their slogan indicates that “Beautiful People Eat Ugly

Fruit". As the customer tends to prefer "perfect" fruits and avoid the "ugly" non-appealing ones, such demands waste about 30% of what the farmers produce and most of the related products to ugly fruits do not pay off the costs of production and harvest. The cooperator of "Fruta Feia" works directly with the farmers to buy rejected fruits in good condition from the supermarket and resell them at cheaper prices at specific pick-up locations or online delivery. By changing consumer patterns, the project helps reduce tons of food waste and raise people's awareness about the fact that "ugly fruits' ' have beautiful quality. Using the main theme and product from this organization, The Kitchen Campus intends to show the student the ways of protecting our world from their small actions.

Therefore, our secondary goals is to determine the willingness of our NOVA IMS Community to participate to a volunteer project related to the kitchen.

3.4 Contextualization

3.4.1 NOVA University Lisbon & NOVA Information Management School (NOVA IMS)

The **NOVA University Lisbon**, a Portuguese public entity considered one of the best institutions of Portugal, has great prestige at the European and the world level "*considered the 15th best University in Europe is among the 50 best in the world under 50 according to the QS Top 50 under 50 ranking, whose evaluation criteria are, among others, reputation and internationalization"* the NOVA was created in the year 1973, is composed by 9 organic units (Faculty of Sciences and Technology, Faculty of Social Sciences and Humanities, Faculty of Medical Sciences, Faculty of Law, Faculty of Economics, Institute of Hygiene and Tropical Medicine, António Xavier Institute of Chemical and Biological Technology, Higher Institute of Statistics and Information Management, National School of Public Health) and *"It has more than 19,000 students and more than 1700 professors".* One of the organic units that we have is the **NOVA Information Management School (NOVA IMS)**, which was founded in the year 1989. The NOVA IMS institution's objective is to encourage its students' teaching excellence, highlighting the concept of learning and research with the main objective of information extraction (using statistics, mathematics, and programs).

3.4.2 Competition

Concerning the focus of our study, which recognizes the satisfaction of the academic community by using the canteen and bar from NOVA IMS, we started wondering which places where most of the community of NOVA IMS would go for lunch to understand their competitors. For our group to do further analysis, we decide to ask only the academic community from NOVA IMS. So, we reach 15 student's primary data *"data that was created by us, to solve our respective problem"*, and we could conclude the main competitors from the canteen and bar from NOVA IMS, are **lunching at home** (7 students, 46% of our target population), or they bring **food from home** (4 students, 26% of our target population), or the students will go to **El Corte Inglés**

facilities (2 students, 13% of our target population) and we had (2 students, 13% of our target population) **that prefer not to answer**, do not feel comfortable answering to our question. We decided also to ask one teacher and one staff for increase the range of our target population to have more diversity in our answers, the result was the teacher will go to **Linha d'Água** *"ideal place for a light meal or a late afternoon snack with friends",* and the staff answered that he will go to **H3 restaurant** *"pure beef burgers, grilled to your chosen point, spiced with sea salt and served on warm, friendly plates".*

6. Decision Implementation

4.1 Decision Alternatives

In order to successfully carrying out the plan, we first need to identify some mandatory criteria for the research purposes. By focusing mainly on the target population, the study is aimed to comprehend the opinions of the community on some aspects of their cooking habits, eating preferences, and level of satisfaction towards the food services of NOVA IMS. As such the following question rise in our study:

- Is the food worth the price?
- Are there different varieties of options available?
- Are people satisfied with the quality of the food provided?
- Would implementing the kitchen save time?
- What are the actions that can be implemented to meet the goals of our study?

Considering the answers we gathered from the participated individuals, it would be analyzed if NOVA organization is willing to invest the implementation of a practical kitchen based on the possible benefits gained.

Second, we want to consider the community judgement on the usage of canteen/bar from NOVA IMS, and create an innovative solution (i.e., our practical kitchen) to appease the demand in case

the satisfaction is not reached. The results will indicate the assurance of the investment, since the consumer perspectives, attitudes and opinions can be shown from the results of the survey.

Lastly, the future impact related to the project will also be investigated. Alongside with the main goal of pleasing the organization's needs, an additional objective is to identify some social benefits that can be achieved from the practical kitchen utilization.

4.2 Decision Criterion

Our decision criterion will be the utilization of interviews, **Personal with Traditional** method and **Postal with Electronic** method using CAWI (Computer-assisted Web interview). Our decision criteria will be the considerations and factors on which we base our decisions. The used methods were interviews, Personal with Traditional method and Postal with Electronic method using CAWI (Computer-assisted Web interview) and focused on obtaining opinions:

- How often on average would you like to kitchen per week?
- Why would you never use the kitchen?

4.3 Decision Rules

Some mandatory rules are determined in order to verify the best analysis results we aimed to received. The plan can be executed if at least 70% of the students from all cycle and 50% of the NOVA IMS teachers and staff vote are in favor of the idea of the practical kitchen. We believe the threshold defined for both the categories are the minimum essential requirements for the decision-making process.

7. Sampling Plan

5.1 Target Population

In our Market Research, we intend to study the **current students who are enrolled in Bachelor's, Postgraduate, Master, and Ph.D. and as well as the Teachers and academic staff from the NOVA IMS campus**, and their opinions on having an open kitchen on campus and if it is going to be beneficial for them. We also intend to include the present Erasmus community who come from different study cycles so that with their opinion, we can have a wide range of diversity in our study and learn more about the factors that have a huge influence on this research. We also want to understand how satisfied our target population is with the food services provided by the NOVA IMS bar and canteen and if any actions need to be implemented to promote for better future food services for the NOVA IM community.

5.2 Sample Segmentation

(Below is a set of the proportion of individuals we intend to collect our study data)

45% of Bachelor and Erasmus Students

Most of the target population includes the students who are enrolled in the Bachelor's, as they are the ones who spend the majority of the time as they are doing the full cycle of 3 years and as well as have the most workload from the semesters. The Erasmus and International students also belong to this category as the majority of them come for the bachelor's cycle.

35% of Master and Ph.D. Students

Individuals from this category, represent a larger community in NOVA IMS after their Bachelor's. Students from the master's, Post- Graduation, and Doctor of Philosophy (Ph.D.), behave similarly due to their different schedules and professional careers.

10% Staffs

Unlike students, staff does not have similar characteristics to any category of students, but they do spend most of their time on the NOVA IMS campus. Thus, we intend to know their opinions

as well and if implementing a kitchen can be beneficial for them as well.

10% Teachers

Though it is difficult to collect data from the Teachers, we would still like to know their experiences with the food services in NOVA IMS and what they think about it.

5.3 Sampling Frame and their Method

This internal secondary data *"data generated from NOVA IMS, that already have been collected for other purposes"* consists of **a list of all the individuals who belong to our target population** of the study. To have an idea of the proportion of individuals that enrolled in NOVA IMS, their students from (Bachelor's, Master's, Ph.D.), their professors, and the academic staff in the year (2020/2021). We can conclude that we have 6 types of stratified data. We used the data from the last academic year because the data from this academic year is not finished and was not possible to have their online access for privacy reasons.

Category	Bachelor's	Master's	Postgrad	Ph.D.	Professors	Staff	Total=N
Number of individuals	**442**	**1473**	**780**	**72**	**45**	**58**	**2870**

Table 1: Number of Individuals of Nova IMS in the year (2020/2021)

Using the information from the table above, we used the total number of individuals as N when determining the sample size. This will only help us find an estimate of the sample size for our study, who will represent the NOVA IMS community.

For the sampling method, keeping in mind the availability of all the individuals and the cost of implementing the sampling method, we are going to use simple random sampling, where with this method it will allow us to understand how each category of individuals from NOVA IMS behave between themselves, their influence on each other, ensuring the behavior diversity and we decided to use with proportion estimator because this method, their goal is to divide the population into homogeneous groups. That means each group (stratified data), sample values

that are not independent, and everyone from one population will have an equal probability of being selected.

5.4 Determination of Sample Size

To understand the proportion of respondents for our sample that will represent the whole population of NOVA IMS, we will estimate the parameter p using a Simple Random Sampling method without replacement.

To determine the p-value, we first must look at the answers we collected from the pilot test. We concluded that the most important question that formulates around the goal of our study is ***"How would you evaluate the overall taste of the food you had?".***

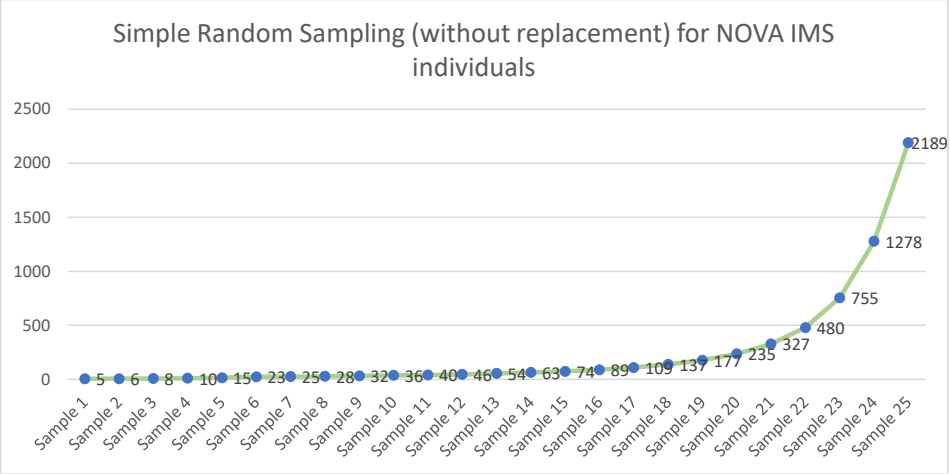
From the 5 pilot tests implemented, we obtained 3 responses that were answered to that question. So, our p-value is (3÷5 = 0.6), which we will use in determining the sample size. (p = 0.6; 1- p = q = 0.4; pq= 0.24; α = 0.05)

The Simple Random Sampling without replacement formula used to calculate n:

Samples	N	d	d^2	$z^2_{1-a/2}$	pq	$z^2_{1-a/2}Npq$	$d^2N + z^2_{1-a/2}pq$	$\frac{z^2_{1-a/2}Npq}{d^2N + z^2_{1-a/2}pq}$	n
Sample 1	2870	0.45	0.2025	3.8416	0.24	2646.09408	582.096984	4.545795894	5
Sample 2	2870	0.4	0.16	3.8416	0.24	2646.09408	460.121984	5.750853408	6
Sample 3	2870	0.35	0.1225	3.8416	0.24	2646.09408	352.496984	7.5067141	8
Sample 4	2870	0.3	0.09	3.8416	0.24	2646.09408	259.221984	10.20783052	10
Sample 5	2870	0.25	0.0625	3.8416	0.24	2646.09408	180.296984	14.67630806	15
Sample 6	2870	0.2	0.04	3.8416	0.24	2646.09408	115.721984	22.86595847	23
Sample 7	2870	0.19	0.0361	3.8416	0.24	2646.09408	104.528984	25.31445326	25
Sample 8	2870	0.18	0.0324	3.8416	0.24	2646.09408	93.909984	28.17691972	28
Sample 9	2870	0.17	0.0289	3.8416	0.24	2646.09408	83.864984	31.55183432	32

Sample 10	2870	0.16	0.0256	3.8416	0.24	2646.09408	74.393984	35.56865673	36
Sample 11	2870	0.15	0.0225	3.8416	0.24	2646.09408	65.496984	40.40024316	40
Sample 12	2870	0.14	0.0196	3.8416	0.24	2646.09408	57.173984	46.28143598	46
Sample 13	2870	0.13	0.0169	3.8416	0.24	2646.09408	49.424984	53.53758091	54
Sample 14	2870	0.12	0.0144	3.8416	0.24	2646.09408	42.249984	62.6294694	63
Sample 15	2870	0.11	0.0121	3.8416	0.24	2646.09408	35.648984	74.22635327	74
Sample 16	2870	0.1	0.01	3.8416	0.24	2646.09408	29.621984	89.32872558	89
Sample 17	2870	0.09	0.0081	3.8416	0.24	2646.09408	24.168984	109.4830498	109
Sample 18	2870	0.08	0.0064	3.8416	0.24	2646.09408	19.289984	137.1745088	137
Sample 19	2870	0.07	0.0049	3.8416	0.24	2646.09408	14.984984	176.5830434	177
Sample 20	2870	0.06	0.0036	3.8416	0.24	2646.09408	11.253984	235.125097	235
Sample 21	2870	0.05	0.0025	3.8416	0.24	2646.09408	8.096984	326.799964	327
Sample 22	**2870**	**0.04**	**0.0016**	**3.8416**	**0.24**	**2646.09408**	**5.513984**	**479.8878778**	**480**
Sample 23	2870	0.03	0.0009	3.8416	0.24	2646.09408	3.504984	754.9518286	755
Sample 24	2870	0.02	0.0004	3.8416	0.24	2646.09408	2.069984	1278.3162	1278
Sample 25	2870	0.01	0.0001	3.8416	0.24	2646.09408	1.208984	2188.69239	2189

Table 2: The Simple Random Sampling (without replacement) for NOVA IMS individuals



Graph 1: Simple Random Sampling (without replacement) for NOVA IMS individuals, Line Chart

The significance level considered was α= 0.05, because it is the standard that is set by default for the study. We tested out the sample size using different values for d to determine the best estimate for our study.

Using an elbow method, we conclude that the **sample size of 480** is the best estimate after which it starts variating a lot.

5.5 Sample Profile

Role	Percentages
Staff Member	26.15%
Bachelor Student	26.15%
Master Student	21.54%
Erasmus	9.23%
Teacher	7.69%
PhD Student	7.69%
Other	1.54%
Diet	
No diet	75.38%
Lactose free diet	7.69%
Vegetarian	6.15%
Sportive	6.15%
Vegan	1.54%
Other	1.54%
Gluten free diet	1.54%
Frequency	
Occasionally	38.46%
Often	36.92%
Never	18.46%
Always	6.15%
Reasons	
Quality of food	44.12%
Long queues	23.53%
Food choices	14.71%
Price	11.76%
Portion sizes	5.88%
Not enough time to eat	0.00%
Other	0.00%

Table 3: Sample Profile from our Data

A sample profile in a market research report is a description of a specific group of people who have been selected to participate in a survey or study. It helps us to accurately measure the opinions and attitudes of target audiences.

In our case, **we decided to use** the characteristics such as the **role** they play **in the Nova IMS community**, whether the individual is a student, professor, or a staff member, their diet, the **number of times they frequently visit the bar/ canteen** and their **reasons for not using the food services.**

We chose these **variables rather than the demographic ones** as these make more sense for our goal of the study. For example, "Age" or "Gender" has nothing to do with the implementation of the kitchen, rather their **diet and preferences are more important to us in order to understand the behavior of the population and how it affects our study goals in this market research.**

To determine the **Sample Profile of our target population**, the following data is analyzed from the questionnaires that were done both online and on paper. We can conclude that the Staff and students with bachelor's degrees have higher percentages (26.15%) of presence on the NOVA IMS campus. That means from our target population, the Staff, and the bachelor's students are the individuals from whom we collect more answers, they are the categories that represent our sample. This is a crucial point that should be noted for our conclusion. Now according to data from diet and frequency, they complement each other. We can conclude that most of the individuals (75.38%) do not have a diet, they use it occasionally (38.46%) of the academic food services in NOVA IMS. We also can conclude that we have more persons not going lunch to NOVA IMS facilities (18.46%) than always going with (6.15%). That will mean we implementation of our idea could help in the way achieving reaching more individuals to lunch in NOVA IMS facilities, because it will create a new possibility for the lunch, and the individuals will have more option diversity. For last, we have the Reasons why the community from NOVA IMS does not use the NOVA IMS food services, we can conclude **the most 2 important reasons why they do not use their services** are the **Quality of food** (44.12%), NOVA IMS must improve their food, arrange new partnerships with their suppliers, do higher investments in the food that they provide, and the second most import reason is **Long queues** (23.53%), they must contract more labor in a way be less time waiting by their consumers, or invest in better technologies. This is an important variable for us, as this helps us to study the behavior of our target population and how their opinion on the food services will lead to the final decision of this report.

8. Exploratory Research

6.1 Questionnaire and Data Collection Methods

To carry out the best results of the study, we firstly need to determine an effective way to approach our target individuals. As the study was conducted inside the NOVA IMS community, we decided that **our study will focus on the enrolled students, professors, and staff members**. The team **proceeded to the questionnaire in English since we realized the diversity in NOVA IMS social, as our program is currently taught in English** and the programs contain many international students. However, during our data collection process, we hit an obstacle with the fact that not all the staff members speak English, so it could later raise a problem in the analysis since we were not able to include the segmentation of people who do not speak English.

As determined, we **randomly selected a sample of 65 participants**, which was assumed as they represent the NOVA IMS. In the population segmentation section, we understand that the main proportion of NOVA IMS social is students, whose ages are under 30. The **younger generation tends to prefer using the Internet platform over the paper**, thus, our team started to build an **online questionnaire form to reduce time and costs**. The **platform we used; is Qualtrics**, a powerful survey software that offers many benefits to users. With it, users can easily create and administer surveys, collect responses, and analyze data. It also **offers a wide range of features and options that make it a very flexible and customizable tool.** Additionally, Qualtrics offers excellent support and training resources. Overall, it is an excellent survey software that offers many benefits to users. According to us, its benefits include being a free platform, being simple to implement, and enabling a quick and attractive design of our questionnaire**. With Qualtrics we were able to control the answers**. For example, integrating filters (if a respondent answers "yes" to question 4.1, questions 4.2 and 4.3 will appear).

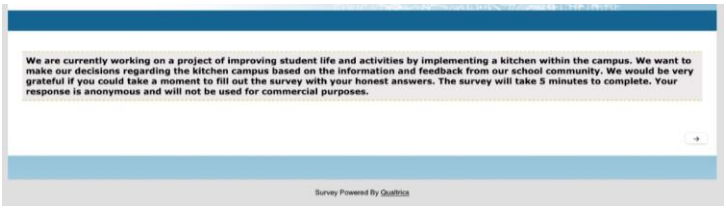


Figure 1: Qualtrics Platform

However**, we noticed that a new approach is needed toward the older generation**, since it is hard to collect their data online, due to personal preferences or private issues. Hence, **we also use the traditional method of handing paper questionnaires** to the remaining target population. While dealing with paper data, we counted several **non-sampling errors** *"incorrect or incomplete observations, failures in the work of interviewers",* which will later be described, due to the inattentiveness towards the instruction or accidentally skipping answers. We considered the need to perform some data treatments while holding the fact that those errors may create biases in our data. Luckily enough, it was not the case in the end.

In comparison with the other possible methods such as telephone interviews, mail or in-person interview, we thought that the online and paper questionnaire was the easiest to handle as it is not requiring any additional costs and time. In the 5 days that the questionnaire was created online and on paper, we obtained 70 answers, of which 5 responses do not belong to our target population. At first we started off with 51 answers, however when analyze the role segmentations, we noticed that the previous sample does not well-represent the diversity we expected. Thus, we expanded the collected data into 65 responses to thoroughly describe the population we aimed to study.

Our questionnaire is not only less than 5 minutes but also, the questions are understandable and easy to answer. The design of our questionnaire was focused on behaving as objectively as possible, to minimize the answering time and try to not influence the decision of our respondents. Based on the data analysis, we determined viral scales **(**Nominal Scale **"variables are simply labeled, with no specific order"**, Ordinal Scale **"variables are simply labeled, with a specific order"**, Interval Scale **"offers labels, order, as well as, a specific interval between each**

of its variable options") to select which is the most suitable to each specific question. Moreover, this decision reflected our desire to reduce the time required in questionnaire response, by limiting the alternatives to those who would express their perspectives in the most straightforward manner. Concerning the design of the questionnaire, we paid close attention to making an appealing outline that attracts the respondent, while also being careful not to distract their focus during the answering time. However, the design has been implemented only on paper since, on Qualtrics, the questionnaire has the default layout proposed by the software. As the design is quite neutral and easy to follow, we decided to stick with it as it has a weak influence on our respondents.

We believe that with our currently developed questionnaire, our team will be able to achieve our goals, which is to determine if the implementation of a practical kitchen is necessary for the NOVA IMS community.

6.2 Pilot Test

The first step of our study was to collect the sample test to be able to identify possible mistakes or ambiguities in our questionnaire. First, we decided to print out 5 questionnaires on paper and randomly hand them out to any individual we meet during the search. Later, we collected 5 answers respectively from 4 students and 1 teacher and kindly asked for their honest feedback on our survey. Based on the comments we obtained, the questions were redesigned to gain an approachable layout of contents and identify any difficulty and misunderstanding that happened during the process of filling out the questionnaire. We will list below the changes acquired during this process.

Introduction

To begin with, the first question mentioned the name "staff", which was ambiguous. So, we changed to the words "staff members".

Sections 1 & 3

Questions in 1.2, 3.1, and 3.4 included a 4-level scale, respectively “Never, less than once, 2-4 times, more than 4 times”. We decide to include “every day” in questions 3.1 and 3.4 as the week includes weekends. And for question 1.2, we decided to replace “more than 4 times” with “every day” as the food services are only open from Monday to Friday.

Section 2

The scale for question 2 has been repeated on the other page as it is more practical for people to answer. They do not need to come back to the other page to check the scale again. It avoids mistakes and allows the respondent to answer more quicker and easier.

Section 3

In question 3.4, “How often on average would you like to use the kitchen per week?”, after talking to a student, we decided to add question 3.5 “Why would you never use the kitchen?”. This decision has been taken as we would like to know if people will use the kitchen or not. Furthermore, in contrast, we can comprehend the reason why the participants are not likely to use the practical kitchen. To better understand the behavior of our population, we decided to make it an open-ended question to collect different alternatives that can better portray the habit patterns of our respondents.

Question 3.6, the option “None” has been added as a proportion of the community thinks that they will not gain any benefits from having an implemented kitchen at NOVA IMS.

Section 4

Question 4.1 included the scale of yes or no, however as volunteering or charity, or non-profit organizations can be a sensible matter, we decided to add the option “I do not know” to let the respondent free of their choices and satisfied.

6.3 Questionnaire Improvement

Analyzing the results received from the Pilot Test, we continue to improve the questionnaires based on the results. During the investigation of data from the Pilot Test and feedback from the respondents, we encountered several problems which can later be avoided while doing the real analysis of our sample. In addition, with the goal of having a simplified and effective questionnaire, the sections were organized again, and added more necessary improvements. In the end**, it was successful for us since we can reduce the duration from 7 minutes to under 5 minutes.** Next, we mention below all the developments we gained during the process of building the survey, and, after the implementation of the Pilot Test.

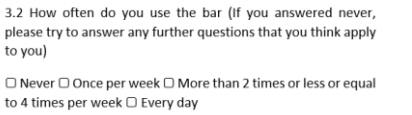


Figure 2: Before Improvement 3.2 Question, Pilot Test

Figure 3: After Improvement 3.2 Question, Pilot Test

We take an example of the question 3.2, which later moved into section 1 for us to better identify the eating behaviors of the respondents. The previous sentence was complained to be too long and contains many texts while defining the frequency of using food service. Also, the use of number range was not suitable, since a few people commented that it is hard for them to answer **how often they eat at the bar and canteen,** unknowingly the specific period. It was **later modified into a short, directed version with a fixed range (per week),** a less ambiguous scale, and a filtered section dedicated to specific individuals containing different behaviors. The changes also applied to similar questions developed in other sections.

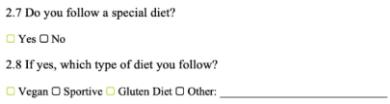


Figure 4: Before Improvement 2.7 and 2.8 Questions, Pilot Test

Figure 5: After Improvement 2.7 and 2.8 Questions, Pilot Test)

Following, we spotted that **a binary scale provides difficulties in interpretation** for both the respondent and the analyst. To acknowledge deeper the common attitude of the participants and save time, **we combined those two questions 2.7 and 2.8 into a semi-open question with more alternatives.** After conducting the Pilot Test, the team has been identifying more common diet types people tend to have. Thus, we are able to broaden the selection of answers to describe the food habits of the participant in a more detailed way. Continuously, for such dichotomous questions, our team agreed on having the option of "I do not know". It was used to avoid the situation where the individual does not know exactly what to answer, and try to skip the question with intention or provide a random answer.

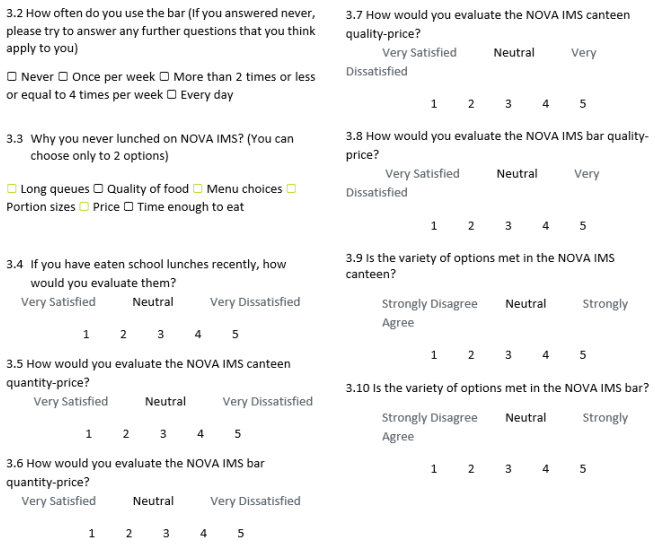


Figure 6: Previous Design from Questionnaire

	Very Dissatisfied	Dissatisfied	Satisfied	Very Satisfied
How would you rate the quality of foods?	☐	☐	☐	☐
How would you evaluate the prices of food?	☐	☐	☐	☐
Do the food services satisfy your diet concern?	☐	☐	☐	☐
How do you rate the variety of food available?	☐	☐	☐	☐

Figure 7: Likert Scale Chart Presentation

Regarding our interval scale in section 2, the **Likert Scale Chart was implemented for a more simple and straightforward presentation.** It saves space **and reduces the complexity of the layout** of the satisfaction segmentation. In addition, we **decided to change from 5 scales to 4, which is to eliminate the "Neutral" opinions.** As we determined, some people have a habit of using neutral options to avoid conflict and giving dishonest answers. Later, the **order was adjusted into an ascending level of satisfaction,** with the base being from Very Dissatisfied to Very Satisfied. The wording questions also were modified to match the scale we used.

3. Kitchen at NOVA IMS

We aim to implement some full-equipped kitchens which are available 24/7 and can be accessed by all NOVA IMS individuals. Thus, we would like to hear your opinions to help us produce the best services.

3.1 How often do you cook per week? ☐ Less than once ☐1 or 2 times ☐3 or 4 times ☐Everyday ☐ I do not cook

3.2 What types of stove are you familiar with?*Please choose 2 options max*

☐ Gas ☐ Electric ☐ Electric Coil ☐ Others_____

3.3 Would you like to have lockers for your food (in the fridge and outside)? ☐Yes ☐No☐ I do not know

3.4 How often on average would you like to use the kitchen per week?

☐ Never ☐Occasionally ☐Often ☐Always

👉*If you have answered "**never**" at Q.3.4 please answer Q.3.5*

3.5 Why would you never use the kitchen?_____

3.6 What are the most important benefits you would like to gain by having an open kitchen at NOVA IMS? *Please choose 3 options max.*

☐ Saving time ☐ Saving money ☐ Eat healthier ☐ Socialize with others ☐ More variety

☐ Improve cooking skills ☐ Control your diet ☐ None

Figure 8: Questionnaire Kitchen NOVA IMS Section

Since our study objective is to identify the necessity of having a practical kitchen in use for the NOVA IMS association, **we developed a more specific section dedicated to kitchen implementation.**

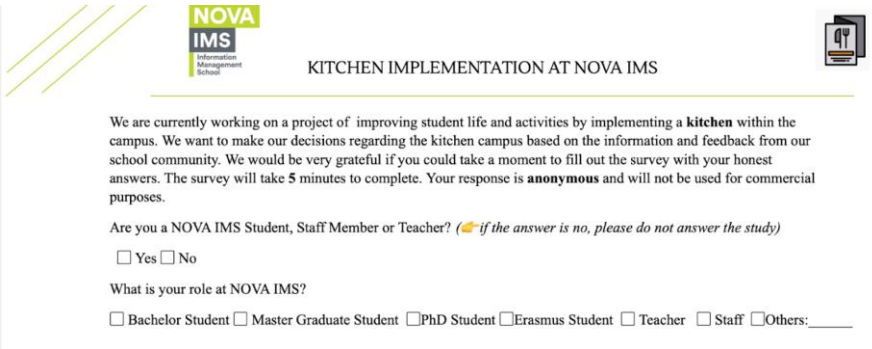
6.4 Questionnaire Structure

After the careful development suggested by the respondents and group members**, our team reached the final version of the questionnaire**. Ways of asking questions possess a significant impact on responses and in some cases, can mislead the answers and provide biased analysis. Understanding the importance of question-wording, we take a considerable period of time to carefully choose words and phrases that effectively express our meaning and purposes to the respondents. The questions are aimed to have a clear and specific explanation that can guarantee a minimal difference in how the respondents interpret what was asked.

The questionnaire was carried out with 20 questions that are subdivided into 5 categories, respectively Qualification, Usage of Food Services at NOVA IMS, Satisfaction with our Food Services, Kitchen at NOVA IMS, and Volunteering for a food support project. The division and order of those questions and sections were handled attentively, as we expected them to give the respondents an overview of what the team wanted to achieve and motivate the participants to provide more genuine answers. Throughout the journey, **we start by defining if the readers belong to the population needed**, understand their food habits and satisfaction level with the campus food services, ask for personal opinions on future kitchen usage, and lately, their willingness to join the volunteering project related to the kitchen implementation.

Furthermore, the first thing we did to develop the questionnaire is to define the structure. Our team thinks that multiple option layout will work the best for our current study. The multiple choices are used to minimize the bias of interviewers, and also saves time and effort for respondents when filling out the survey. However, since it has a data limitation due to the choices we provide, some open-ended questions are added in order to broaden the options of readers and capture more on their diverse behaviors. Besides, scales for each question are also adjusted according to the information we gained and how we are going to use it. The structure is a mixture of Ordinal, Nominal, Likert scales and additional dichotomous questions using binary values. The following section will provide a detailed explanation on the questionnaire structure.

6.5 Qualification Category



KITCHEN IMPLEMENTATION AT NOVA IMS

We are currently working on a project of improving student life and activities by implementing a **kitchen** within the campus. We want to make our decisions regarding the kitchen campus based on the information and feedback from our school community. We would be very grateful if you could take a moment to fill out the survey with your honest answers. The survey will take **5** minutes to complete. Your response is **anonymous** and will not be used for commercial purposes.

Are you a NOVA IMS Student, Staff Member or Teacher? *(if the answer is no, please do not answer the study)*

☐ Yes ☐ No

What is your role at NOVA IMS?

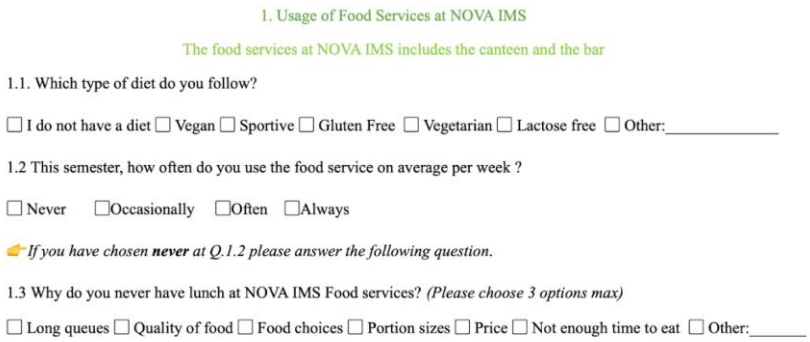
☐ Bachelor Student ☐ Master Graduate Student ☐PhD Student ☐Erasmus Student ☐ Teacher ☐ Staff ☐Others:_____

Figure 9: Actual Questionnaire Introduction

The questionnaire starts with a brief introduction explaining the intentions and objectives of the project**. The opening presents the team** and notifies the readers of **our current working project**, which aims to **improve the university's daily life** by identifying the impact of having a kitchen implemented on the campus. Using formal and polite expressions, we genuinely **ask for honest answers that will be used during the decision-making process**. Regarding this, the duration is stated **to not exceed 5 minutes** and the responses **are ensured to be anonymous and will not be used for any commercial purposes.** Correspondingly, we included in this section questions of qualification that filters out our target population. **Using the binary values for the first question, we can identify the individuals needed for the survey**, and erase the one that does not belong to the examining habitats. The **demographic measure that corresponds to the role of the readers** was applied to the second question. Defining the public information gained from the NOVA IMS website, we determined our alternatives as Bachelor Student, Master Graduate Student, and Ph.D. Student, Erasmus Student, Teacher, Staff Members, and Others. This semi-ended question also includes the "Others" option, in which we can identify the hidden population segmentation that belongs to NOVA IMS and avoid under-coverage sampling. As we focus on analyzing the food habits of the NOVA IMS community, **we decided to exclude other qualification questions related to "Age" and "Gender", as those are not related to our current study**.

6.6 Main Categories of Questionnaire

1. Usage of Food Services



1. Usage of Food Services at NOVA IMS

The food services at NOVA IMS includes the canteen and the bar

1.1. Which type of diet do you follow?

☐ I do not have a diet ☐ Vegan ☐ Sportive ☐ Gluten Free ☐ Vegetarian ☐ Lactose free ☐ Other:_____

1.2 This semester, how often do you use the food service on average per week ?

☐ Never ☐Occasionally ☐Often ☐Always

👉*If you have chosen **never** at Q.1.2 please answer the following question.*

1.3 Why do you never have lunch at NOVA IMS Food services? *(Please choose 3 options max)*

☐ Long queues ☐ Quality of food ☐ Food choices ☐ Portion sizes ☐ Price ☐ Not enough time to eat ☐ Other:_____

Figure 10: The Usage of Food Services (Questionnaire Section 1)

The section was built with two major questions and an additional filter question **that can verify the eating pattern and usage frequency of the food services at NOVA IMS**. As explained previously, Q1.1 asked about any specific diet the reader might contain. Additionally, we expect a segmentation of respondents having specific habits that were not listed by us. Therefore, for any similar questions, **we added an open-ended alternative as "Others" to gain knowledge about their preferences.** Q1.2 defined the number of times that individuals use the food services per week, which we can understand the willingness to stay at the campus after class and have lunch at the canteen. For example, people who choose "Always" to tend to stay on campus for more than half a day and will have a higher need in using the kitchen according to money-saving or eating preferences. They can also give us better accurate feedback on the canteen services as well. The additional filter was added to understand the reasons they prefer to not eat on campus, which can also be used to improve the quality of campus food services.

2. Satisfaction with our Food Services

2. Satisfaction with our Food Services

This section is to understand the respondent satisfaction toward our food services

👉*Please skip this section if you have never eaten at the food services*

How would you rate the following aspect of our food services?

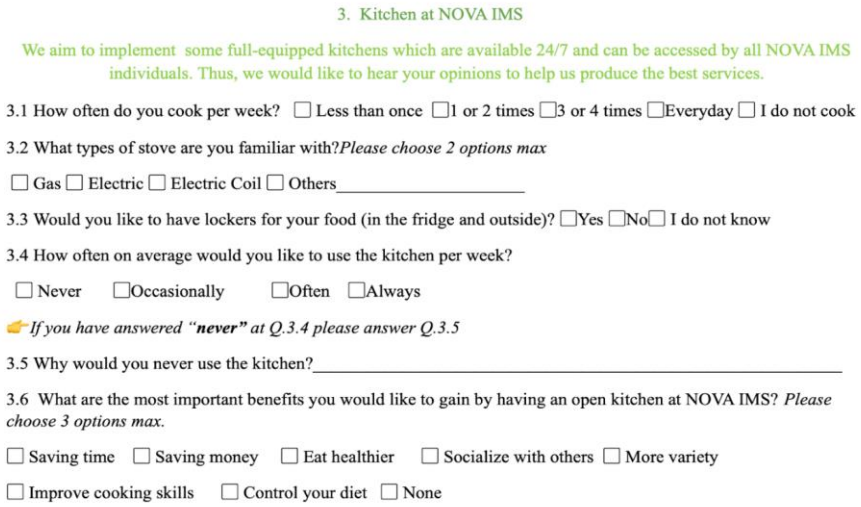
	Very Dissatisfied	Dissatisfied	Satisfied	Very Satisfied
How would you rate the quality of foods?	☐	☐	☐	☐
How would you evaluate the prices of food?	☐	☐	☐	☐
Do the food services satisfy your diet concern?	☐	☐	☐	☐
How do you rate the variety of food available?	☐	☐	☐	☐
	Very Dissatisfied	Dissatisfied	Satisfied	Very Satisfied
How would you evaluate the overall tastes of the food you had?	☐	☐	☐	☐
What do you think about the amount of time it took for you to be served?	☐	☐	☐	☐

Table 4: Satisfaction with our Food Services (Questionnaire Section 2)

Furthermore, section 2 was implemented to gain the **feedback of respondents and factors that need leverage in the food services.** It also **gives our team a brief looks on at the weaknesses of our main competitors.** Since in the scenario that the canteen has a low service enjoyment rate, we can determine that overall, people are more likely to use the practical kitchen to please their eating preferences and save money. In this category, **the Likert Scale is applied to represent people's attitudes and satisfaction levels corresponding to 6 aspects of the canteen services**. As previously defined, we use a 4-point Likert Scale with intermediate agreement answer options, **from Very Dissatisfied to Very Satisfied in ascending order** respectively. The ordinal scale assumes that the distance between each choice is equally the same. The table will later help us in evaluating the opinions of the respondents to understand if it is a positive, or negative rating

overall. Moreover, for on paper questionnaire only, the legends of the scale are duplicated for easier understanding and saving time on flipping back the paper, since the last two questions are moved toward the second page of the paper.

3. Kitchen at NOVA IMS



3. Kitchen at NOVA IMS

We aim to implement some full-equipped kitchens which are available 24/7 and can be accessed by all NOVA IMS individuals. Thus, we would like to hear your opinions to help us produce the best services.

3.1 How often do you cook per week? ☐ Less than once ☐1 or 2 times ☐3 or 4 times ☐Everyday ☐ I do not cook

3.2 What types of stove are you familiar with?*Please choose 2 options max*

☐ Gas ☐ Electric ☐ Electric Coil ☐ Others_____

3.3 Would you like to have lockers for your food (in the fridge and outside)? ☐Yes ☐No☐ I do not know

3.4 How often on average would you like to use the kitchen per week?

☐ Never ☐Occasionally ☐Often ☐Always

*If you have answered "**never**" at Q.3.4 please answer Q.3.5*

3.5 Why would you never use the kitchen?_____

3.6 What are the most important benefits you would like to gain by having an open kitchen at NOVA IMS? *Please choose 3 options max.*

☐ Saving time ☐ Saving money ☐ Eat healthier ☐ Socialize with others ☐ More variety

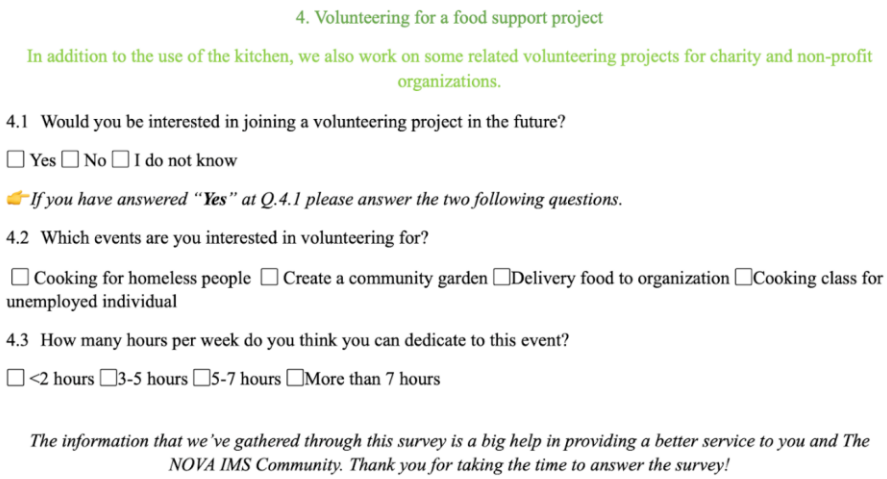
☐ Improve cooking skills ☐ Control your diet ☐ None

Figure 11: Kitchen NOVA IMS (Questionnaire Section 3)

The third category is dedicated to approximately comprehending the level of frequency in future kitchen usage, as well as the food production equipment that comes in handy for the majority. The section is a combination of closed-end questions, respectively as Q3.1, Q3.3, Q3.2 and Q3.6. Moreover, we also included one semi-ended and open-ended to broaden the possibility of honest feedback we received, which allowed us to understand the respondent's true attitude toward the questions. The questionnaire first approaches the reader with ordinal scale in Q3.1, as we aim to gain knowledge of their cooking habits by the number of times they cook per week. Q3.2 and Q3.3 use nominal scales to determine which features and furniture that most people prefer to use. Considered as the most important of our study, the Q3.4 shows the number of

people who think the kitchen might be helpful and interested in accessing the kitchen in future. However, also to verify the reason why they neglect the use of the kitchen, we also build an open-ended question Q3.5. And in contrast, toward the segmentation that takes notice in a new space of cooking, we can justify the main motives that make them want to have the kitchen implemented based on the benefits they want to gain.

4. Volunteering for a food support project



4. Volunteering for a food support project

In addition to the use of the kitchen, we also work on some related volunteering projects for charity and non-profit organizations.

4.1 Would you be interested in joining a volunteering project in the future?

☐ Yes ☐ No ☐ I do not know

👉*If you have answered "**Yes**" at Q.4.1 please answer the two following questions.*

4.2 Which events are you interested in volunteering for?

☐ Cooking for homeless people ☐ Create a community garden ☐Delivery food to organization ☐Cooking class for unemployed individual

4.3 How many hours per week do you think you can dedicate to this event?

☐ <2 hours ☐3-5 hours ☐5-7 hours ☐More than 7 hours

The information that we've gathered through this survey is a big help in providing a better service to you and The NOVA IMS Community. Thank you for taking the time to answer the survey!

Figure 12: Volunteering for a food support Project (Questionnaire Section 4)

The final category concerns 3 closed-end **questions relating to the social impact arising from our kitchen implementation.** As stated in the secondary objective, the application of **our kitchen can be used for several means,** including the development of new volunteer projects related to the food supply, or food consumption. We want to use **this section to let the participants learn about the positive image the kitchen will have**. Also, it can be used to attract curiosity and increase the concern of people who have an interest in finding a meaningful volunteering program on campus. Q4.1 applied a question with a binary scale, in which we can separate the segment of people who want to participate in the project and those in contrast. Thus, two filtered questions Q4.2 and

Q4.3 were added as we want to extend our knowledge of the reader's willingness in joining the volunteer gathering. From Q4.2, we can know exactly which non-profit programs people are more concerned about than the rest. It can also be used in future event applications to verify which events might attract more participants than others. Respectively, the final question identified the total hours people would like to spend on the program so that the organizer can better define the duration needed each week. In the end, we finished the questionnaire with a sincere thank you message for all the attributions the reader gave us.

9. 6.7 Quality Control

It was crucial for us to ensure that the online questionnaire was as well-done as feasible to ensure that our study had the appropriate quality and that the information obtained was as truthful and honest as possible. As we did not interview people directly, our questionnaire needed to be as direct as possible and to avoid any ambiguity. Questions needed to be clear and allow the respondent to answer fast. During our pilot test, we were able to get feedback from our respondents to improve our questionnaire and correct the mistakes or ambiguities that were part of it. The language used was simple and clear, and no questions had similarities with the others, therefore the respondents did not have to interpret any questions.

As we implemented the qualification question at the beginning, we could easily filter our target population and have better quality data during the collection. Answers of people that were not part of our target population have been not taken into consideration. (6 online responses, respondents were not able to continue with the questionnaire, but its data still appears and counts as a response). Blocking the questions enables better organization and reasoning from the respondents. It also benefits the analysts greatly by enabling a more time-efficient and organized analysis.

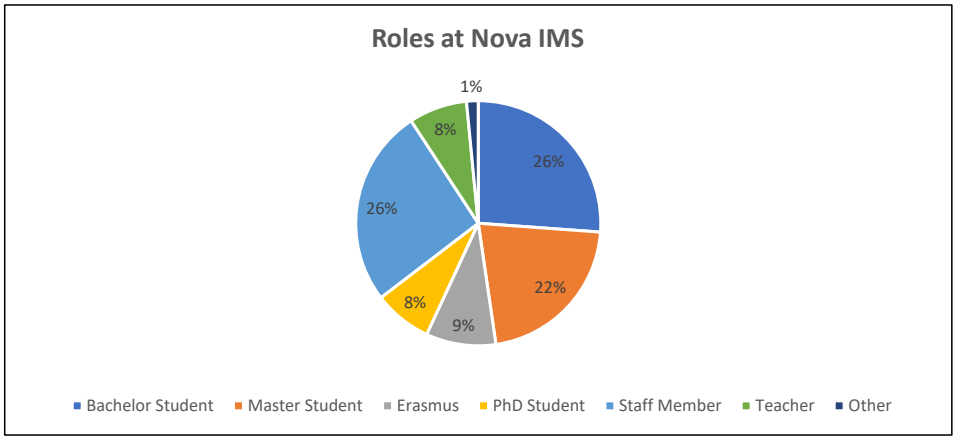
Feedback was sought from the professor to ensure that our questionnaire was designed appropriately, and we feel that certain issues with directness and repetition were corrected before the questions were made public.

10. Results

7.1 Results of Total Responses

We collected a total of 70 responses, including 36 online responses and 34 paper responses. Five online responses were eliminated prior to our analysis because they were not part of our target population. Therefore, the analysis ended with a sample of **65** responses. We evaluate the answers to create charts and comparison that accurately express the population's attitude and common habits. Based on the results and communities' opinions, our analysis from the survey can partly determine if the plan of carrying out a practical kitchen in the campus is a success or not. Later, we also verified the comparison between the two main segmentations with 64 responses, which are 42 answers of Students (Bachelor, Master, Erasmus, and PhD) versus 22 answers of Teachers and Staff Members. During the process of calculation, 1 respondent chose "Others" was excluded from the calculation, as we could not determine which segmentation that he/she belongs to.

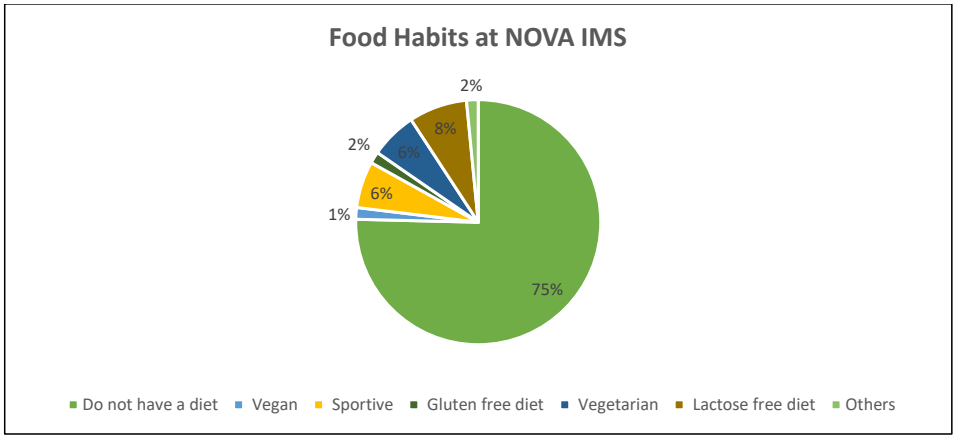
Roles at NOVA IMS Analysis



Pie Chart 1: Roles at Nova IMS, Percentages

Observing the Roles at NOVA IMS individuals Pie Chart that answered our questionnaire, we defined the 7 main categories by percentages (Bachelor Student, Master Student, Erasmus, Ph.D. Student, Staff Member, Teacher, and Other), from the sample size of 65 persons that answered our questionnaire. As shown in the graph, the two biggest segmentations of the sample are bachelor's students and Staff members that are representing as 26% each. Consecutively, in the descending order, we have Master Student plays a large part in the university community (22%), follow by Erasmus Students (9%) and PhD Student (8%). We can conclude the total percentage of students is (65%) of our sample. The distribution of Teacher also represented in the chart by (8%). We also collected 1 response (1%) of individuals that works or studies at the NOVA IMS but does not belong to any populations listed above. Compared the percentages received from the actual sample versus predefined sample segmentation, we concluded that our data contained the diversity of respondent that well-represent the population of NOVA IMS.

Food Habits at NOVA IMS Analysis

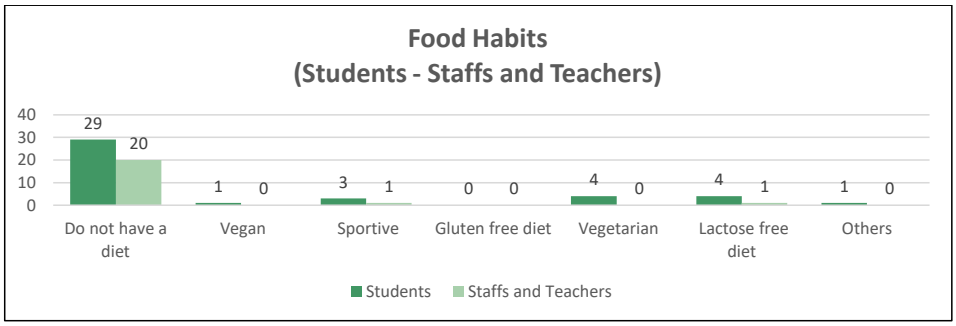


Pie Chart 2: Food Habits at NOVA IMS, Percentages

According to the pie chart, most of the persons that answered our questionnaire do not have a specific diet, having 49 persons representing (75%) of our data. It shows that (25%) of participants stated that they are having a specific diet habit, which means one-fourth of our sample could

benefit with our idea of implementing the practical kitchen in the campus of NOVA IMS. These persons will not be limited to the academic food services dishes, they will have the opportunity of bringing their food and satisfy their needs. We could also detect some less popular eating habits such as Gluten Free (2%) and Vegan (1%).

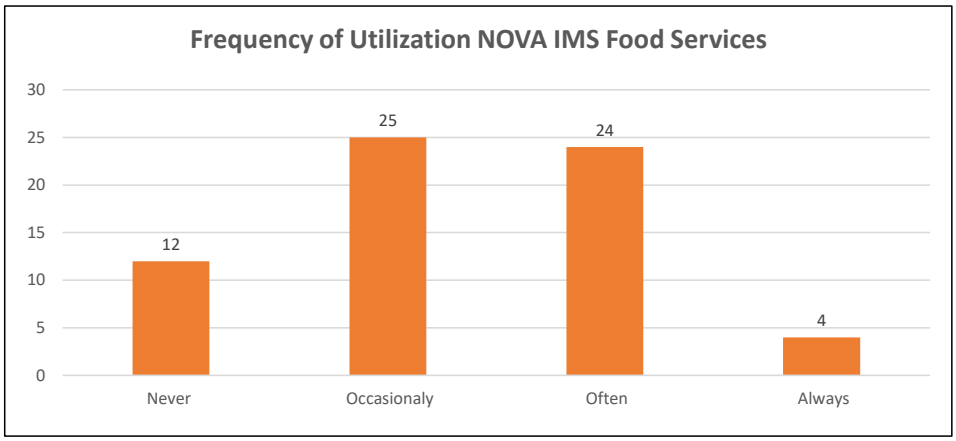
Food Habits from NOVA IMS Students versus Staff and Teachers



Graph 2: Food Habits (Students - Staffs and Teachers), Absolute Values

Based on the graph of comparison between NOVA IMS Students versus Staff and Teachers segmentation, we can conclude that we have 42 students, and 22 Staff and Teachers in this analysis. Although the majority contains no diet in their eating habits, the results from the remaining options stated that Students tend to have more additional diets than Staff and Teachers. Out of 22 members of the second category, only 2 individuals mentioned about their specific eating preferences, 1 in Sportive and the other in Lactose Free Diet.

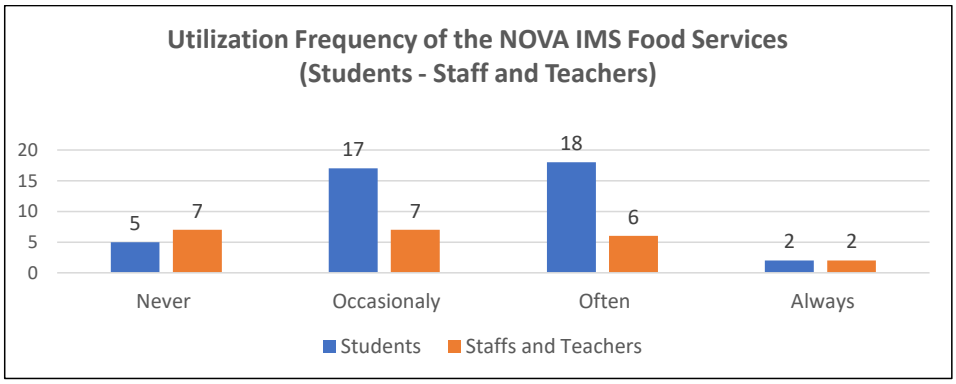
Utilization Frequency of the NOVA IMS Food Services



Graph 3: Frequency of Utilization NOVA IMS Food Services, Absolute Values

Considering the observed graph, it allows us to understand the frequency of people using the bar and canteen from NOVA IMS by our sample, 37 individuals (56%) out of the participants does not regularly visit the canteen or do not access to any of food services from NOVA IMS. It can either indicate that this segmentation does not have the need to use the canteen, due to several reasons such as packed lunch, outside lunch, or come back home to have lunch. We can later determine the reason behinds this "Never" options in another graph shown below. The most significant variable is **Occasionally** with 25 answers, representing (38%) of the sample and we have 12 answers saying **Never**, representing (18%) of the target population sample.

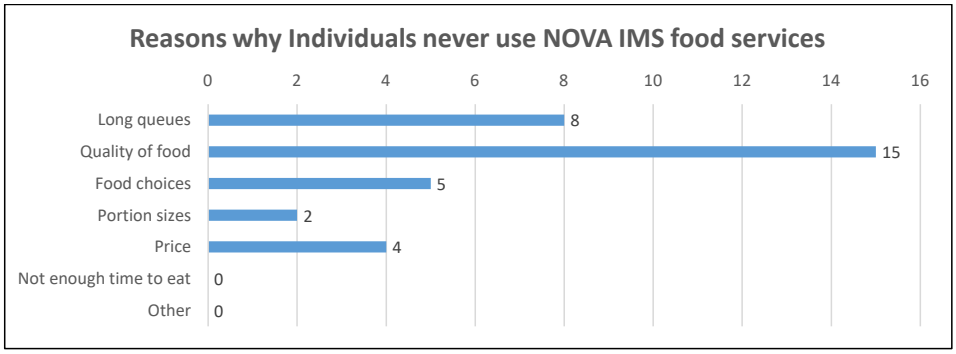
Utilization Frequency of the NOVA IMS Food Services (Students - Staff and Teachers)



Graph 4: Utilization Frequency of the NOVA IMS Food Services (Students - Staff and Teachers), Absolute Values

Analyzing the results obtained from the graph, according to Students, Staff and Teachers we can conclude that students use the services more than the staff and teachers at the university. Leave aside people who never has access to the food services of NOVA IMS, only 37 students (57%) **and** 15 Staff and teachers (23%) used the food services at NOVA IMS. An interesting point the results shows is that compare to the students, Staff and Teachers have a higher tendency of not using the NOVA IMS food services.

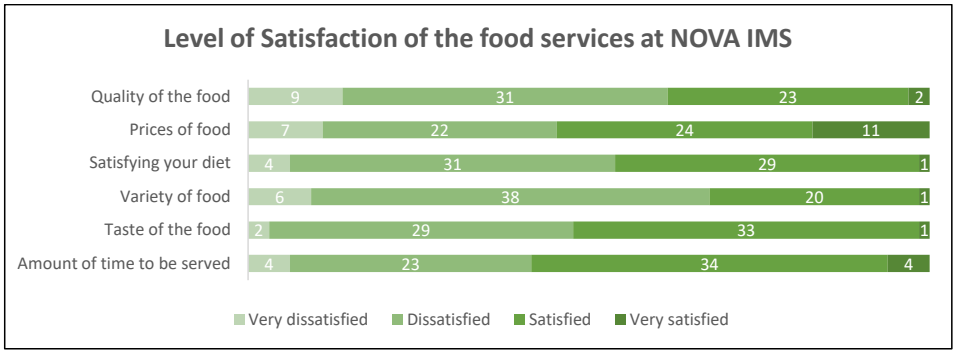
Reasons why Individuals never use NOVA IMS food services



Graph 5: Reasons why Individuals never use NOVA IMS food services, Absolute Values

Based on the graph, we can conclude the **principal reason why people refuse to use NOVA IMS food services is due to the Quality of food** with 15 answers, representing (44%) and the **second principal reason is the Long Queues** with 8 answers, representing (23%). Thus, we can learn about the fact of why people think the food services from NOVA IMS are not efficient. If our idea of applying a new practical kitchen can be implemented, it is aimed to provide a substitute solution for all problems listed above.

Satisfaction of the food services at NOVA IMS



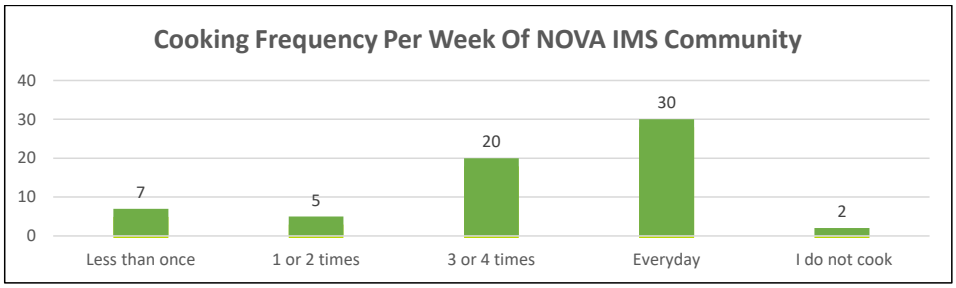
Graph 6: Level of Satisfaction of the food services at NOVA IMS, Absolute Values

From the above chart on "Satisfaction of the food services at NOVA IMS", we can see how many individuals fall in the scale of Very Dissatisfied to Very Satisfied. For each variable, it is evident that majority of the satisfactions fall as 'dissatisfied' or as 'satisfied', with minor numbers for the extremes. We break downed the analysis into 2 main sections of "Overall Dissatisfied" combined from Very Dissatisfied and "Overall Satisfied" summed up from Satisfied and Very Satisfied. as follows: Quality (OD: 61.5%; OS: 38.5%), Price (OD: 44.6%; OS: 55.4%), Satisfy diet (OD: 53.9%; OS: 46.1%), Variety (OD: 67.7%; OS: 32.3%), Taste (OD: 47.7%; OS: 52.3%) and Time to be served (OD:41.5%; OS:58.5%).

(Note: Here OD means 'Overall Dissatisfied' and OS means 'Overall Satisfied').

From this above analysis, the results point out that even though the price, taste and amount of waiting time are satisfied for the majority, however, the contrast category is out weighted the remaining on 3 main sections. The most unpleased with the services is the factor “Variety of Food”, in which approximately 68% of participants stated their dissatisfy. Consecutively, it is followed by the factor Quality of Food (62%) and Diet Satisfaction (54%). On the other hand, it is noticeable that 55% of the participants found the price reasonable, since it is not very high for a standard meal. The consumers also pleased with the In the end, the total percentage of Overall Dissatisfaction counts up to 53%, which accounted that half of the people in the NOVA IMS community is not pleased with canteen/bar services.

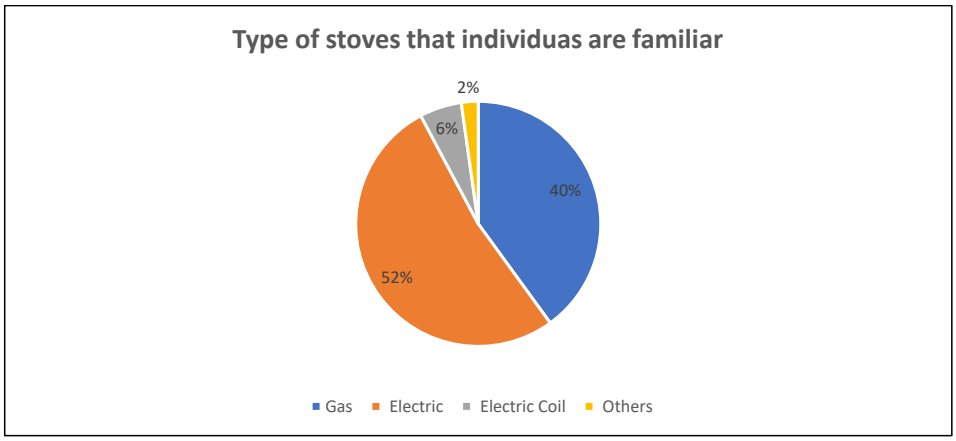
Cooking Frequency Per Week of NOVA IMS Community



Graph 10: Cooking Frequency per week of NOVA IMS Community, Absolute Values

Observing the Cooking frequency graph, people who cook everyday throughout the week obtained the largest part (78%). It is equivalent to that the number of individuals belong to this segmentation are most likely to take advantage of our practical kitchen. We also can observe in our graph that only 2 people do not cook, representing (3%). It indicates that the application of our idea will be efficient in a way that (97%) of the people can use the practical kitchen, allowing more variety of products not to be limited as well with the food menus.

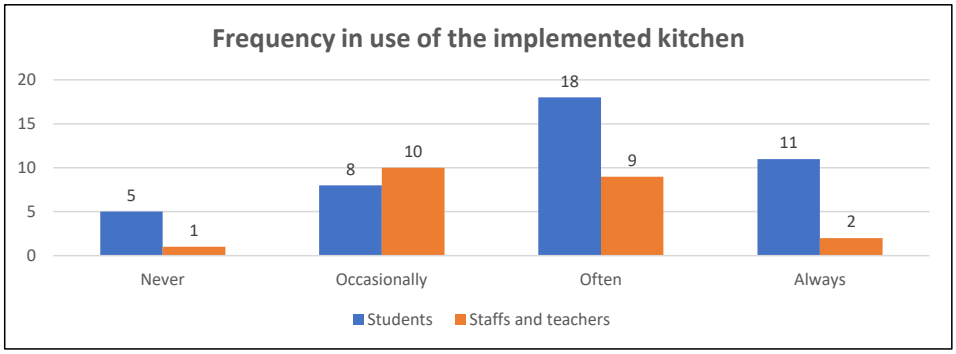
Type of stoves that individuals are familiar with



Pie Chart 3: Type of stove that individuals are familiar, Percentage

Concluding from the Type of stove that individuals are familiar with graph, we realize which type of cooking kitchen that most people know how to use. We conclude that the major is familiar with Electric comes from 47 answers, representing (52%) and the Gas with 36 answers, representing (40%). We can define that Electric and Gas stoves are considered as the best options for our kitchen equipment.

Frequency in use of the implemented kitchen



Graph 11: Use of the implemented kitchen frequency, Absolute Values

Analyzing the graph above, we realize that most of the answer from most of the **students and Staffs and teachers stated that they will use** the Practical Kitchen frequently**, with 18 answers for using it often and 11 for always, accounted for (69%) of students'** answers. Meanwhile, **only 9 staffs and teachers declare that they will use it often and 2 confirm to visit it every day, representing (50%)** of teachers and staff answers. We also can conclude that 8 students (19% of all students) and 10 staffs/teachers (45% of all staffs and teachers) confirmed that they would be the occasional users of the kitchen. Then 5 answers from the students (11% of all students) were to never use the kitchen if it will be implemented whereas only 1 staff/teacher (4% of all staff and teachers) stated the same. After this analysis, we can consider that implementing a Kitchen in campus, it will be useful for students, teachers, and staffs. This inquiry is the key point of the survey to ensure that the kitchen is considered as a need of the NOVA IMS community, to increase their satisfaction, and satisfy our target population.

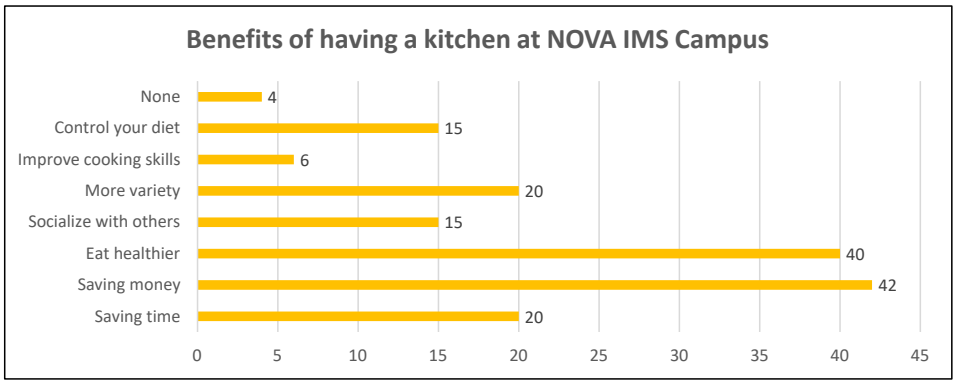
Commented [GU1]: @sumaiya this is very amigus. What is the conclusion of the results and how do we apply it to the goal.

Reasons why people would never use the kitchen:

After the analyzing, we indicate some reasons of why the respondents claim that the kitchen has no use for them in future, listed down below:

- " Would rather cook at home, bringing ingredients to school would be difficult"
- " I prefer to cook in my house"
- "I don't want to cook at university, I prefer to cook at home"
- " Because I bring food from home"
- " It takes too much time"

Benefits of having a kitchen at NOVA IMS Campus



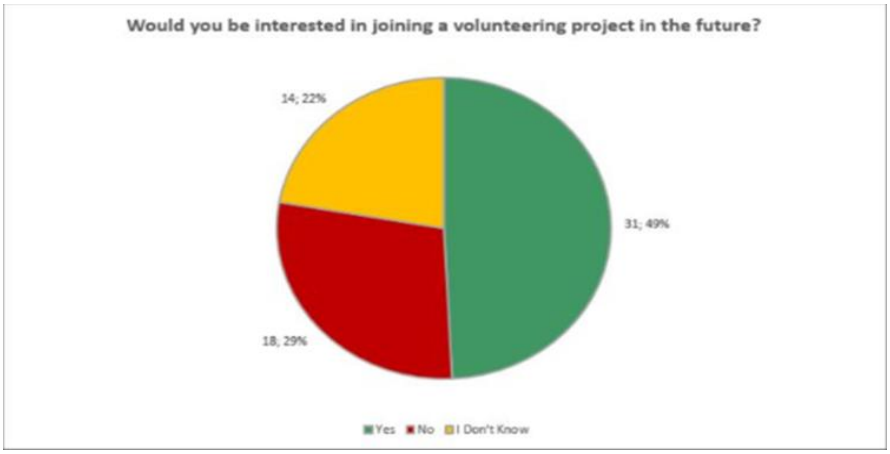
Graph 12: Benefits of having a kitchen at NOVA IMS Campus, Absolute Values

According to the Benefits of having a kitchen at NOVA IMS Campus bar graph, saving money, and having a healthier meal were the two most favorable reasons for the benefits of having a kitchen at NOVA IMS Campus with 42 and 40 answers, respectively. 20 individuals were also chosen to have a wider variety of food choices and time saving. Socializing with others - a unique advantage that only cooking at the campus could bring to respondents – accounted for 15 answers from a total of 162 choices. People on a special diet found it beneficial to have a kitchen at NOVA IMS as 15 answers for that criterion was submitted. Improving their cooking skills accounted for a small portion of the answers with 6 responses while 4 people believed that having a practical kitchen at the campus bring them no benefit at all.

VOLUNTEERING

Would you be interested in joining a volunteering project?

Commented [GU2]: please review



Keeping our secondary goals in mind, we asked our respondents if they are interested in future volunteering projects and events to which a large part of our sample responded positively (49%) and about (22%) responded as I don't know. We suppose this is because most of them have a tight schedule and may not be able to participate even if they are interested.

In the following question we asked about the preferences of the events they are most interested in. Overall, 53% of the respondent are interested in cooking for homeless as the respondents feel that it provides a sense of community and connection, as it gives people an opportunity to come together to share a meal and build relationships. Also 30% are interested in creating a community garden, which indeed will provide access to healthy and locally grown food, and it can also give the academic community the opportunity to learn about sustainable gardening and growing techniques. Additionally, it can help reduce the costs of groceries by providing an alternative to store-bought produce and use the produce when cooking for homeless.

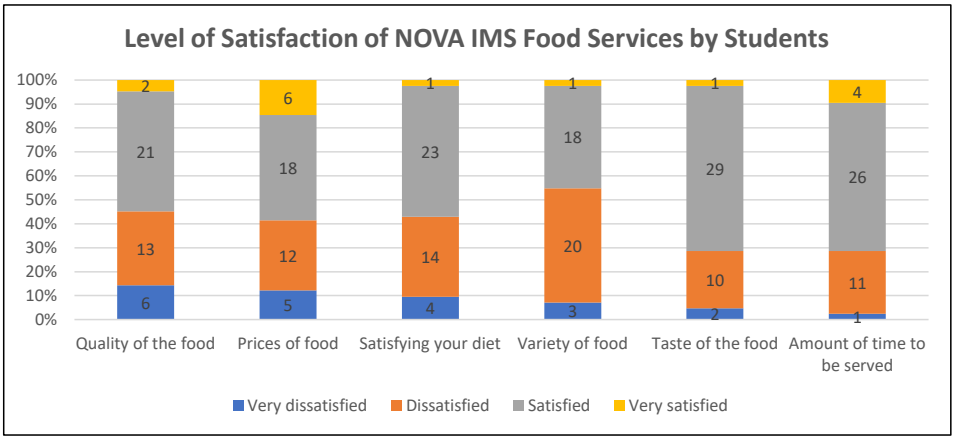
Commented [GU3]: Is this 16.53% from the 31.49%? Or 16.53 per 100?

To have a conclusion of our secondary goal, we asked 'How many hours they would like to dedicate on the events'. As such we received 23 responses (74.19%) who would like to give less than two hours per week and 8 responses for 3-5hrs (25.81%). We assume that, since this is a future event, many are not sure if they can dedicate longer hours and therefore chose the safest option.

7.2 Comparison of Two Main Segmentations

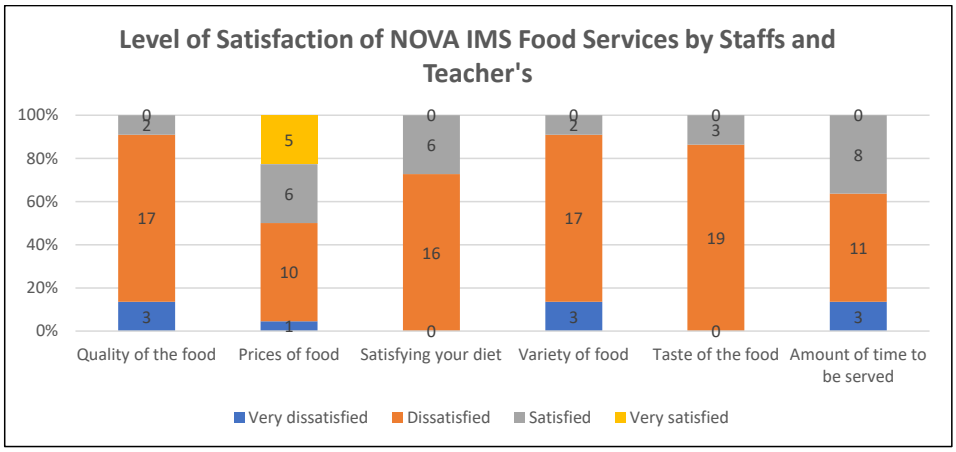
In addition, we also verified the comparison between the two main segmentations with 64 responses, which are 42 answers of Students (Bachelor, Master, Erasmus, and PhD) versus 22 answers of Teachers and Staff Members. During the process of calculation, 1 respondent chose "Others" was excluded from the calculation, as we could not determine which segmentation that he/she belongs to. The calculations are mainly carried out by some criteria we want to investigate more in the differences in attitudes and preferences of the two targeted categories.

Level of Satisfaction of NOVA IMS Food Services by Students



Graph 7: Level of Satisfaction of NOVA IMS Food Services by Students, Absolute Values

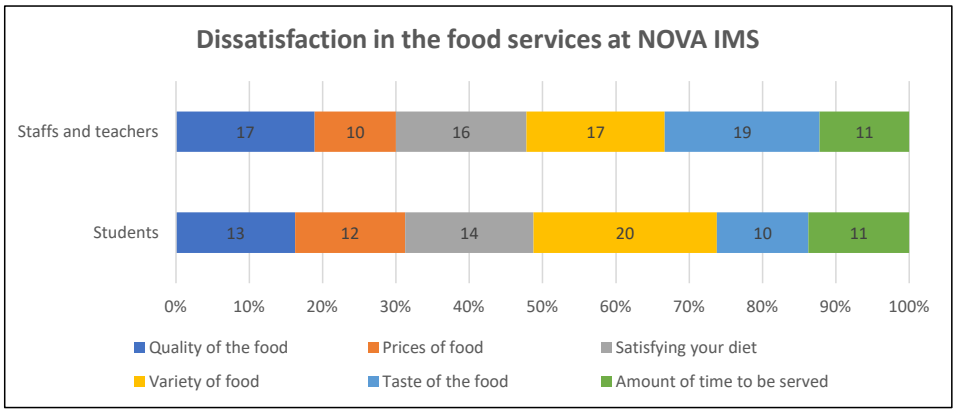
This stacked bar chart gives us a visualization of the proportions of the satisfactions in all the variables. As such, there is evident that in most categories the satisfaction numbers outweigh the other proportions, except for the Variety of Food where in contrast, the dissatisfaction is comparatively higher than the first category. With the on-campus kitchen, it is likely that this issue with variety would be solved as students will be prepare their desired snacks or meals.



Graph 8: Level of Satisfaction of NOVA IMS Food Services by Staffs and Teacher's, Absolute Values

This stacked bar chart on "Staffs and teachers' satisfaction of the food services at NOVA IMS ", gives us insight on how teachers and staff perceive the food services. As can be seen most answers respond to dissatisfactions for all the variables. Most of the dissatisfaction comes from the taste of food (86.36%) followed by variety and Quality of food, both with (77.27%), Satisfy your diet (72.72%), amount to time taken to serve (50%) and lastly Prices with (45.45%). Comparing the levels of satisfaction between the two graphs, it indicates that the Teacher and Staff segmentation has higher dissatisfaction toward the NOVA IMS Food Services than the students.

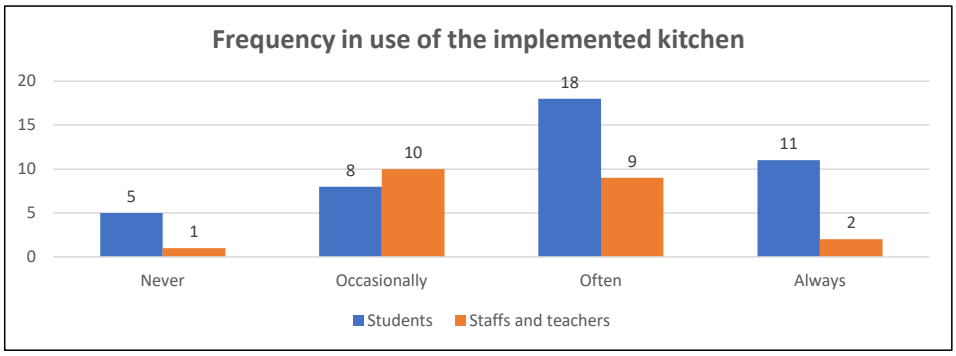
Dissatisfaction in the food services at NOVA IMS by Students, Staffs and Teacher's



Graph 9: Dissatisfaction in the food services at NOVA IMS, Percentage

To be more specific, in the preferences of both main segmentations, we continue with the dissatisfaction levels, which shows the most significant difference between Students and Staff/Teachers. The insights taken from the graph suggests that teacher and staff are more dissatisfied over the quality of food (17%) than the students (13%) as they pay more and are not happy with the quality for the price that pay, the satisfaction with diet and the overall taste of the meal. With students, they have the most dissatisfaction with the variety of food (20%) as they spend more hours in university and have little variety of snack options available. Also, (11%) of the academic community is equally dissatisfied with the amount of time taken for food served.

Frequency in use of the implemented kitchen



Graph 11: Use of the implemented kitchen frequency, Absolute Values

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Commented [GU4]: @sumaiya this is very amigus. What is the conclusion of the results and how do we apply it to the goal.

Errors

Throughout the research, errors have occurred from both the researchers and interviewees' sides. 3 non-sampling errors arose during the research. When implementing the questionnaire to the online platform, a measurement error of not making answering every question mandatory

had resulted in a non-response error. Respondents were allowed to move to the next question without having to answer every part of the inquiry, which resulted in 2 blanks from the online answers and 5 blanks from the paper-based survey. In the question regarding the benefits of having a practical kitchen at NOVA IMS, the survey stated that respondents could only chose a maximum of 3 answers, but instead, there were some submissions with 5 answers for that particular part. With regard to the processing error, our team made some mistakes while transcribing the answers from paper surveys to the coded answers file as the input was not typed in the same format, preventing excel from analyzing the answers correctly. We could prevent the errors by paying more attention when working with the online surveying platform and giving proper instructions for our interviewers to avoid inaccuracy and miscalculations in our work.

Analysis of the results

The goal of our study was to understand if the Nova IMS Community was satisfied with the food services at NOVA IMS. Our hypothesis was that people are not satisfied and that the implementation of a kitchen can increase that satisfaction. Therefore, the second goal of our study was to determine if people would be willing to use our kitchen and what would be the impact of having a kitchen at the campus.

The findings indicate that the NOVA Community is somewhere between content and unsatisfied with its level of satisfaction with the food services at NOVA IMS. The variety available and quality of the food have been rated as poor, but the price and taste have been rated as good. Furthermore, when dining at the university's food services, only half of the Nova IMS Community is able to satisfy their dietary needs. However, most of the participants claim that they do not have a diet which is a bit contradictory. A reason could be that as participants cannot satisfy their diet when eating at NOVA IMS food services, they then choose to not have any diet and be flexible.

A further finding of our study indicates that 90% of respondents are willing to use sur kitchen. The vast majority of respondents thought having a kitchen on the NOVA IMS Campus was beneficial. Saving money and eating healthier are the main advantages realized. If we take a

closer look at our data, we find that most respondents are satisfied with the price of food in dining services but find the benefit of saving money by having a kitchen on campus.

From our point of view, this is consistent. The consumer will always want to save money. Even if the price is already low, they are willing to pay even less. Their satisfaction increases when the price goes down. However, some consumers are willing to pay more for better quality. In our study, the quality of food in food service is considered low, with the implementation of our kitchen, the NOVA IMS community will be able to eat for a lower price with better quality. In addition, they will be able to satisfy their diet because they will be able to cook for themselves and choose their products. On the other hand, some respondents (a minority) claimed that cooking at university would take too much time or that it would be more comfortable for them to cook at home and bring their lunch. Furthermore, some respondents think that bringing the ingredients at university would be difficult, however as the NOVA IMS Campus is centered and close to many grocery shops, we think that it wouldn't be a problem. These facts can be examined in more detail when implementing a kitchen to facilitate the use of our kitchen by all.

The results also show that the majority of the respondents would be willing to participate in a volunteer project related to cooking. They would mainly like to cook for homeless people and would be willing to create a community garden. However, most of them would have less than 2 hours to dedicate to that volunteering program. But we think that it is not a problem to implement the volunteer program if we have enough volunteers that dedicate 1 or 2 hours per week to the help, the project has many chances to be a success.

Limitations

Regarding the limitations of our study, some points need to be taken into account. Firstly, market research is based on a sample of individuals, which may not be representative of the population as a whole. Small samples can lead to sampling bias, which can lead to inaccurate results due to over- or under-representation of certain segments of the population. In our study, we had only 65 respondents. It is difficult for this sample to represent the entire population at NOVA IMS. We

could have had a sample of 50 respondents and obtained completely contradictory results. Furthermore, small samples are also more vulnerable to the effect of extreme cases, which can distort the data and lead to inaccurate conclusions.

Secondly, individuals may not be honest when answering questions about their behavior. Respondents may not be truthful when answering questions due to the fear of giving away sensitive information, or because of the desire to present themselves in a more positive light. For example, it may come from a friendly relationship with the people in charge of food services at the nova. Being friends with a person working in the food service department may encourage us to respond positively to satisfaction questions related to it.

Finally, market research may not be able to accurately predict future behavior. Participants who responded that they would use the kitchen every day may never use it and vice versa. This may depend on the conditions of the kitchen, their first experience cooking in the NOVA IMS, or personal factors.

11. Final Conclusions and Recommendations

Our study proved that the idea of having an open kitchen on the university campus is an innovative way to increase food service satisfaction among the NOVA IMS community. Since food services (canteen and bar) cannot satisfy half of students, NOVA IMS University should definitely consider installing a kitchen. The practical public kitchen that we have proposed allows the NOVA IMS Community to cook healthy and varied dishes, cheaply and above all to know what they are eating. As our study shows, most of the NOVA IMS community is willing to use our kitchen and finds several benefits. In addition, the idea of creating volunteer projects around the kitchen has proven to be valuable. Since the majority of participants would be willing to help create a community garden or cook for the homeless, the NOVA IMS community could make a difference in the neighborhood and become an inspiration for other universities in Lisbon.

Naturally, further research will need to be taken in order to understand better how to implement our kitchen and what the possible complications and implications may be.

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