

# APPetite: An Interactive Campus Door-To-Door Food Delivery System for College Students

M. S. Pavan<sup>1</sup>, Mansi Venkitachal Sarma<sup>2\*</sup>, Siddhika Mutreja<sup>3</sup>, Hrithik Raj<sup>4</sup>, M. Staffi<sup>5</sup>

<sup>1,2,3,4,5</sup>Department of Computer Science and Engineering, School of Engineering and Technology, Jain Deemed-to-be-University, Bangalore, India

**Abstract:** Food delivery through digital apps has become very popular in the fast-growing industry of eateries across the country. The appearance of digital tools has bestowed a distinct outlook on the food industry. Consumers today have the privilege to settle on from a spread of cuisines, anywhere, anytime from a spread of food providers listed within the e-commerce space. The work focuses on the availability of a delivery system for school students to order food from outside their campus whenever required. The appliance is going to be available in android, and also within the style of an internet application. It'll have both consumer and seller interface where, within the consumer interface, the order booking, online confirmation is recorded and within the provider interface, the choice for accepting/declining the orders for the day are going to be provided. The appliance will give its users a choice to choose whether or not they want to pre-order their food and later pick it up or they will request any of their contacts to choose and deliver their order. Overall, the most objective of this application is to assist college students to access shops outside their campus with ease.

**Keywords:** College students, Delivery system, Digitalization, Mobile application, Order online, Small businesses.

## 1. Introduction

Delivery systems have become a big part of everyday life for many people around the world. May it be courier services, tiffin deliveries, or even groceries, there is an application to cater to all the needs of a user. Different people from various backgrounds require different types of delivery systems to help with the transport of their respective goods.

For example, the main objective of the delivery system in e-commerce companies like Flipkart and Amazon is to deliver items such as electronics, stationery, decoration items, and much more to whoever has placed an order. Their target audience is almost the entire public. Then there are some companies such as Swiggy and Zomato, who specialize in food deliveries by creating an impressive network between consumers and various restaurants across India. "APPetite" is a similar app but with college students and residents as their prime target audience.

It aims to bridge the gap between college students and the shops outside a college campus. Students often find themselves in the need to go outside the college campus to buy certain food items that are not available inside the campus. Many times,

students decide against going out because they do not get the time. "APPetite" aims to solve this problem and give the students a choice to order any item from the shops outside the campus and request any of their contacts to deliver it to their rooms. This application is open to students and teachers alike and also strives to promote digitalization and help the shopkeepers to have a digital account of their stock and finances. It promotes small enterprises and helps them gain more customers as more students are likely to buy from them if they have the choice for it to be delivered.

Many tools are used in the development of this application such as Android Studio and XCODE which are used for the native development of the app. Flutter is a cross-platform tool that is used to develop the app as a hybrid app so that the consumers can use it in the form of a web application as well as a mobile application. NoSQL databases such as firebase and firestore are used to develop the database where all the data of the consumers that are relevant to the efficient working of the app is stored.

## 2. Overview

The application will mainly contain 2 interfaces:

### A. Seller Interface

The Seller interface will be designed keeping in mind the requirement of shop owners. It will consist of various options such as accepting/deny orders and provide e-invoice. Using these options, the seller will have the choice to decline orders if there is a big rush to increase and manage time efficiently.

### B. Consumer Interface

The consumer interface will be designed to be as user-friendly as possible having various features such as Order Food, Contact the café, and e-payment of orders. It will also maintain a record of the orders for repetitions.

Both the interfaces will have a sign-up page with OTP verification.

## 3. Problem Definition

There are many problems that college students, teachers, and other residents face related to food that affects their ability to

\*Corresponding author: mansisarma13@gmail.com

work efficiently.

#### A. Time

Some students who are sick, or are busy with completing college work, usually sleep hungry because they didn't find the time to go to the mess. This proves to be true especially during exams where usually students tend to not give much importance to going to the mess and eating.

#### B. Lack of variety

There is a lack of snacks such as biscuits, chips, etc. inside the college campus. Students can easily lose interest in the monotonous menu of the mess and eventually crave for some variety.

#### C. Pre-existing menu

Since there is an already existing menu that is served in the mess, no one has a choice of what they wish to eat on a particular day. This further leads to a loss of interest in eating.

#### D. Lack of digitalization and infrastructure

There are many shops, usually outside college campuses, that exist mainly to cater to the needs of college students such as food and stationery. Most of the time, these shops do not have the proper infrastructure to handle the huge flow of customers digitally, which can lead to increased wait time between fulfilling orders, misplaced bills, and worst case, withdrawal of frequent visiting customers. The above problems need to be solved in order to introduce a new concept of campus delivery system which can then be extended beyond just-food.

### 4. Objectives

This project aims to fulfil the following objectives:

#### A. Provision of a common online platform

"APPetite" will act as a common online platform for students and teachers to use alike, to order and self-collect or get delivered food from outside the campus.

#### B. Promote time management

This App allows users to order from the store of their choice ahead of time so that, by the time they reach the store, their order is ready. This helps students to waste less time which can then be used for more important work.

#### C. Freedom of choice

The users are given the choice of choosing whichever establishment they wish to order from. This ensures that the app appeals to a wider range of audiences.

#### D. Self-pickup/Delivery

The users are given the choice to choose between self-pickup and getting their order delivered by any of their friends who are in the vicinity of the shop.

The users who choose self-pickup can order ahead and pick up their order as soon as they are notified that it is ready. The users who choose for their order to be delivered by a friend will then be redirected to their contacts app and they can call anyone to collect and deliver their order.

The order, in either scenario, will only be picked up after the confirmation of the order id.

#### E. Digitalization

Since our planet is slowly deteriorating, "APPetite" will be fully digitized. All bills will be generated as *E-bills* as soon as an order is confirmed, thus reducing paper consumption and promoting both environmental change as well as digitalization among small establishments.

### 5. Literature Review

Dr. Sonali [1] has very elaborately explained how the concept of *Online ordering of food* has gained popularity due to the fact that people not only need to eat but that they need to eat multiple times a day which leads to repeated orders especially among students and office going audience who do not find the time and energy to cook food. Online ordering is not only convenient but also effective as there are fewer chances of an order being misinterpreted as nothing is verbal, and the entire menu of the restaurant is visible in the application. Her study shows that 95% of people are aware of mobile applications to order food online. Almost 66% believe that food apps will be the most preferred tool for ordering food in the future. 12% of the customer respondents have never used the app, whereas the majority of the respondents have used the app sometimes or frequently. She also notes the most important and common advantages of ordering food online as *ease of payment* and *convenience*. Out of all the benefits, the availability of options was rated as one of the least important advantages. One of the biggest challenges/disadvantages of using this method of ordering food is the *inability to return the dish* if it is not up to the expectation/ not appetizing/spoilt. She also explains the various advantages that the restaurants have if they are linked with a food delivery partner such as, they can save on the service time and effectively deliver more orders, they have a higher scope for increase in sales since they can cater to a larger market and ordering accuracy is improved. Also, the customers tend to spend more when they order online.

In her study of different food establishments, she found that 87% of the respondents were linked with mobile food ordering apps. 57% of the respondents who were linked with mobile food ordering apps said that there were linked to up to 3 apps for ordering food. In conclusion, as of 2018, more than 50% of the food market was in the unorganized sector.

"Impact of Online Food Delivery on Customers" [2] mainly deals with how food delivery systems affect the customers who use them. It, very clearly explains the process a customer should follow to order any food item online. It also gives an outline as to why customers prefer to order online to physically going to the restaurant.

According to Anita Vinaik, Richa Goel, Seema Sahai, and Vikas Garg [3], According to gender, out of total 134 male surveyed respondents, 125 had knowledge of the online food app and out of a total of 166 female respondents, 160 knew about the online food app.

N. Thamaraiselvan, G. R. Jayadevan, K. S. Chandrasekar [4] explain the importance that age and the overall population of

the country affect the popularity of mobile app usage for ordering food. India, with a population of over 1.3 billion, is a big consumer market across the globe. It has more than 50% of its population below the age of 25 and more than 65% below the age of 35 years. India has more citizens who are in their youth. Youth populations below 40 years demand more fast-food items in their diet. Young Indian appetite would be one of the major growth drivers for the food and beverage sector on the whole.

H.S. Sethu & Bhavya Saini [5] explain Customer Perception and Satisfaction on Ordering Food. Their website acts as a one-step go platform for the users who wish to order food online. The website releases the users from the burden and inconvenience of carrying printed menu cards or searching for restaurant phone numbers. It also talks about customer loyalty as a psychological commitment towards a specific brand or company. Customer loyalty can be measured through the customer Loyalty Index (CLI):

“Implementing Customizable Online Food Ordering System Using Web-Based Application” [6] adds a module to the whole ordering via a mobile application. It also explains a way for the kitchen of restaurants to see real-time orders efficiently. It also introduces an SMS system which, at the time of registration asks the customer to enter the contact number & other information, this contact number & other information will be saved in a database. If there is any offer in the restaurant, then the server will automatically send an SMS to the customer.

## 6. Proposed System and Advantages

The users need not crowd the shop, as their order will already be ready by the time they reach, which will *reduce huge crowd formations* in front of the shop, thus helping the sellers maintain a level of efficiency. The *introduction of online payment* as soon as the order is confirmed will again help the sellers make sure all their sold items are paid for. It also helps the consumers save their time by not waiting around to know what is the final amount to pay after receiving their order. Since the orders are made online, there is *no confusion about the order* between the seller and the consumer as to what was ordered and what should be delivered. Thus, keeping both parties happy by providing the correct order to the consumer and saving the extra work of the seller to re-make an order from scratch again.

The consumer, after confirmation of their order, has the choice to *either self-pickup or request a friend to get it delivered to their room*. Once the order is either picked up or delivered, the consumer has the liberty of enjoying their meal in the *comfort of their rooms*. This setting also helps with sharing food with others, keeping leftovers hygienically to be eaten later, and adding their twist to the food. People who prefer eating alone, in a *noise-free environment*, will be benefited from this application as it will allow them to get their food delivered and eat it at their convenience.

*Vegetarians and Non-vegetarians*, who feel uncomfortable eating with each other, can just order their food, ask any of their friends to deliver it, and eat it comfortably. Consumers who *are sick, and are not able to physically go outside* the campus to eat something that they like, will highly appreciate “APPetite” as it

will give them the option of ordering their favorite dish from their rooms and request any of their friends to deliver the food to their room. The use of this application will greatly help both the sellers by increasing their number of customers exponentially and the users by providing a level of convenience.

## 7. System Architecture

The following architecture diagram of the project describes the basic working principle of the app. It has 5 models which include:

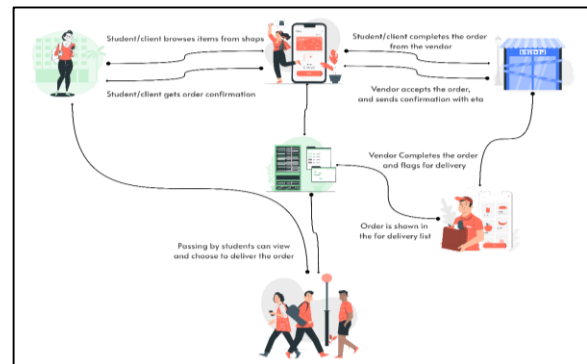


Fig. 1. Architecture

### A. Browse

The application needs to be able to show the user different menus from different food establishments so as to provide the users with all the information they need in order to make a decision and add items to the cart. It also needs to have an excellent user interface so that is easy for the user to switch between restaurants and have a good flow using the app. This will make sure that the user has a good experience which will ensure that the app is used more frequently.

### B. Order

Once the consumer decides their order, they will be allowed to make any changes required in their cart to any of the items such as adding multiple quantities, removing items, reducing item quantity, etc. Once the order is confirmed from the user side, its details are sent to the seller for confirmation.

### C. Seller Confirmation

The order needs to be confirmed by the seller too, so as to make sure that there is no confusion about the order.

### D. Payment

Once confirmed by the seller, the user will then be re-directed to an online payment gateway to complete the payment of the order. Once successful, the user receives an e-bill of their purchase for future references.

### E. Pickup/Delivery

The order can be picked up by the user itself or he/she can choose someone to pick up and deliver their order to them.

## 8. Methodology

The application follows a 5-step methodology:

### A. Browse through the menu:

The user using the consumer interface is given the choice to view the entire extensive menu of all the shops nearby the college. This makes sure the user is given a variety of choices to choose from. Consumers are more likely to buy more items if given a multitude of options to choose from, thus satisfying both the sellers as well as the consumer.

### B. Order desired dish

Once the user has browsed the menu thoroughly, they can choose whichever dish they wish to consume and add it to a cart. This ensures that there is a page where the consumer can view their final order and make any changes if necessary. Doing this, also makes sure the consumer knows, at all times, what is the final bill amount. Once the order is confirmed from the consumer side, it is sent to the seller for confirmation.

### C. Confirmation from seller

To make sure that the consumer receives the best service possible, the order needs to be confirmed by the seller before any kind of payment is made. This ensures that the seller has complete knowledge of the order and that they have the capacity of fulfilling it.

### D. Payment of the order

Once the confirmation of the seller is received, the user is re-directed to a payment gateway to complete the payment of the order after which, they will receive an e-copy of the bill. This order will also be saved for future repetitions.

### E. Pickup/Delivery of order

The user has both the option of either picking up their order themselves or get it delivered by anyone in their contact list. In the former option, the order will be kept ready by the seller, and after a unique OTP is communicated, the order can be picked up by the user itself. In the latter option, when selected, the user will be redirected to their contact application, where they can choose which contact to request to pick up their order and deliver it to their rooms. Whom so ever they choose, will also have to collect the order only after communicating a unique OTP.

The methodology plays an important role while implementing the idea as it makes sure, all the features to be added, that was planned in the beginning, is implemented correctly.

The steps are summarised as follows:

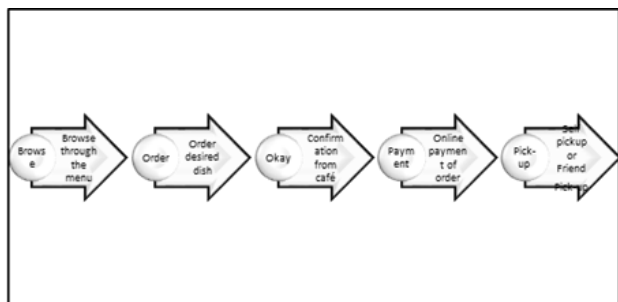


Fig. 2. Methodology

## 9. Algorithm

An algorithm explains the working of an application step by step in detail for maximum information as to how the application interacts with the user and further explains what functions are performed by the application to fulfill the task given by the user efficiently.

The algorithm for “APPetite” is as follows:

### A. Consumer Algorithm

- Step 1: If new user, Signup, Else Login
- Step 2: The home page is displayed from where orders can be placed.
- Step 3: Select items from the same shop and add them to the cart.
- Step 4: Repeat step 3 till all items needed are in the cart.
- Step 5: Checkout
- Step 6: The order details will be sent to the seller.
- Step 7: If the Order is accepted, go to step 10. Else go to step 8.
- Step 8: Wait for the order to be accepted.
- Step 9: If an order is rejected, terminate.
- Step 10: Payment gateway Select cash or online payment.
- Step 11: If payment successful, continue else terminate
- Step 12: Select pickup order by friend or self-pickup.
- Step 13: If pickup by friend go to step 14 else go to step 18
- Step 14: User is re-directed to contacts application, from where anyone can be called to pick up and deliver the order.
- Step 15: If the request accepted go to step 17 else go to step 16
- Step 16: Repeat step 14 till the request is accepted.
- Step 17: Order is placed.
- Step 18: Order is placed and can be picked up by the consumer or by the person who has been requested to deliver when convenient

### B. Seller Algorithm

- Step 1: If a new user, Signup, Else Login
- Step 2: The home page is displayed from where orders can be accepted or rejected.
- Step 3: If the order is rejected go to step 7 else continue.
- Step 4: Process the order
- Step 5: Keep the order ready for delivery.
- Step 6: Hand over the order after OTP confirmation.
- Step 7: Terminate

## 10. App Result

Following are the screenshots of various pages in both the consumer and the seller interface of “APPetite”. The UI has been designed by keeping in mind the aesthetics as well as user comfort.

The presence of separate interfaces for consumers and seller

makes sure that there is smooth communication between them to avoid any miscommunications that may occur.

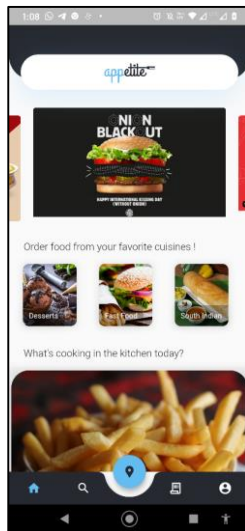


Fig. 3. Consumer Home

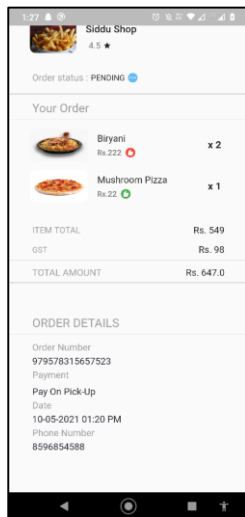


Fig. 4. Order Summary Screen

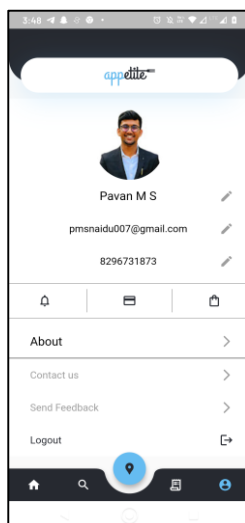


Fig. 5. Profile Page

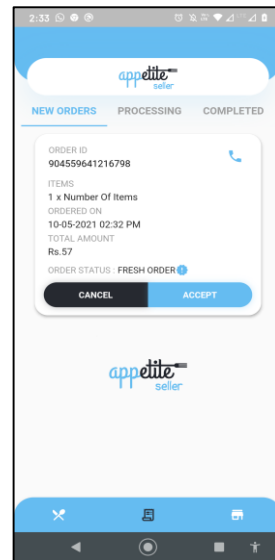


Fig. 6. Seller Home Page

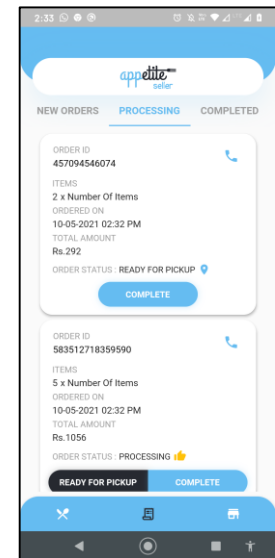


Fig. 7. Order Status

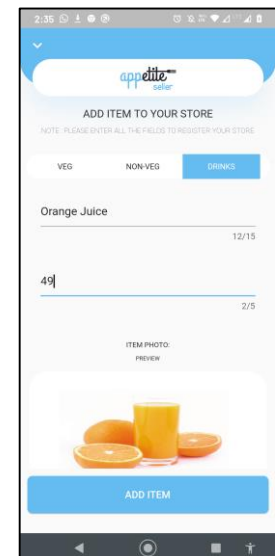


Fig. 8. Add Item to Store

## 11. Future Scope and Conclusion

The future scopes of this project strive to achieve all the goals that are currently limitations. They include:

### A. Implementing in other colleges

Currently, this project will only be tried, tested, and implemented on our campus, Jain university. Once feedback is received from various users, the application will be made better and customizable depending on the college that will adapt it.

### B. Expanding the store list to multiple shops

The project will be scalable in the future so as to accommodate any new shops that might open near the college. It will be modified such that, any new establishment that is set up near a college campus, will find it easy to use and implement this application.

### C. Interactive chat box between seller and customer:

An interactive chat box between the seller and the customer will give the customer a choice to personalize his/her order and communicate it directly to the shopkeeper. This will improve customer and seller relationships which will lead to improvement in sales and customer satisfaction.

### D. Interactive chat box between customers for ease of pickup

Using this chat box, in the future, the customer will be able to communicate to the friend who is picking up his/her order. This will make sure that there is constant communication between the customer and the delivery friend.

### E. Use of Machine Learning

Machine Learning algorithms will be used to show suggestions to customers based on frequent orders and searches. This will help the customer to browse less and order more, thus, managing time which again will lead to an increase in customer satisfaction.

### F. Live tracking

Live Tracking feature will be useful in big college campuses, where there will be a considerable distance between the food establishments and hostel/classrooms. It will give the user a way to track, in real-time, the location of their order and its estimated time of arrival.

### G. Refund and cancel options

The customer will have a choice to cancel an order and a refund will be processed for pre-paid orders. This feature will further help the customers by giving them the freedom of cancelling an order that has been made incorrectly, or by mistake. However, the welfare of the seller will also be kept in mind so that he/she does not go through any losses due to the

cancelled orders by keeping a time limit, till when the orders will be allowed to be cancelled.

### H. Cashback and coupons

Cashback and coupon features will be added to make the app more interesting and user-friendly. This will partially gamify the application. This feature will make the users order more to earn extra points/cashback/coupons.

### I. Referral system

Customers can refer other customers to earn points. When this feature will be implemented, it will help the application to expand its user base and help it to gain popularity among different colleges, thus ensuring its success.

### J. Customer care

Artificial Intelligence chatbots will help the customers with any problems that they are facing. It will be designed in such a way that the user will be able to solve his/her issue, without the need to talk to a customer representative.

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