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Delivery X- an Online Delivery System

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***Abstract*—Delivery service providers are offering e-commerce businesses new ways to grow their range and cater to a broader range of customers. To provide courier services to multiple organizations, an advanced management system is required. To put it differently, this process is fraught with difficulties [3]. Waste of time, effort, resources, and being unable to manage multiple customers are the major drawbacks that any courier company faces [6]. The objective of this research is to overcome all the major issues of traditional courier services and provide a convenient and user-friendly system. We have developed an application where one can act as client as well as a deliver person and tries to conserve all the resources. This system focuses on express and door-to-door delivery services. This application also provides a source of income to any ordinary person. This paper talks about how our application is different from other applications present in the market, shows the workflow and Use-Case diagram for better representation of the system, and then discusses the results obtained.**

I. Introduction

The world is progressing with high speed in terms of businesses. For increasing the growth and prosperity of the business, one would want to deliver the packages to the destination in a faster and efficient way [7]. Gone are the days when consumers had to wait for days at end to receive their products and packages. Nowadays, demands of receiving the products by customers in a day or two has become usual in the entire world [8].

Today's companies are relying on courier service providers to outsource their deliveries as soon as possible. That's where good courier services play a major role in not only business firms but also in a person's daily life, therefore more focus and effort need to be put into improving the convenience and reliability of logistics [1].

Customers don't like to be kept waiting for their package or to be left out of the loop. Delivery X is one such courier delivery application that is door-to-door, reliable and rapid and helps you deliver your hyperlocal orders to your buyers. This application delivers any type of package (documents, cloth, groceries, food), offers security, tracking service and provides quick deliveries at your doorstep. This application is not only made for business firms but also for common people. A system which focuses on a door-to-door delivery system can reduce the time span of the delivery as the frequency of people travelling is greater with our application shortlisted by area codes. Delivery X will minimize the effort of a person and bring to you the best delivery system.

Features of Delivery X:

- Provides Special Handling: Delivery X is qualified to handle specialized commodities, such as fragile or sensitive items, that require special handling. They understand not only how to properly handle such materials to ensure the shipment's safety and integrity.
- Provides Security: Delivery X will give the customer the best security since he/she will have all the details of the delivery person and will be able to track the order.
- It is User Friendly: A user can switch from light mode to dark mode for convenience of the user. We have also designed the app to be simple and easy to use so that any age group can use the application.
- It allows users to have different types of payment options.
- It also allows the user to input package details, like weight and size, which helps the company to gather data together easily and quickly.
- It allows users to schedule delivery.
- It allows you to add multiple deliveries at the same time.

II. Maret Survey

In the following market survey, we have researched on different applications that are currently out in the market which offer similar functionality and are potential competitors. We have gone through the features, functionalities, and operating offered by the different companies [5].

A. Wefast

Wefast is a courier service application of India which is budget centered and is getting very popular in the market these days because of its fast delivery and low-cost services. Wefast uses a B2C model and focuses on time managing delivery. It provides same day on demand intra-city courier and express delivery service in 60-90 minutes exactly when you need it.

Place an order in this delivery app and the system will find the most suitable delivery partner nearby. It currently operates in 8 cities in India including Mumbai, Delhi/NCR, Hyderabad, Chennai, Ahmedabad, Kolkata, Pune and Bengaluru. Wefast has two different applications: One for the customer end and Second for the delivery end.

B. Pidge

Pidge is an on-demand courier delivery service currently active only in the Delhi NCR region. It provides an eCommerce courier delivery service for different types of businesses. We are here to help if you are looking for a quick on-demand courier delivery service.

Advantages of Pidge:

- Same-day pick up & delivery: Exceptional delivery SLAs and supply predictability allow Pidge to pick up and deliver your products on the same-day without any hassle.
- Exceptional at-door experience.
- Optimum route for each customer situation.
- Track orders in real-time.

C. Dunzo

Dunzo is also an app-based courier delivery service provider with a similar business model to WeFast. In fact, Dunzo is one of the most popular courier service delivery apps functioning in the market. Suppose you own a business and are looking for a hyperlocal delivery partner to either to buy daily stuff or to outsource delivery service for your products, Dunzo is a good option. Dunzo has even partnered with local restaurants to offer food delivery services just like Swiggy and Zomato. Dunzo operates in the following cities: Mumbai, Pune, Bangalore, Chennai, Hyderabad, Jaipur, New Delhi, Gurgaon.

D. Saral

Saral is an application based, same-day, intra-city delivery service provider by India's leading E-Commerce shipping company Shiprocket. It delivers the parcels within a 50-kilometer radius. It is available on Android (Play store) and IOS (App store).

Saral has partnered with many delivery services like Shadowfax, Dunzo and Wefast and offers its services in 12 cities including Delhi, Bangalore, Ahmedabad, Chennai, Jaipur, Faridabad, Mumbai, Hyderabad, Navi Mumbai, Gurgaon, Pune, and Noida.

How is Delivery X different from other delivery applications?

- The best thing that Delivery X provides is that one can be a customer and a delivery person at the same time.
- The second thing is Delivery X consists of user side and delivery side in one single application, therefore it is hassle free unlike other companies thus making the process easy.
- Delivery X minimizes a person's time and effort making the delivery faster and convenient, thanks to the innovative system.
- Delivery X creates Employment and a source of income for people. Any person can register and start delivering packages and can earn money.
- We will give good incentives to retain customers. We will also include a referral system to incentivize users to refer the application to their friends and family to get points or a free delivery for the referrals.
- It also allows the user to input package details, like weight and size, which helps the company to gather data together easily and quickly.

III. Proposed Work

We aim to create a fast delivery experience that focuses on two user groups which are the customers using the delivery application and users who enroll as delivery drivers/runners to deliver the package to customers. By researching on this and analyzing various companies like Swiggy, Pidge, and Wefast, we understand that these companies make it complex for delivery guys to go through long process and have different app to deliver the package which makes difficult user experience.

We have been aiming to create an app that focusses on users and delivery guy to switch from user to delivery or delivery to user easily all in one app with minimal user interface which is understandable to all user categories, and which provides a better user experience on a delivery app.

Customer side User flow:

Fig 3.1 represents the user flow and the actions available to users on different Screens.

- First, the User reaches the Login Screen and Enters their Login Details.
- The options on this screen are Login, Register, and Forgot password.

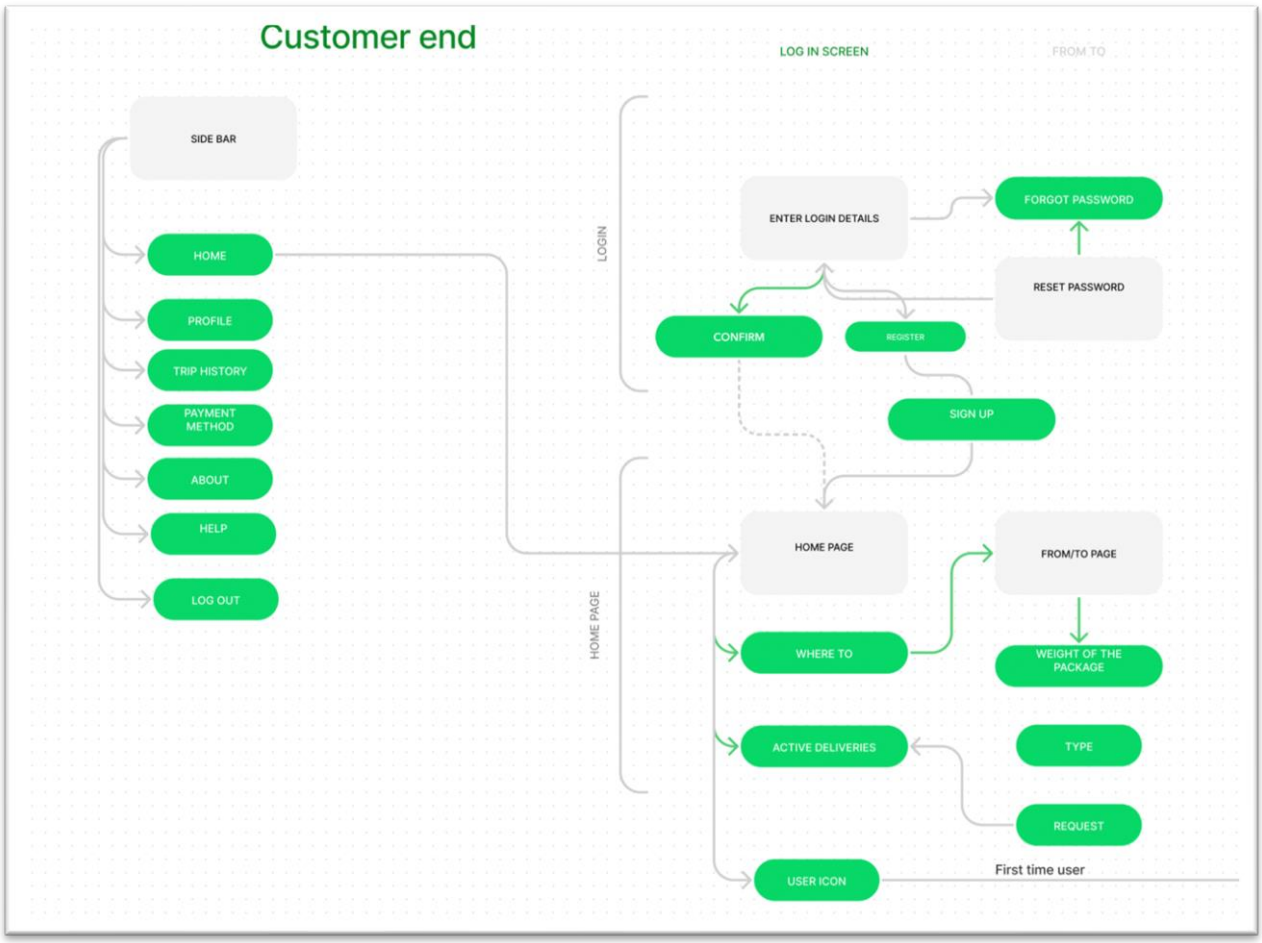

Fig 3.1: Customer side User flow

- The users must enter their ID and password to then continue to the home screen. If they have forgotten the password, they can follow the 'forgot password' steps.
- If they are using the application for the first time, they first need to register. Here, they enter their details and sign up. Once they are signed up, they are taken to the home page.

The home page has the following options:

- Where to: This option is to make a new order. Clicking on 'Where To' will take the user to the 'From/To' page where they can enter the details of the package and the delivery address.
- Active Deliveries: Here, the users can view and track their ongoing deliveries.

Side Navigation Bar has the following options:

- Home: Takes the user to the home screen
- Profile: Takes users to their profile page to see and manage their details.
- Trip History: The history of the orders placed by the user.
- Payment Method: Here the user can manage their payment options.
- About: This page has details about the company.
- Help: Here the users can find the FAQs (Frequently Asked Questions) and can contact us for help.
- Log Out: By clicking this the user can sign out.
- User icon: This will switch the user's profile from customer profile to delivery guy and vice versa.

Delivery side User flow:

Figure 3.2 shows the Delivery side user flow diagram.

- Registration Page: After the user icon is clicked, if the user is a first-time user, then they would have to fill all the necessary data that a runner needs to provide like vehicle number, government issued id, driver's license, and other important documents.
- Home Page: The Home page shows and allows the Delivery guy to enter details like the place he would be going and on what time so the application can filter deliver parcel requests accordingly and the delivery guy can see all the requests on the scrollable dashboard.
- Bottom Navigation: The Home Page has Bottom Navigation Bar to make it easy for the user can switch between the home page, profile page and orders page.

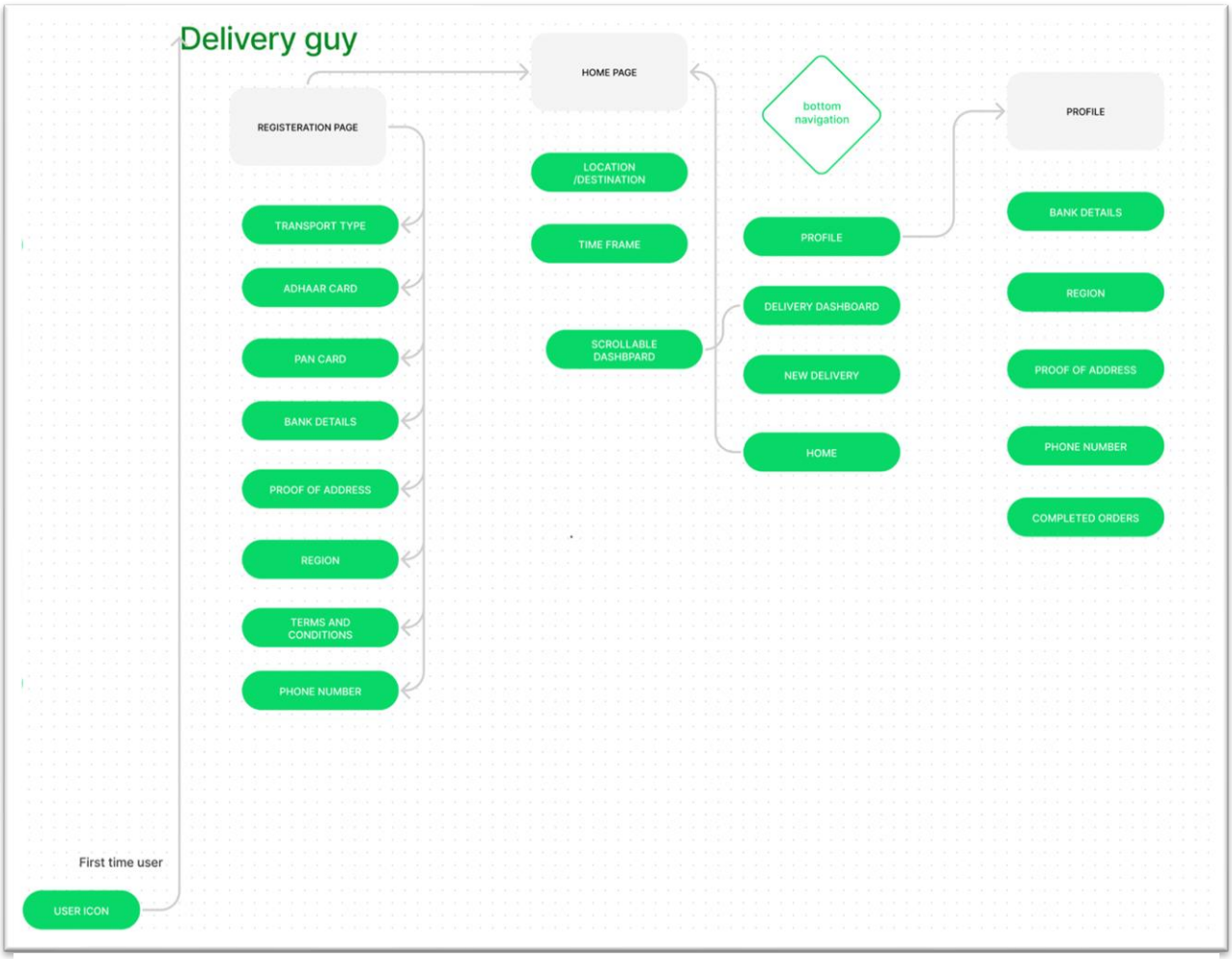

Fig 3.2: Delivery side User flow

- Profile Page: Profile Page consist of details which can be edited like phone number, password, vehicle number and government id and also allows delivery personnel to logout of the application.

Use Case Diagrams: *Figure 3.3 and 3.4 show the customer end Use-Case diagram and Delivery end se-Case diagram respectively.*

IV. Results and Discussion

Talking about the results, the minimum viable product (MVP) came out to be as expected and we were able to make the application as we had aimed.

Figures 4.1, 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7 show the customer end screens that we developed for our application's MVP, and Figures 4.7, 4.8, 4.9, and 5.0 show the delivery side screenshots[3].

However, the model is not tested on large scale yet. Testing it on a large scale could show us the various errors, flaws, and faults in our application. It would also give us feedback on how we can improve our application and what we can change. We will be testing it on a larger scale as soon as possible.

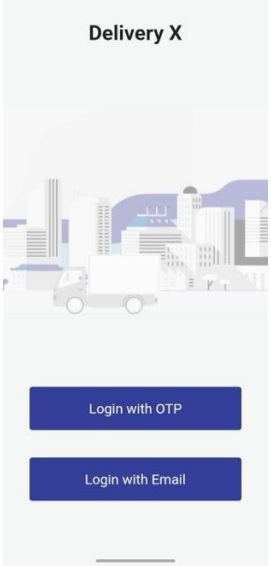

Fig 4.1: Login/Signup

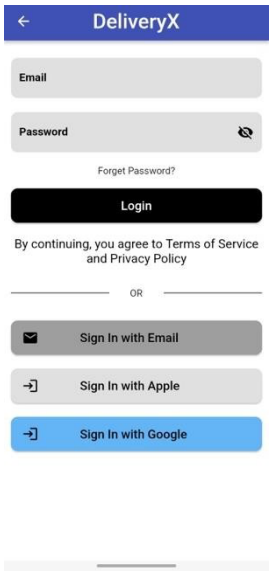

Fig 4.2: Login screen

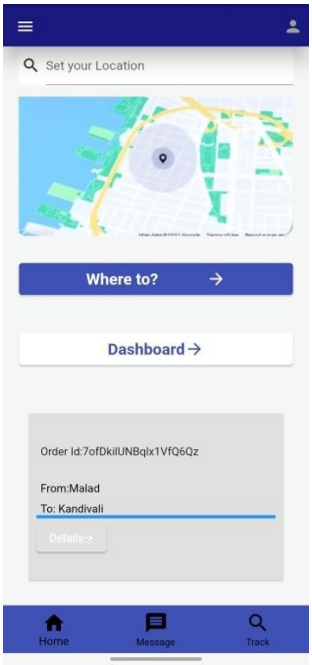

Fig 4.3: Customer side Home Screen

Fig 4.4: Location Selection Screen

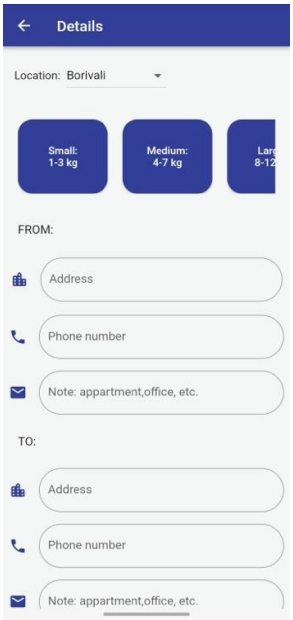

Fig 4.5: Order Details

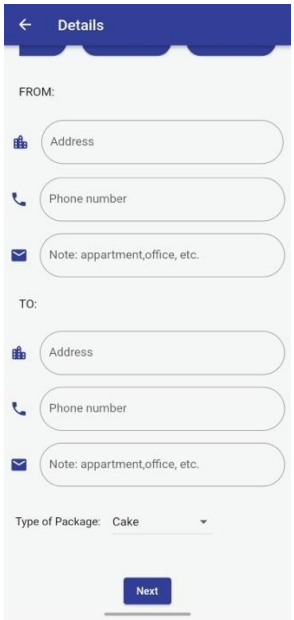

Fig 4.6: Order Details cont.

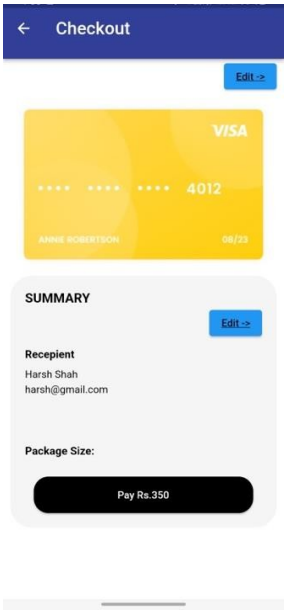

Fig 4.7: Checkout Screen

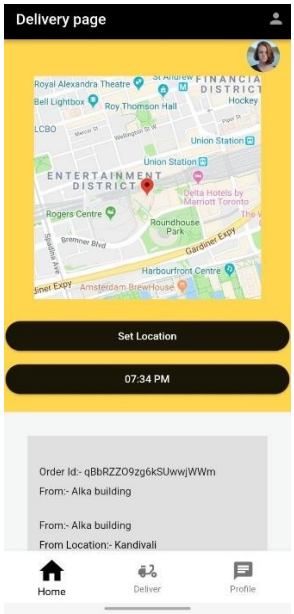

Fig 4.8: Delivery side dashboard

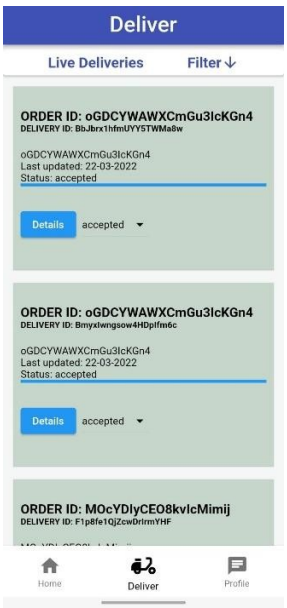

Fig 4.9: Available Orders List

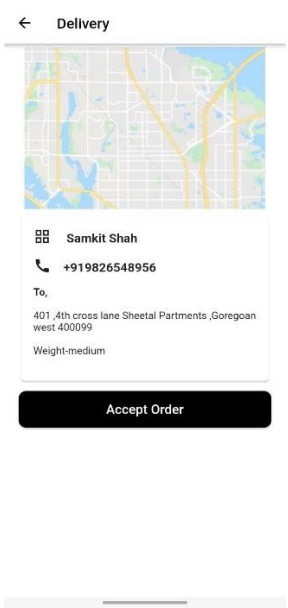

Fig 5.0 : Accept Order Screen

V. Conclusion

We have created an application for a delivery system that is more convenient and quicker than the usual as it is based on a door-to-door innovative system. It shortlists the location of pickup by area code and the person closest to the location would be able to see the order to deliver the parcel. Our aim is to promote users to also deliver parcels whenever convenient to create a large network of people that can deliver parcels.

Assuming we have formed this large network of users, then the efficiency and delivery speeds would increase drastically as there are runners as well as other users delivering parcels when convenient. As we would also be incentivizing the use of electric vehicles, this would also be beneficial for

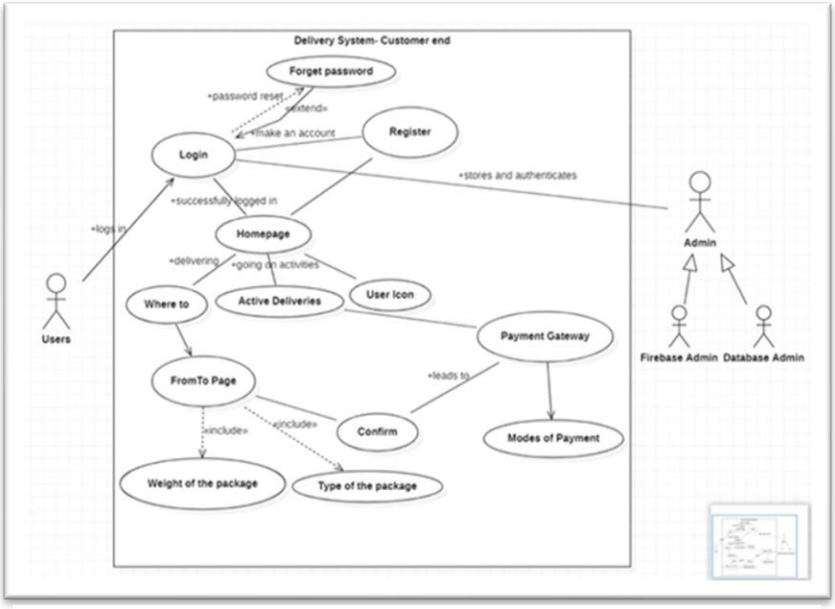

Fig 3.3: Customer side Use-Case diagram

the environment. This way the system will be beneficial for the users, runners, and the environment as well.

VI. Future Scope

Environmental View: Challenges for the Eco-System The number of delivery vehicles in the past decades has increased rapidly and it will even increase by 30% as e-commerce is growing rapidly day by day. As a result, the emissions from the vehicles will increase as well. The challenge for us is to minimize the emission from these delivery vehicles and help the environment. Delivery X can do the following things in the future to solve this problem

- Use of Electric Vehicle (EV) for inner-city areas
- Collab with the global delivery system and build a network across the country

Growth of Delivery X: There will be great demand for Delivery X because of the Covid-19 pandemic. E-commerce users as increased rapidly in the past decade. People order online so there will be more deliveries happening day-to-day. There can be an increase of 20% to 40% growth in deliveries.

Urbanization is a factor for the growth of the application. The global population is expected to reach 8.5 billion in 2030, cities. Increasing middle-class income and falling vehicle costs allow for individual mobility.

Create a local network from different stores: In today's world the bigger the network the more customers will be attracted. So, we aim to build a network shortly and collaborate with companies/corporates and provide our services to them as well [4].

For the near future we also look forward to the following things:

- Reducing greenhouse emissions caused by Delivery Vehicles for example, by promoting the runners to use electric vehicles for delivering parcels by giving them incentives if they use electric vehicles.
- Enhanced security measures, for example, safety lockers specially designed for expensive items like jewelry.
- Office to office deliveries and building a network.
- Dynamic re-routing based on traffic conditions weather conditions, etc.
- Delivery parking zones in different areas so the delivery guy is ready as soon as any pickup is there
- Giving discounts to the user and a higher cut of pay to the delivery guy on each parcel.

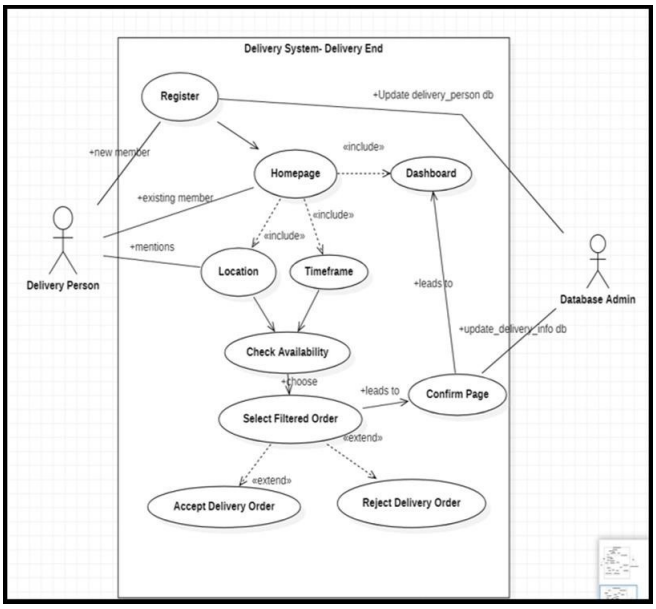

Fig 3.3: Delivery side Use-Case diagram

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