Design Project 2 : Two Wheeler Taxi Design

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Acknowledgment

My project Design of Two-wheeler Taxi has been a great experience overall. It has taught me how to look at the problems faced by users on day to day basis and how to design for the people. All these wouldn't be possible without proper guidance so I would like to sincerely thank my guide, Prof. Nishant Sharma for his valuable guidance throughout this project.
I would also like to thank Prof. Sugandh Malhotra for his valuable inputs. A big thank you for all the users and the people who contributed to my project. Finally a huge thanks to all my classmates for the valuable inputs and feedback throughout the project.

Contents

1.Introduction

There are different kinds of scooters like Maxi scooters, Step through scooters,3 wheeled scooters. Step through scooters, in particular has been very popular in the Indian market and is famous for its practicality and reliability. Scooters are used for different purposes like e-commerce delivery, food delivery, personal use, to carry goods. What else can scooters be used for? How can the design be made more practical and efficient? As scooters are quick and agile in traffic why shouldn't it be used for quick travel from point A to point B? A more affordable way of commute.

Why a two-wheeler taxi?

The number of two-wheelers in India is 75% more than the rest of the category of vehicles and has an increasing trend. India's taxi market stood at around $ 6.4 billion in 2016 and is forecast to grow at a rate of 13.7% during 2017 – 2022, to reach $ 14.3 billion [4]. We can see from the stats that there is a huge scope for the taxi market in India and with the huge number two-wheeler market there can be a market for two-wheeler taxi service in India which also will give many employment opportunities to men and women.

Scope of the project.

Scope of the project is to design a scooter taxi which is more practical, affordable than a 4 wheeler taxi with better comfort and weather protection then a regular scooter which can be used by all age groups advancements in technology and electric drive train options gives more freedom to design the packaging and increase the storage space as well.

2.Pre Research

At the beginning of the project, the topic was to design a multipurpose scooter. To understand what multipurpose is, Pre research is done. Some of the different types of scooters, different uses of scooters are found and some basic research is done on each of them and the interesting areas are explored further.

2.1 Different types of scooters

The First motorcycle with a step-through frame was built in 1984. Scooter Like design started to emerge in the 1900s. The first generation of Scooters was built in 1915. Scooter Production increased after world war 1 and gained popularity with time for its practicality and economy. The second generation came around the 1930s in the united states and japan. Third generation scooters were produced from 1946 where Italy joined the scooter industry with the Vespa and Lambretta. Scooter Industry was joined by the United Kingdom, Russia and India joined in 1972 with the production of Chetak **[1]**. With the change in technology and resources scooters changed from all-metal bodies to plastic body and new segments of scooters emerged which are given below.

2.1.1 Underbone (Step through)

An underbone or a step through scooter has a single large tube coming from the stem and does not have a structural member connecting the stem and the under seat. It has space to move ones feet across unlike a motorcycle.

Fig 1: Step through

2.1.2 Maxi Scooter

A Maxi-scooter has a larger engine capacity ranging from 250 cc to 850 cc with more storage space and is mainly used for touring.

Fig 2: Maxi Scooter

2.1.3 Enclosed Scooters

These scooters have a roof for weather protection and a large windscreen for protection from wind blast. These are single seat scooters.

Fig 3 . Enclosed scooter

2.1.4 Three wheeled scooters

Three wheeled scooters were manufactured during world war 2 with 2 front wheels and large storage between the front wheels. Modern version of these scooters comes with front wheels which can tilt independently and rides like a two wheeler but with more stability .

Fig 4 . Three wheeled scooter

2.2 Different Uses of scooters

Scooters are known for its practicality and ease of use . Some of the areas scooters are widely used are given below.

2.2.1 Personal use

Scooters are one of the best way of transport to zip through traffic. It is also practical to carry anything ranging from small rice bag to a big gas cylinder.

Fig 5. LPG cylinder on Foot board

The step through design with floor board and under seat storage makes carrying luggage,vegetables,LPG cylinder so easy.

Fig 6. Family on scooter

Scooters are easy to ride in traffic .We can see various examples like the above photo. It can easily fit in the whole family even though it is not safe to travel as such.

Fig 7. Women riding scooter with Saree

One of the main reasons scooters are famous amongst Indian families are because it can be ridden by anyone in the family.The image shows a woman riding the scooter wearing Saree and the design of the scooter is well suited for it.

2.2.2 Delivery Purpose

Due to the under-seat storage, wide seat and step-through design, it is convenient to keep big bags of delivery boys. Food delivery boxes can also be easily fixed on the rear section of the seat. Some of the scooters that are particularly designed for delivery worldwide are

Fig 8.Honda Gyro : Japan

Fig 9.Silence:Spain

Fig 10.Govecs Pro Cargo: Germany

Fig 11.Blitz Motors:Israel

Fig 12.Honda MW 110:Japan

Fig 13.Xinling : China

These scooters are specifically designed for delivery purposes like goods and food delivery.

These are some of the delivery scooters available in India specially made for delivery purposes.

Fig 14.Dexpress : India

Dexpress is a Indian company based in Mumbai which makes delivery scooters for Indian Market.

Fig 15.Elektric spok e : India

Li-ions Elektrik Solutions Pvt Ltd is an Indian company that developed the Spock to meet delivery requirements of various firms.

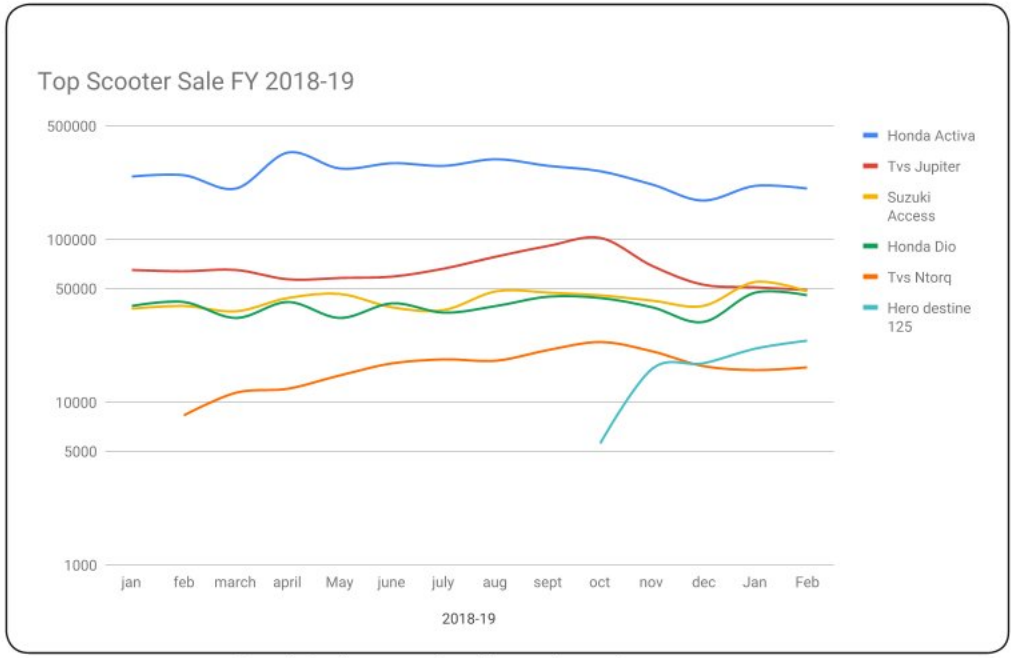
Market survey

To understand what are the features that are emphasized when it comes to delivery. Scooter showrooms were visited for which I had to conduct a market survey to find the top-selling scooters in India
(Refer graph 1).

FY 2019 Sales in Units.

Honda Activa	TVS Jupiter	Suzuki Access	Honda Dio	TVS Ntorq	Hero Destine
30,08,334	7,88,456	5,39,123	4,46,264	2,13,039	1,06,901

Fig 16 : Top selling scooters



Graph1 shows sales data of top 6 scooters

5 showrooms were visited with a set of questions to understand the response from the salesperson. This gave me an idea of what customers look for and what features the salesperson emphasizes which could help me if I had to design a scooter for delivery purposes.

Thayee Motors **Heera Motors**

Common Dealerships

Insights from the visit

- When it came down to delivery , everyone focused on points like metal body, storage spaces.

- Afford ability such as service cost,mileage are important factors.

2.2.3 Medical Field

When it comes to medical emergency first few minutes are very critical for the patients. Proper first aid procedures have to be carried out immediately in any kind of emergencies which can save a lot of lives. Unfortunately in Urban cities makes it impossible for ambulances to reach the patients on time due to traffic.This is solved, by scooters and motorcycles.

In Israel, Eli Beer started an organization to give free first respondent to patients. Volunteers are trained to give first aid procedures and the emergency calls are received in less than 3 seconds and the nearest volunteer is sent to the patient is less than 3 minutes where the first respondent procedure is carried out till the main ambulance arrives **[8]**. Several countries like Australia, Sudan, Victoria, Brazil, Germany, Hong Kong, India, Kenya, Poland, Portugal, UK, USA and several more have started using two-wheeler emergency respondent ambulances **[2]**.

In India where ambulances are always stuck in heavy traffic with no lane discipline followed and without any serious rules against lane splitting two-wheelers are also usually stuck in bad traffics all the time

Fig 17.Ambucycle : Israel

Fig 18.Ambulance :India

Fig 19.Ambulance:Sudan

Fig 20.Ambulance:London

Fig 21.Ambulance :Serbia

Fig 22.Ambulance:Netherlands

2.2.4 Taxi service

Two wheeler taxi is famous in most Asian countries and are one of the most used ways of commute. Two wheeler taxi is an emerging concept in India ,with such a huge population especially in Urban cities people are constantly searching for affordable ways of transport. College students to Office going people who have to commute daily , in need of a cab it is usually expensive and not everybody can afford a cab everyday . With the price nearly 50% lesser than the 4 wheeler taxi services this was an interesting idea to work on .

Fig 23. 2 wheeler taxi Bangkok

Fig 24. 2 wheeler taxi Paris

Fig 25. 2 wheeler taxi India

General user study

To understand what people think about two wheeler taxi as a concept ,General user study of 8 users was conducted in Mumbai.
The questions asked were

• What do you think about 2 wheeler taxi in general?

•What would be the advantages and disadvantages of a two wheeler taxi?

•How safe would you feel?

• Would you use it?

2.3 General User survey Insights

Delivery service
Taxi service is a good idea
Cheap
Good for traffic.
Safety Issues



8 male users:
Delivery services: 4
Taxi services : 3
Own business : 1

Most of them chose delivery services in the beginning but after giving a hint about taxi services everyone thought it was a good idea.

Women Should get into Delivery services
Good idea
Cheap
Safety is an issue for women

5 female users:
Do you mind sitting behind a stranger?
YES:2
NO:3

Most of them were OK sitting behind a stranger
Safety and timings were the main concerns
It would be better if there was lady driver

After getting a positive response from the users about the Idea of a two-wheeler taxi It was convincing enough to give this project a direction. I decided to design a two-wheeler taxi and further research is carried out.

2.4 Pre research Inference

During pre-research different fields in which scooters are used were explored like personal use, delivery purpose, medical use and as a taxi. As an emerging concept in India is interesting to know what people think about two wheeler taxi as a concept. Opinions of users were asked. Positive responses were obtained so it was decided to go on with two-wheeler taxi as the topic for the project and further research was carried out.

3.Research

Research is done to understand the current scenario of the taxi market around the world and in India. Different countries using a two-wheeler taxi are found in the beginning to know how reliable this concept is. Indian taxi data is found which shows the forecasting in upcoming years. Indian two-wheeler taxi services are listed and data is compared with the rest of the taxi services. At the end of the research why a two-wheeler taxi is a feasible concept can be concluded.

Two wheeler taxi is a form of taxi service which are active in many countries .It is a cheaper way of transport than a four wheeler taxi. It is popular amongst many countries and is considered as main transport in some of the countries as well **[3]**. Some of the countries who use two wheeler taxi services are listed below.

3.1 Two wheeler taxi scenario around the world.

Brazil

The taxi service in Brazil started in 1994. At Present, most of the Brazilian cities have motorcycle taxi service. It is famous in rural and less urbanized areas where young people make a living out of driving a two-wheeler taxi.

fig 26 Brazil taxi service

Cambodia

Low-cost public transport in Cambodia is two-wheeler taxis. The drivers are called motocross and are usually male. The drivers do not undergo any regulatory training or wear any kind of uniform.

fig 27 Cambodia taxi service

China

Taxi services started in china during the 1990s. It is used throughout China, Beijing, Guangzhou, and Shanghai. It is popular mainly because of its less fare.

fig 30 China taxi service

Cameroon

Two-wheeler taxis are also the common form of transportation in Cameroon, Maroua. More than two passengers are carried on most trips around three to four children are sometimes carried on the motorcycle. Although Helmets are compulsory it is rarely used.


fig 28 Cameroon taxi service

Philippines

The taxis in the Philippines are called habal-habal, or a skylab.Motorcycle taxis usually have sidecars that are enclosed or seats extended sideways and carry more than 4 children at a time.


fig 29 Philippines taxi service

Indonesia

Motorcycle taxis are a common form of transport in Indonesia, They are called ojek. They are usually unlicensed, Motorcycle riders and passengers have to wear helmets, but usually, only the driver wears.


fig 31 Indonesia taxi service

India

Goa has bike taxis since the 1980s with regular taxi stands.The riders are called Pilots. Two-wheeler taxi is also a growing concept in India with companies like Rapido,Baxxi, Ola, and Uber.

fig 32 India taxi service

Thailand

In Bangkok and most other cities, towns, and villages in Thailand two-wheelers are a common form of public transport. Generally used for short trips. Orange Jackets with yellow number plates are used by Licensed motorcycle taxi operators. The driving license with photo and driver's Information in a yellow card is placed on the back of the driver for passengers to be known about the driver details.


fig 33 Thailand taxi service

United Kingdom

The motorcycle taxi service in London started in 1990. It is a small industry with a very less number of bikes in operation. An intercom system is provided for driver and passenger communication and Luggage space as well.

fig 34 United kingdom taxi service

Paris

The company provides Taxi services to businessmen in a hurry and is called Moto Limos Club. Honda Gold wings use, with facilities such as Blue-tooth-equipped helmets so they can talk on their phones or talk to the rider. Hit-Air airbag-equipped vests for safety and weatherproof jackets and trousers.


fig 35 Paris taxi service

Vietnam

Bike taxis are one of the most popular modes of transportation in Vietnam, they are called as xe ôm. One can get a ride simply by stopping passing riders, or by going to public places such as markets, schools, bus or train stations, and hospitals.where one can find drivers.


fig 36 Vietnam taxi service

Nigeria

The number of two-wheeler taxis in Nigeria is around three million and is locally called Okada. There are not many rules which are followed by drivers and passengers but the new rule does not let them carry pregnant women and children.


fig 37 Nigeria taxi service

3.2 Why TWO wheeler taxi?

3.2.1 Indian Scenario

Indian Taxi market stood around $ 6.4 billion in 2016 and is forecast to grow at a CAGR of 13.7% during 2017 – 2022, to reach $ 14.3 billion. With the changing lifestyle of travelers and disposable income demand for the taxi is surging, especially in Tier-I and Tier-II cities. Taxi market is witnessing increasing traction as taxis services offer hassle-free travel experience to customers in addition to various other tangible and intangible offerings such as booking convenience through mobile applications, various payment options, air conditioning, educated and skilled drivers, 24×7 customer support, electronic fare meters, GPS enabled vehicles, etc **[4]**.

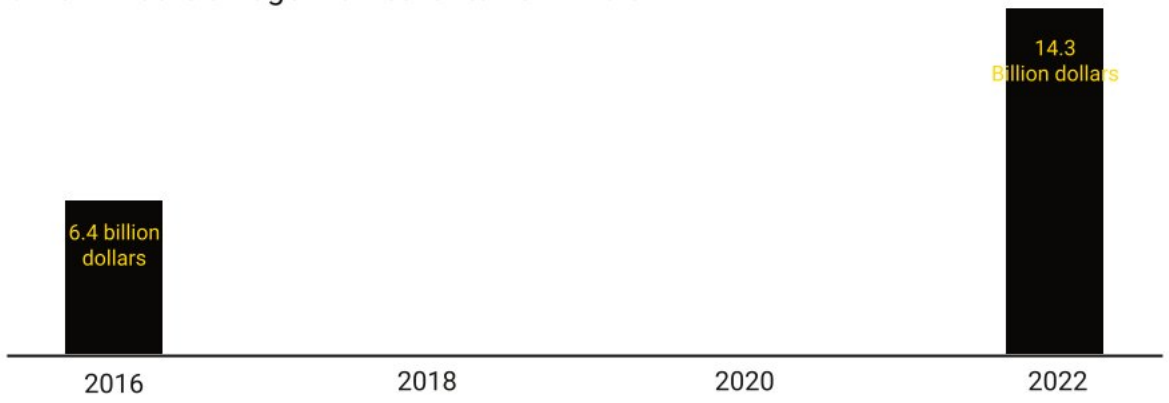
Till 2014, there were very few users for on-demand taxis but a lot changed in 2015 when Ola rolled out a much improved and accurate app with broader coverage. Till 2014 and even early 2015, Ola`s 20% bookings were made through laptops and desktops. India`s weak Internet infrastructure and comparatively lower smartphone penetration was the prime reason behind this. The smartphone penetration was 6% in India in 2013 and, reached 28% by May 2019. In metro cities, the penetration reached 60%-65% by Q1-2015 and that is when and where the revolution of on-demand taxis began in India **[5]**.

The smartphone penetration was 6% in India in 2013 and, reached 28% by May 2019. In metro cities, the penetration reached 60%-65% by Q1-2015 and that is when and where the revolution of on-demand taxis began in India. The on-demand taxi market has grown among low income and mid-income users due to low data costs which make them come Online and stay Online for long durations.

Fig 38, Taxi market segmentation in India

3.2.2 Taxi growth forecast

India taxi market stood at around $ 6.4 billion in 2016, and is forecast to grow at a CAGR of 13.7% during 2017 – 2022, to reach $ 14.3 billion.That Is a huge market for taxis in India.



Indian Taxi growth forecast

Some of the two wheeler Taxi Companies in India are

Taxi Now

baxie

Rapido

Bikxie Taxi

Ola bikes

Uber Moto

There are only a handful of companies that are trying to get into the two-wheeler taxi business. Some of the companies like Dot,TuWheelz, Rideji, Headlyt, Heybob, and Zingo. have already shut down. Even though not a single company has thrived in the country they are constantly making efforts to show that two-wheeler taxis can be an affordable form of transport to those who can not afford cabs regularly.

3.2.3 Indian two wheeler taxi data

TICKET TO RIDE

Bike taxi operators are trying to address last-mile connectivity woes of the urban commuter.

Startup »	N.O.W	M-Taxi	Bikxie	Rapido	Baxi	Ola	Uber Moto
City of operations	Noida	Gurgaon	Gurgaon	13 Cities	Gurgaon & Faridabad	31 Cities	11 Cities
Launch month	Jan-16	Dec-15	Jan-16	Aug-15	Dec-15	NA	NA
No of bikes	10	25	22	15000	400	NA	NA
Price per km/ Base fare	₹10 for first 2 kms	₹20 for first 2 kms	₹25 for first 5 km	₹15 base fare	₹25 for first 5 km	₹20 for first 3 kms	₹20 for first 3 kms
Price for subsequent km	₹5	₹5	₹5	₹3	₹5	₹5	₹5
No of trips/rides	Clocks in 75 trips daily	200-250 rides/day	750 plus	100000 per day	2000 plus per day	NA	NA

Fig 39 : Two wheeler taxi data

The point of these startups is to address the last mile connectivity in an affordable way. Customers have to choose either auto-rickshaw or a taxi for last-mile connectivity. Another option is driving your own car or bike which is expensive.Shared transport is inefficient and does not take you to your final destination.

The above data shows that the bike taxis are slowly capturing the market. With the number of rides reaching up to 100000 per day by Rapido.

Taxi fares Delhi

Taxi service	NOW	M-Taxi	Bikxie	Rapido	Baxi	OLA 2wheeler	Uber 2 wheeler	Auto rickshaw	OLA	Uber
Base Fare (in Rupee)	**10** for first 2 kms	**20** for first 2 kms	**25** for first 5 kms	**15** base fare	**25** for first 5 kms	**20** for first 3 kms	**20** for first 3 kms	**25** for 1st km	**40-60**	**40-60**
fare for subsequent kms (in Rupee)	**5**	**5**	**5**	**3**	**5**	**5**	**5**	**8**	**6** per km	**6** per km

Table 1 : Taxi fare comparison

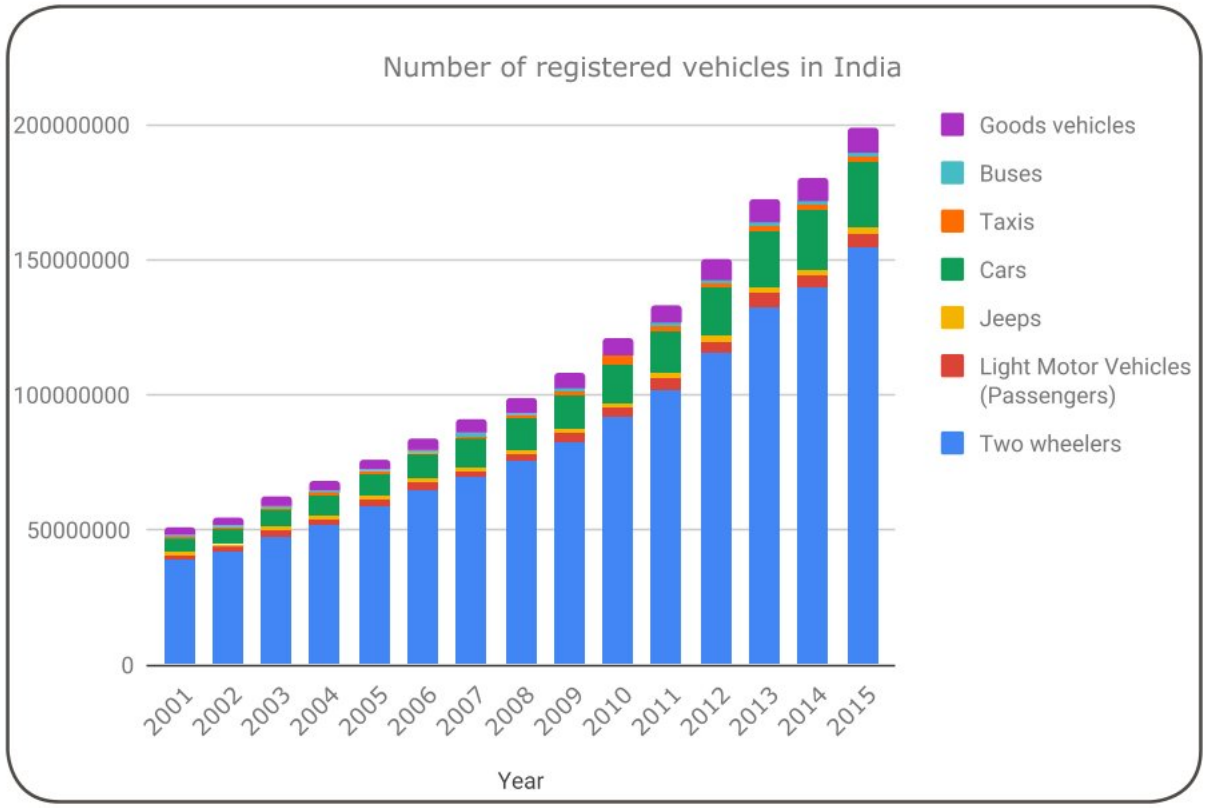
The above table gives the fares of a two-wheeler taxi, four-wheeler taxi, and auto-rickshaw. The fares are according to Deli as two-wheeler taxis are quite popular around there.

We can see the difference in fares, 2 wheeler taxis are almost half the price of 4 wheeler taxis and are even cheaper than Auto rickshaws.

Taxis	Base fare in Rs	per subsequent km in Rs	Total fair for 6 kms in Rs
Ola four wheeler	50	6	86
Two wheeler taxi	15	3	**33**
Auto rickshaw	25	8	73

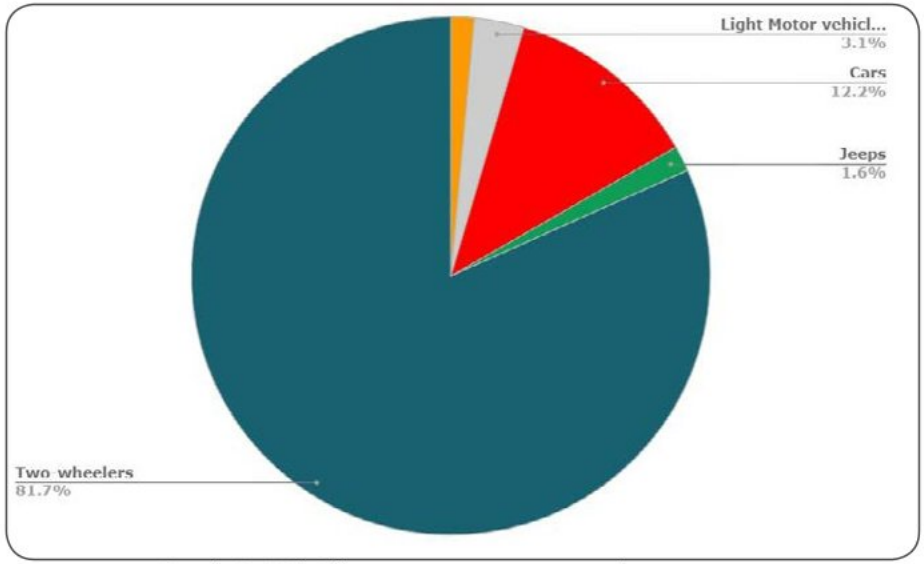
Table 2 : Taxi fare comparision

3.2.4 Vehicle registration data in India 2001-2015



Graph 2 : Vehicle registration data from 2001-2015

The data shows number of vehicles registered from year 2001 to 2015 which includes goods vehicles,Buses,Taxis,cars,jeeps,LMV'sand Two wheelers **(Graph 2)**. This data would give an idea of the ratio of two wheelers to rest of the market and the potential market prediction for 2 wheeler taxi growth **[7]**.



Graph 3 : Vehicle segment percentage data

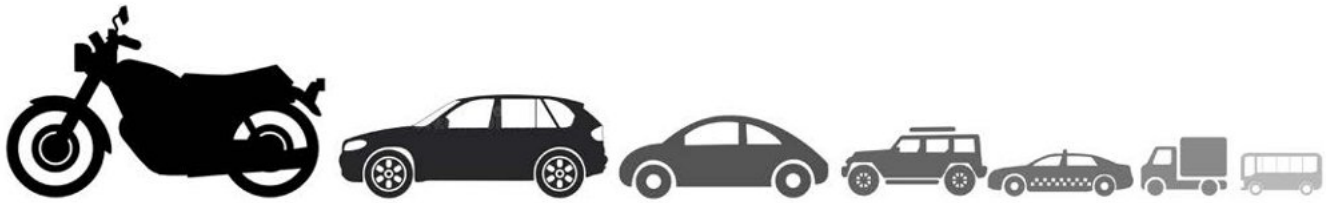
According to the data India has **81.7% two-wheelers,1.6% jeeps,12.2% cars and 3.1% Lmv's**

• The number of vehicles getting registered is increasing year to year

• India has around 75% more two-wheelers than cars.

•This will continue and the footprint of vehicles on the road will also increase leading to more congestion.

•India has a large two-wheeler market which also allows creating employment in this market.



3.2.4 Inference

Why TWO wheeler taxi? Why not !

By the above research data of two-wheeler taxi scenarios in India and the market trend of vehicles since 2001 it is visible that

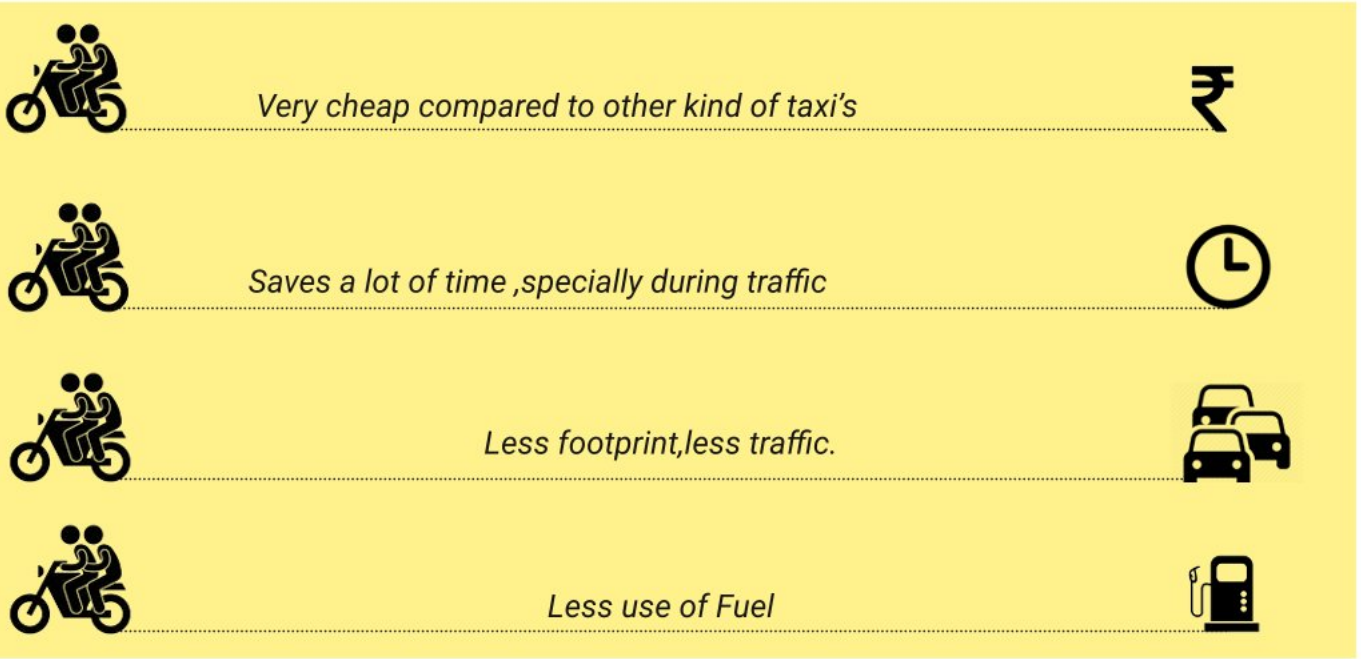
• The taxi market is going to increase exponentially over the coming years

• Two-wheeler taxi has a huge potential to create more affordable ways to travel.

• Two-wheeler taxis can reduce the time of travel in most traffic-filled urban cities.

• Two-wheeler taxis can also solve last-mile connectivity problems

• As the two-wheeler market is huge in India, where two-wheelers are more affordable it can create a lot of job opportunities for young men and women.



3.3 USER STUDY

As a taxi, the primary purpose is to give a comfortable ride to passengers. It is thus important to talk to users to know what they think about how the design features should be, how much luggage space do they need, what are their aspirations while using the taxi and more.
A qualitative questionnaire style user research was conducted to know what the users want. The question aimed at letting the users talk about their choice, problems that they might face while using the taxi, what are the features that have to be included. Product mapping and Aspirational mapping were also done to get an understanding of the kind of design language that would work for the users.
User research was conducted among 29 users in which there were 17 men 12 women of the age group 18- 35 years. All the user research was conducted around different places of Mumbai.

Questionnaire

Name:.....
Profession:.....
Age:.....

1)Do you ride /Own a two-wheeler ?...

2) What do you think about a two-wheeler taxi?

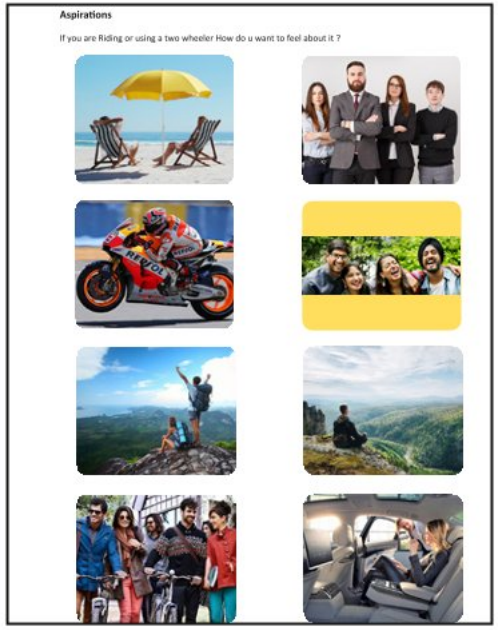
Advantages

Disadvantages and suggestions

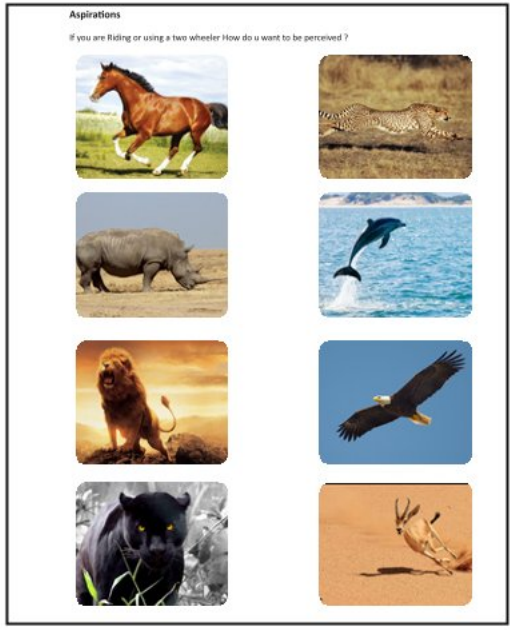
3)Are you comfortable sitting behind a random driver?

4) Why ? and suggestion to improve it?

5) If you were a designer and you could design the scooter in any way you want, how would you do it?



Questionnaire to know the aspirations



Questionnaire to know the aspirations

Things Arrangement for mapping.

1 2 3 4

5 6 7 8

9 10 11 12

13 14

Name : Sumeet

Age : 20

Occupation: Sticker Shop owner
Own/Ride:Owns

Thoughts and Advantages on bike taxi.
Good idea
Beats Traffic
Cost effective

Disadvantages
Weather :Rain
Safety:Accidents

Suggestions
Rain: Top cover
Accident:Helmets and gears
Exhaust on top to ride during rain.

Fav colour:Neon Colours

Aspirations
Q1: 3,Super bike(Fast)
Q2: Cheetah (Fast).

If you had an option to design ,how would you do?
Top cover
Good graphics

Name :Mohammed jamil

Age : 26

Occupation: Delivery guy box 8
Own/Ride : Rides

Thoughts and Advantages on bike taxi.
Saves time.
Cost effective.

Disadvantages
Rain

Suggestions
Rain coat
Better tyres to avoid puncture.

Fav colour: Red

Aspirations
Q1: 2(Calm)
Q2:Rhino(Strong)

If you had an option to design ,how would you do?
Rain coat

Name : Naeema Manika
Age : 25

Occupation: Student own/Ride : NA

Thoughts and Advantages on bike taxi.
Good idea
Beats Traffic

Disadvantages
Speed
Comfort,Storage space

Suggestions
Speed limit
More space for luggage

Fav colour:Black
Are you ok sitting behind a stranger ,Why?
No ,Body contact.
Lady driver would be the solution

Aspirations
Q1: 2(Confident aas i am nervous on 2 wheels)
Q2:6(glide through traffic)

If you had an option to design ,how would you do?
Shouldn't skid,Better tyres
Comfortable handle
More comfortable for rider and pillion.
Roof like structure for rain.

Name : Sharmila
Age : 30

Occupation: Job own/Ride : NA

Thoughts and Advantages on bike taxi.
Short distance travel is good
Beats traffic
Time saving
Disadvantages
Accident
Speeding

Suggestions
Speed limits.
Trained Drivers

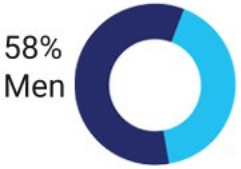
Are you ok sitting behind a stranger ,Why?
Yes if Professional behavior is considered.

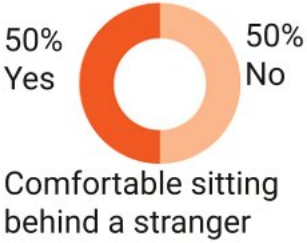
Aspirations
Q1: 2(Confidence)
Q2: lion(confident and dominant)

If you had an option to design ,how would you do?
Better seats
Rain coat or roof for rains
Better engine
Better wheels for safety on road

3.4 User study inference

User Study Insights





What do you think about 2 wheeler taxi


Good idea

Advantages


Saves Time


Saves Fuel


Cost effective
Cheaper maintenance


Beats traffic
Less footprint

Less
pollution

Disadvantages


Prone to
accidents


cant use during rain
Slippery during rain
Pot holes are not
visible


Less storage
space


Discomfort


Not very Women
Friendly
Body contact
between rider and
pillion

Possible solutions from users/If you were to design a two wheeler taxi how would you do it?

Safety

Safety riding gears
Vehicles
Condition should be checked
Crash Guards
Speed limit

Weather

Rain coats
Roof top cover
Bigger tyres
Better suspension for potholes

Storage

Extra storage space
Detachable luggage space like side cars
2 helmet space

Comfort

Comfortable seats
Wifi / entertainment system
Good footrest
Back Rest
Grab rails

For Women

Splitter between seats
Time restrictions
Lady drivers
Location limits
Live tracking

Inferences

•Airbags in cabin
•More stable design
•Splitter between seats
•Grab rail between rider and passenger
•Bottle holder /Umbrella holder
•Rear view camera mirrors
•Electric Scooter
•Provide proper branding/uniform/colour code

Spacious
Comfort
Safety
Women friendly
Rain protection

Aspirations


Relaxed and comfortable

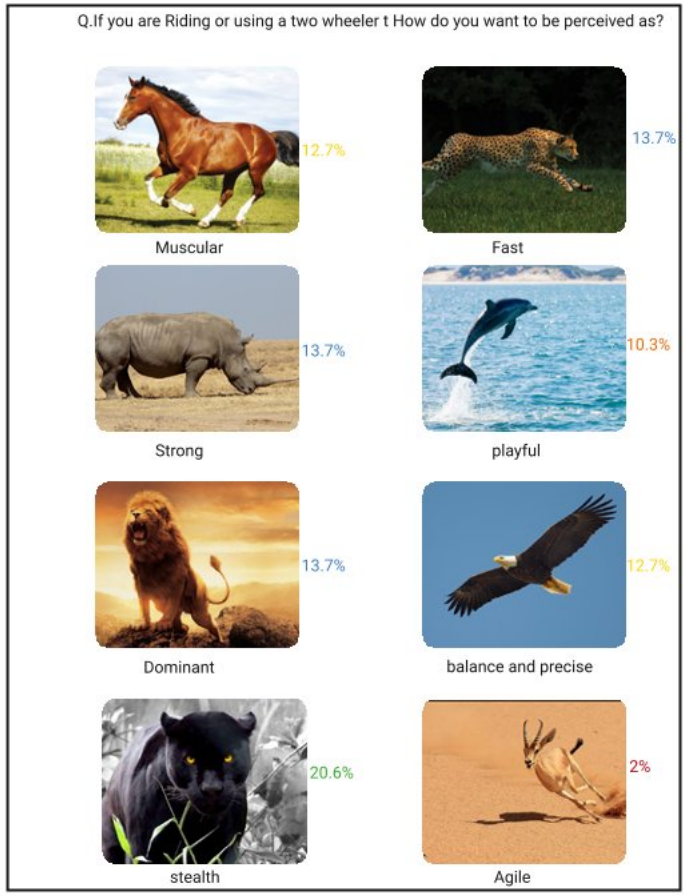

Stealth

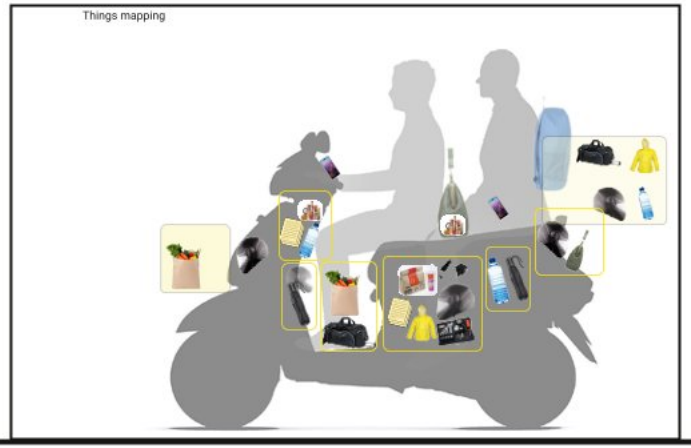
Stealth
Relaxing
Fast
Comfort

Key inferences

According to the inferences it is found that most of the users want a relaxing and comfortable ride with women wanting privacy and safety. where some of the users mainly youth wanted an exciting, fast experience.

Aspirational Mapping data





Preference mapping

3.5 Problem identification and finding existing solutions

Before writing down the project brief I had to understand what are the real problems faced by the people and to identify that user insights were evaluated and brainstorming was done. A list of problems was made and what are the existing solutions if there are any were found.

If there are any good solutions it could be incorporated in the design.

1.Comfort For Rider and Passenger

As the rider has to use the vehicle for more than 10 hours a day comfort is a main concern .The rider should not feel exhausted or start getting body pain because of the long hours. As it is a taxi Comfort for passenger is the primary importance.

Conventional Scooter Seats

Maxi Scooter Seats with barrier

Cruiser style seats

2.Lady Riders and passengers with Saree

If the driver and passenger are wearing Saree it should not create problem to use the taxi(should not restrict them from getting in and out of it).

Riding scooter with Saree

Passenger with Saree

3.Older People

If older people are using the taxi it should be comfortable and easy to use for them.

Step through and Comfortable and seats

4.Storage

The vehicle should have sufficient storage to accommodate two helmets ,safety gears and luggage of the passengers.

Bigger under seat storage

Helmet box and saddle boxes

7.Safety and Aesthetic Intent

The vehicle should be more safer in terms of perceived safety and actual safety (Accidents,Road conditions)

2 wheeler safety gears

Compulsory helmets

Crash guards

6.Weather Conditions

Passengers and Drivers should be protected from rain and Sun(Accessories included).

Plastic covers

Roof structure

Enclosed structure

Rain coats

Fig 40 : problem identification and existing solutions

4. Design Brief

To design a two-wheeler taxi with a double step-through frame, between driver and the passenger with cruiser style seats, storage of Approx 40 liters which can accommodate at least two helmets and a medium-sized bag, Space to keep the umbrella, protective gears for the passenger. A roof structure for weather protection and a wheelbase of approximately 1500 mm.

Aesthetic intent

• The scooter should give a sense of trust and confidence to the user to use the two-wheeler taxi with better practicality.

Package

• The scooter should be made safer to use.
• It should have better storage.• It has to be very comfortable
• Design to protect from bad weather.
• Infotainment for users.

Audience

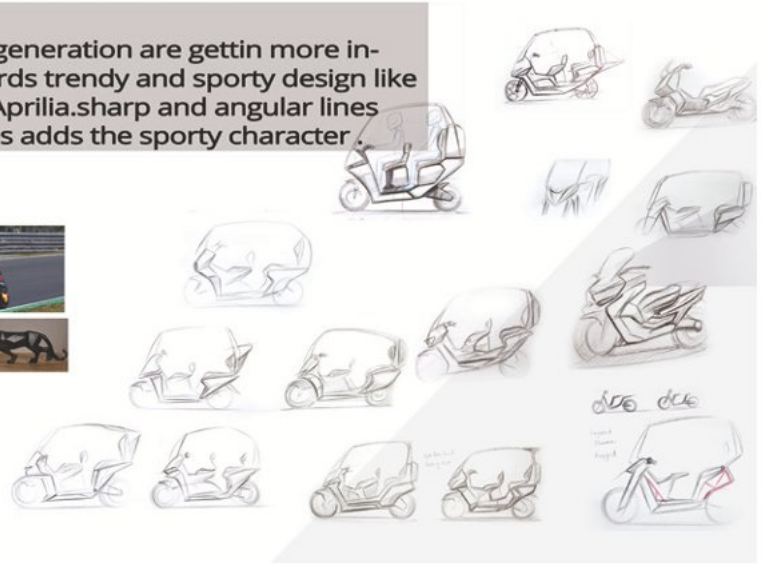
•The scooter taxi is targeted mainly to the urban cities for short and economical commute
• It is also intended to create job opportunities for young men and women

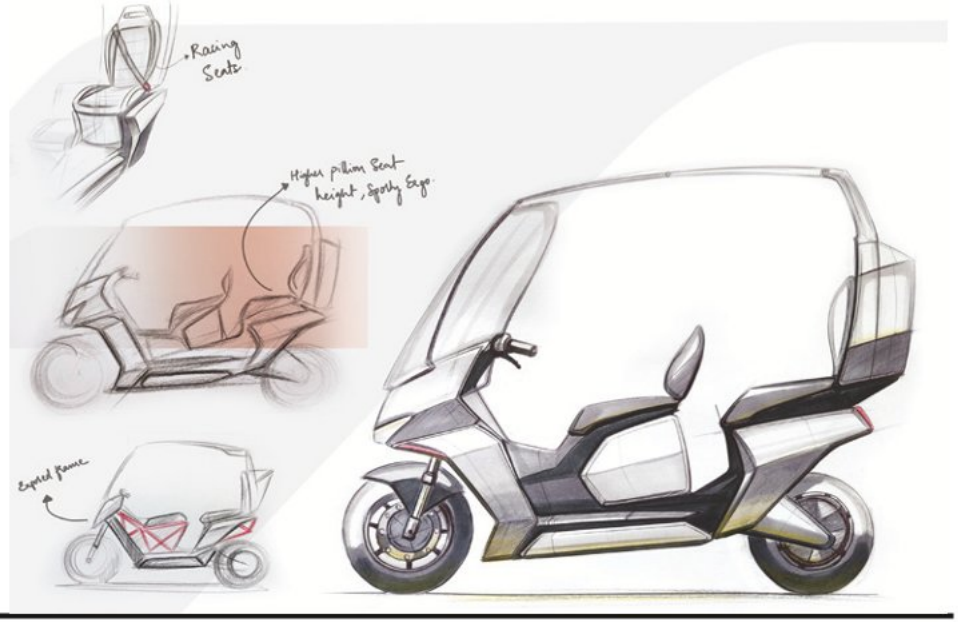
5. Initial concepts

CONCEPT 1

Sporty

The newer generation are gettin more inclined towards trendy and sporty design like Ntorq and Aprilia.sharp and angular lines and surfaces adds the sporty character.

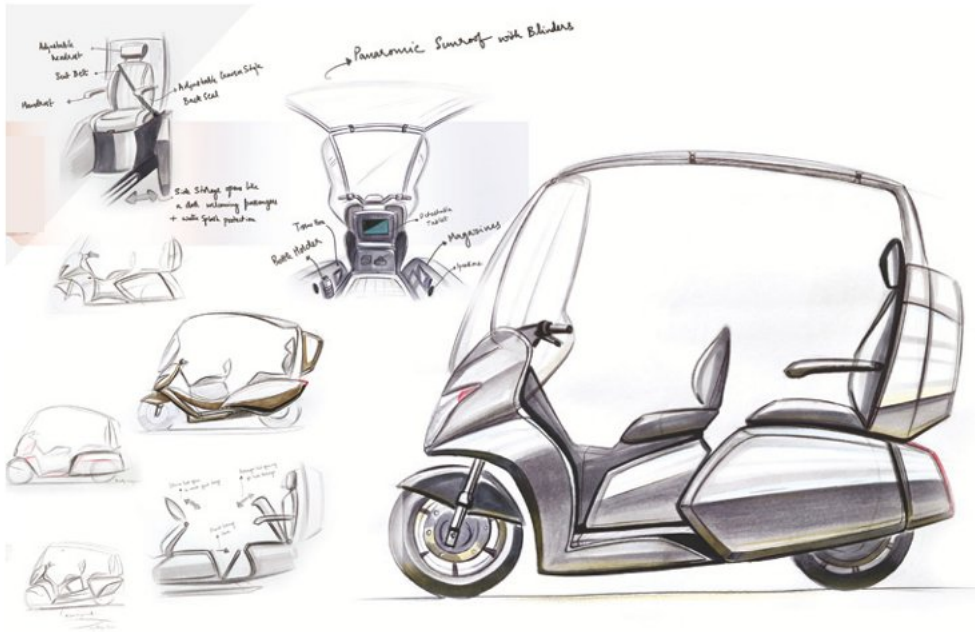




CONCEPT 2

Luxury

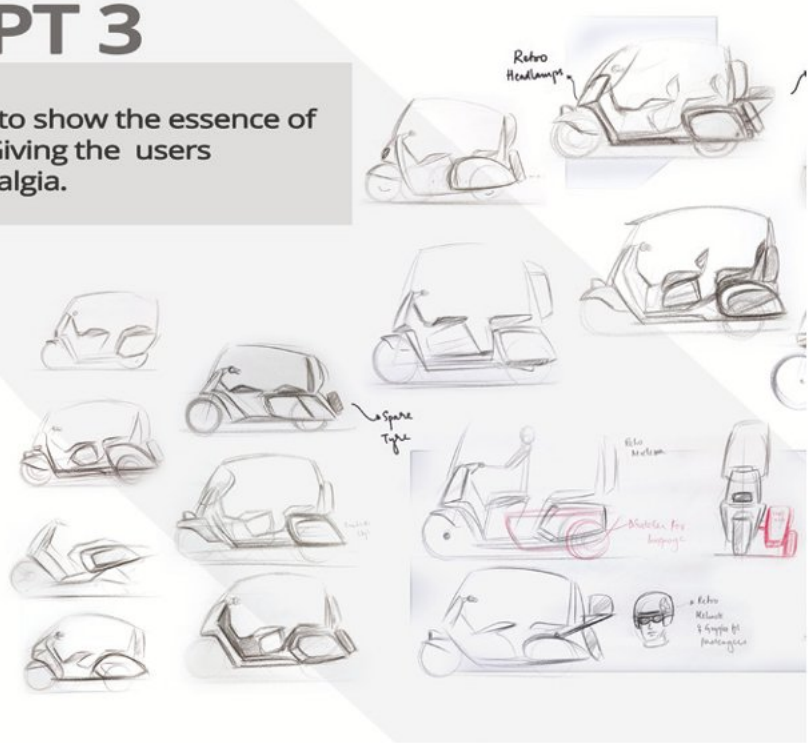
As a taxi the main intent is to provide a comfortable and relaxing ride to the users.fusion of comfort ,practicality and aesthetics gives the whole experince of luxury.



CONCEPT 3

Retro

The design intends to show the essence of retro modernism. Giving the users experience of Nostalgia.



6.Packaging

6.1 Dimension study

As the scooter has to have a double step-through the frame. The length of the scooter and the wheelbase increases. Step through scooters usually has a wheelbase of 1270 mm approx and an overall length of 1810 mm approx.
The wheelbase of the scooter to be designed would be approximately 1500 mm which is close to the dimensions of maxi scooters.

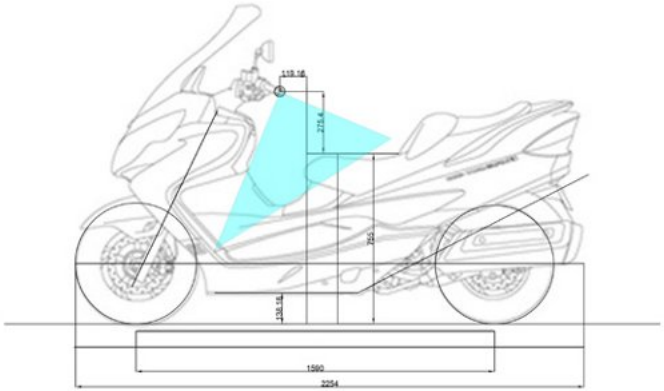
After making some initial ideation and checking the dimensions on the exact scale. The dimensions obtained were as follows Wheelbase: 1605 mm, Length: 2178mm, ground clearance 140 mm and a seat height of 731 mm.
Dimensions of different maxi-scooters were compared and the most suitable one is chosen.

Scooters	Wheelbase in mm	length in mm	width in mm	seat height in mm	Ground clearance in mm
BMW gt 650	1591	2218	822	795	NA
BMW C400 x	1564	2210	833	775	NA
Yamaha Xmax	1539	2160	790	792	125
Suzuki burgman 400	1580	2235	765	755	125
Yamaha T max	1580	2200	775	800	130
piaggio mp 3	1549	2159	774	790	NA
kymco ak 550	1580	2165	795	785	NA
kawasaki j 300	1555	2235	715	775	145
Honda Nss 300	1510	2140	750	780	135

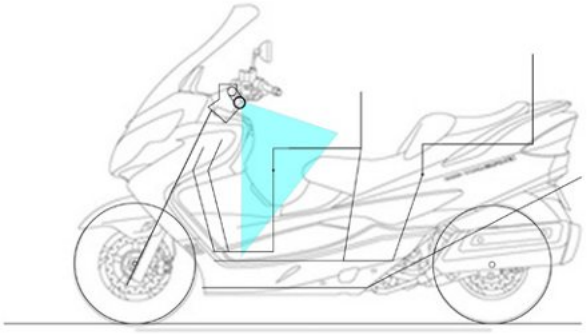
The nearest dimensions are of suzuki burgman. Dimensions of Suzuki burgman is considered and worked on.

Maxi scooters have lower ground clearance, lower seat height, and a relaxed riding triangle. Taxi dimensions have to be according to the Indian conditions and the rider triangle is also different. For this Suzuki, access dimensions were also considered and worked on. Both Suzuki access and Suzuki Burgman dimensions are compared and packaging is made accordingly.

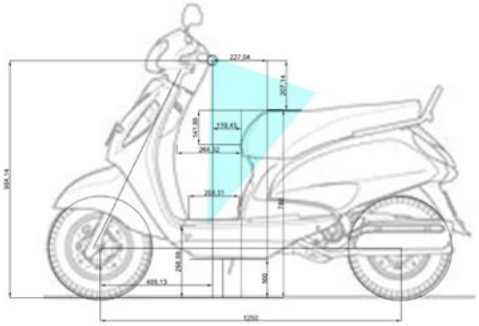
6.1.1 Dimensions and riding triangle comparison



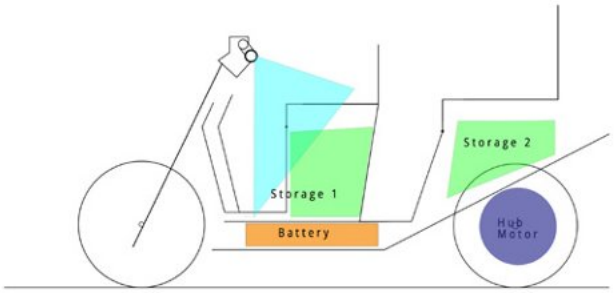
Suzuki burgman 400



New dimensions



Suzuki access 125



New dimensions

6.1.2 Anthropometric Study

S/No.	Body dimensions	Min	Max	Male percentile			Mean	SD
				5th	50th	95th		
1	Stature (body height) (mm)	1520	1890	1600	1710	1810	1712	62
2	Sitting height (erect) (mm)	680	920	730	805	880	805	43
3	Shoulder height, sitting (mm)	470	650	520	570	620	569	33
4	Lower leg length (popliteal height) (mm)	390	510	410	450	487	450	23
5	Hip breadth, sitting (mm)	260	425	270	320	380	319	30
6	Elbow height, sitting (mm)	130	310	160	200	245	200	28
7	Buttock–popliteal length (seat depth) (mm)	360	540	390	450	520	453	38
8	Buttock–knee length (mm)	460	640	496	560	610	556	35
9	Thigh clearance (mm)	80	200	100	140	185	139	25
10	Eye height, sitting (mm)	600	810	630	710	780	708	43
11	Shoulder (bideltoid) breadth (mm)	350	480	380	420	462	423	24
12	Knee height (mm)	460	600	490	530	570	532	27
13	Body mass (weight) (kg)	400	1100	476	635	915	653	131

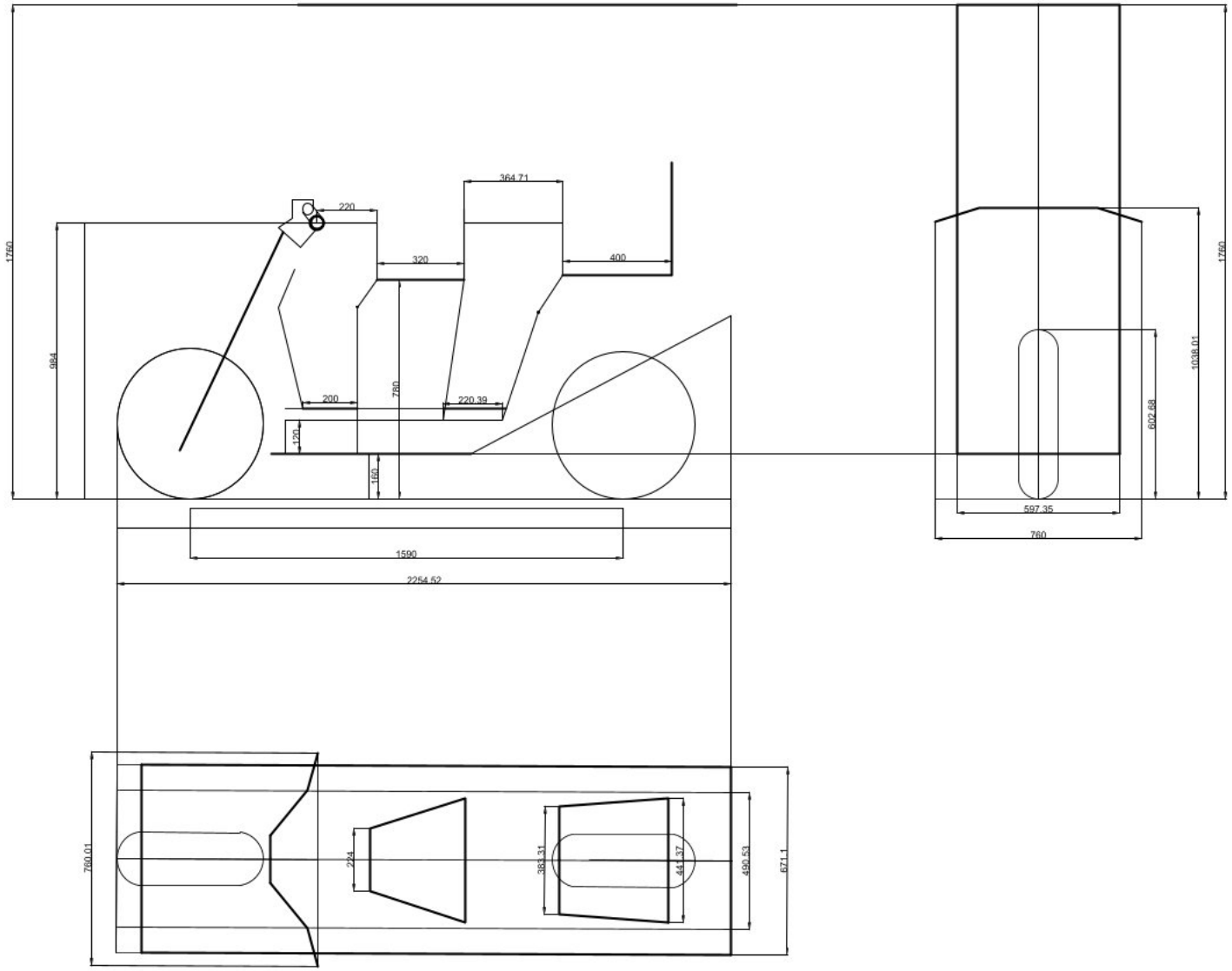
S/No.	Body dimensions	Min	Max	Female percentile			Mean	SD
				5th	50th	95th		
1	Stature (body height) (mm)	1410	1770	1465	1600	1730	1598	81
2	Sitting height (erect) (mm)	680	830	730	780	820	779	29
3	Shoulder height, sitting (mm)	500	610	500	550	580	548	27
4	Lower leg length (popliteal height) (mm)	340	470	375	420	470	422	30
5	Hip breadth, sitting (mm)	300	450	320	400	430	389	37
6	Elbow height, sitting (mm)	130	250	155	200	240	198	25
7	Buttock-popliteal length (seat depth) (mm)	390	540	390	470	520	463	40
8	Buttock-knee length (mm)	450	620	505	550	620	556	38
9	Thigh clearance (mm)	90	200	100	130	180	135	25
10	Eye height, sitting (mm)	560	770	630	680	720	679	33
11	Shoulder (bideltoid) breadth (mm)	320	460	350	400	440	398	27
12	Knee height (mm)	390	550	420	470	530	474	36
13	Body mass (weight) (kg)	370	1000	400	550	782	559	116

Indian Male and female Anthropometry was studied to get the dimension for seat dimensions. The rest of the dimensions were taken from Suzuki access and Suzuki Burgman.

50th percentile Male and 5th percentile female dimensions are considered. 50th percentile male dimension is 560mm and the 5th percentile female is 509mm. The dimension comes around 520 mm. As scooter front seats are not sat on like a typical chair the seat length is further reduced to 400mm for the front seat. Rear seat is of 450mm.

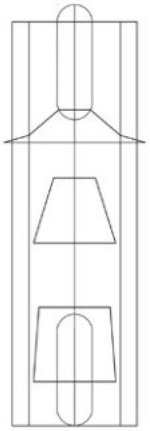
6..1.3 Technical Dimensions

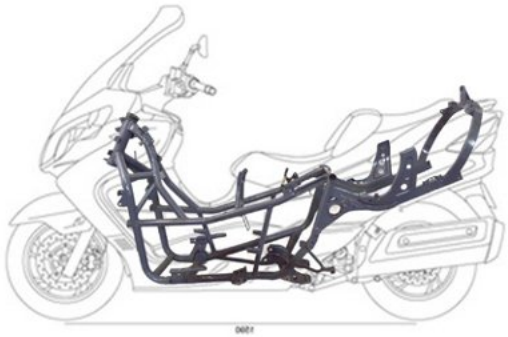
All dimensions are in mm



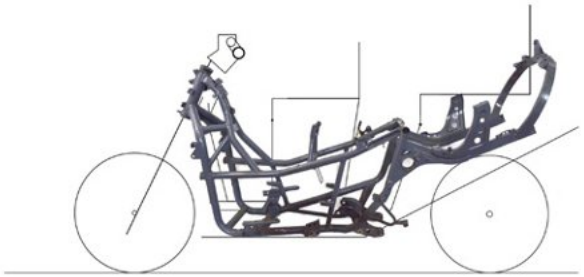
6.2 Frame Structure study

As the frame has to be changed according to the new design. The frame of Suzuki Burgman is borrowed and changed according to the step-through design. Several ideations were made to find out the best setup for the structure to be strong enough, and the frame is designed accordingly.



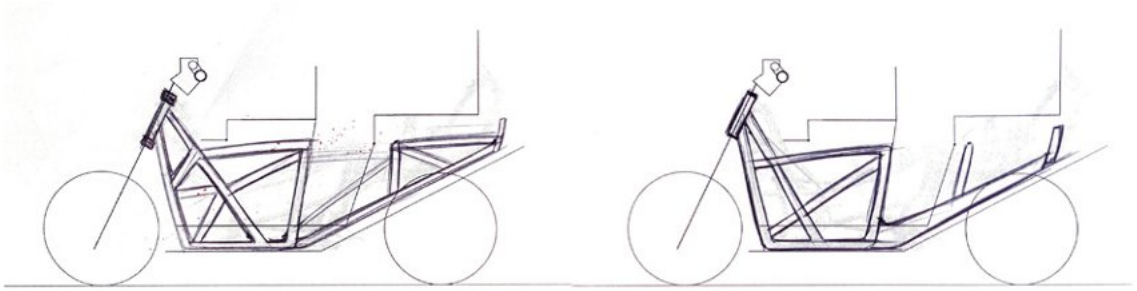


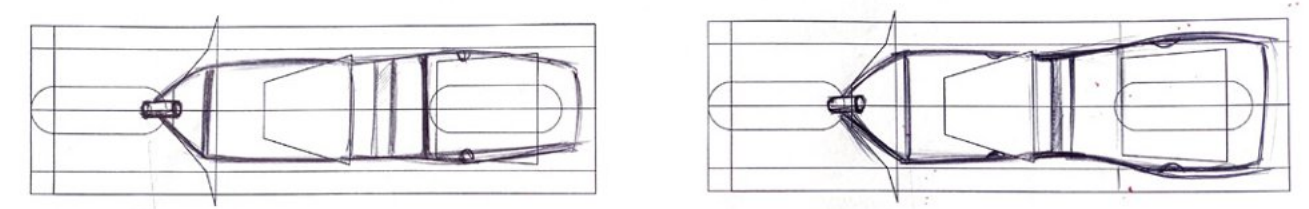
Suzuki burgman 400 frame

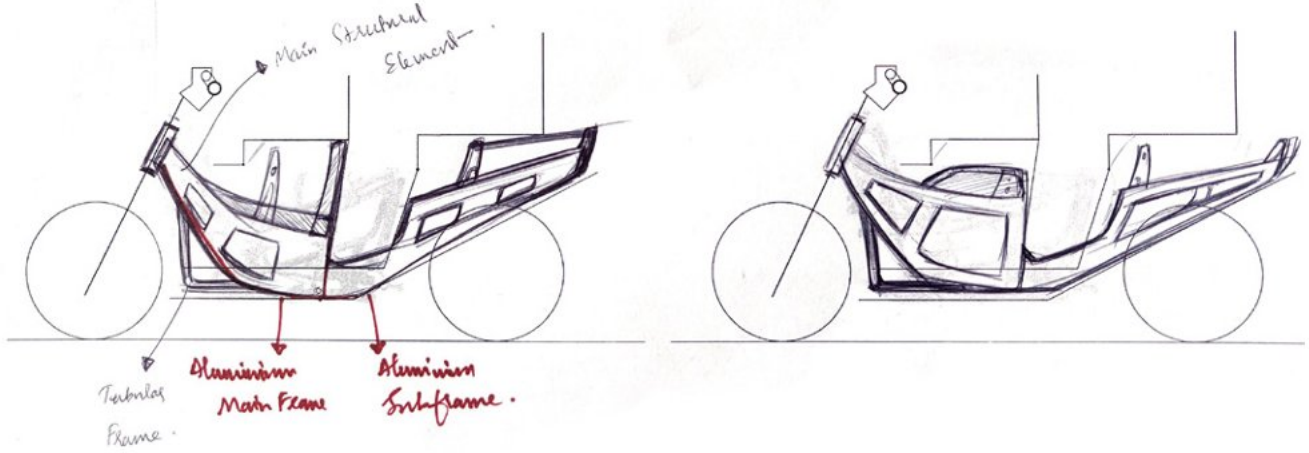


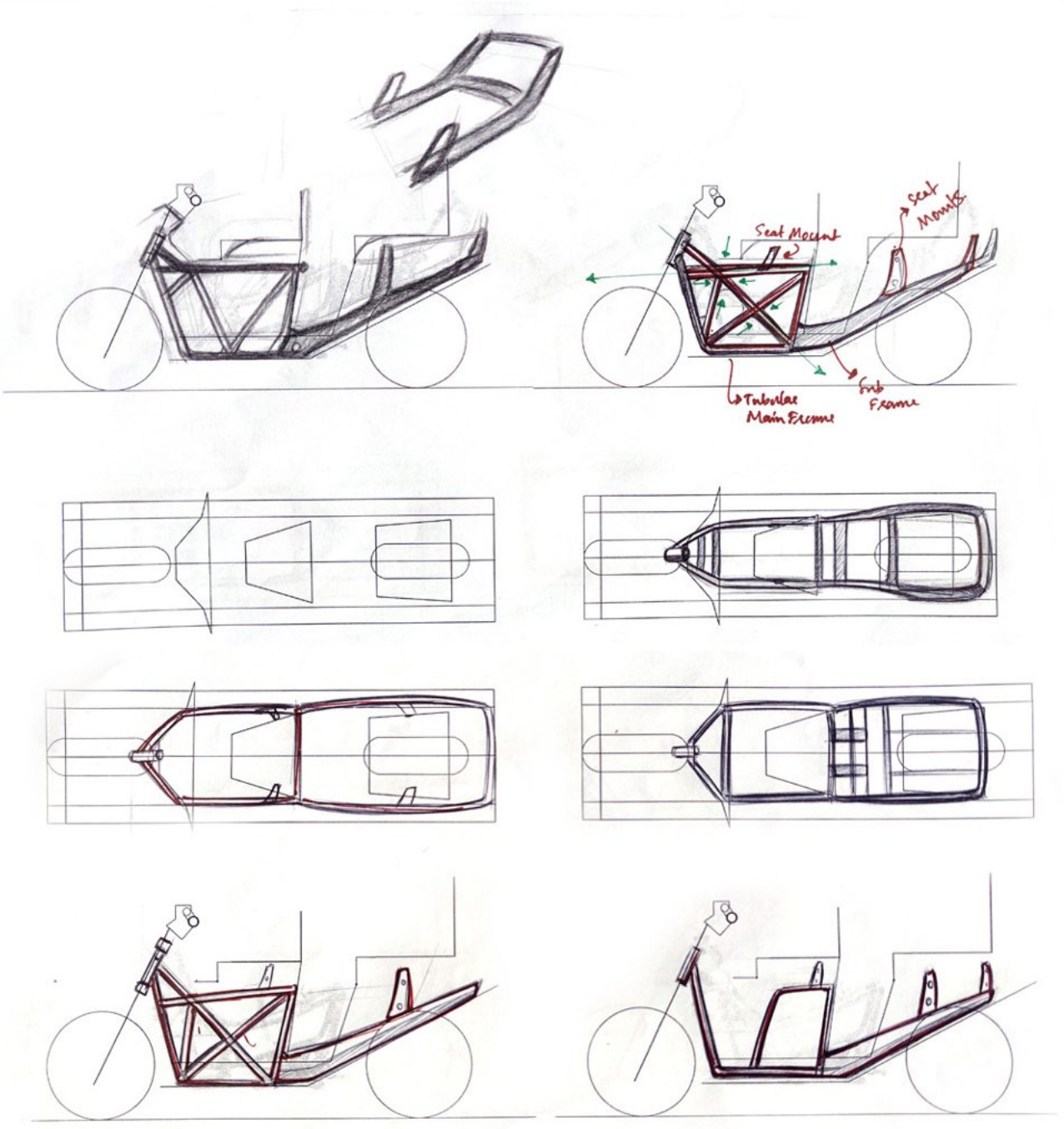
Suzuki burgman 400 frame on new package

Frame design Ideation's



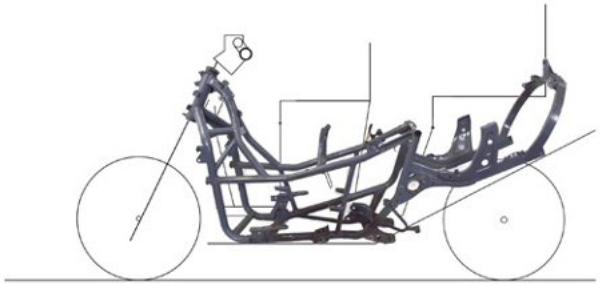




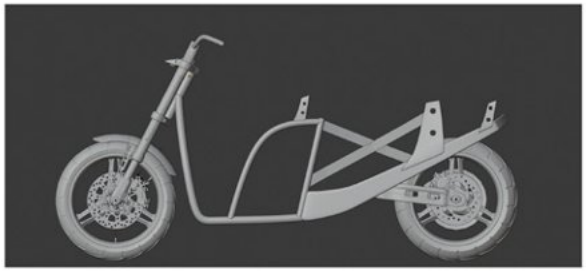


Final direction

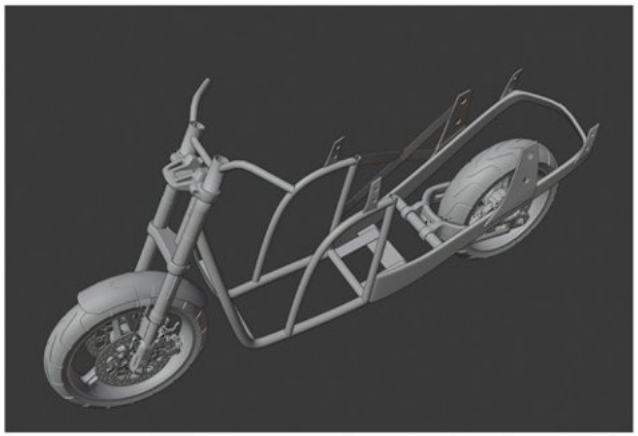
Frame Structure design

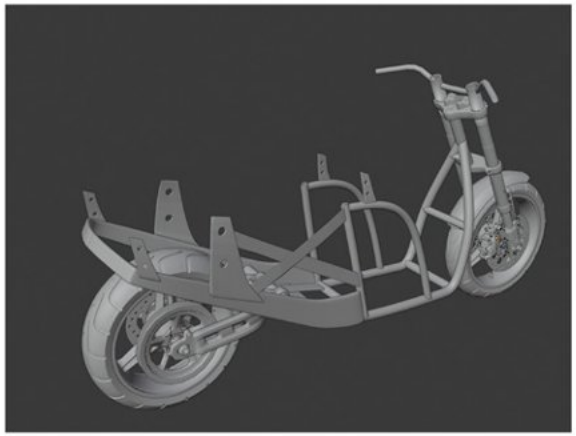


Burgman sub frame moved down



New frame design





6.3 Benchmarking of Enclosed scooters

Benchmarking is done to Understand the existing products which offer weather protection and which are different than the regular scooters in the market . Different ideas can be taken which can help in the design process.


BMW C1


Benelli Adiva


Peraves Ecomobile/ MonoTracer


Quasar


Lit C1(Concept)


Honda Elysium (Concept)

Peugeot HYmotion 3(Concept)


BMW Simple (Concept)


Toyota i-Road (Concept)


Honda Gyro


Accessories in Indian market


Accessories in Indian market

Fig 41 : Benchmarking of enclosed scooters

6.4 Drive train considerations

The electric drive train is considered as it gives more packaging freedom and spaces to design with. As the scooter has two-step through's and is longer than the regular Indian scooters It would be feasible to use Hub motors to save space on the frame packaging which can create more space than using a frame-mounted motor. A motor of 4 kW can be used which would have sufficient power and economical.

Fig 42 Electric drive train

fig 43 Hub motor

6.5 User persona

Two-wheeler taxi is an affordable option over 4 wheeler taxi or even an auto-rickshaw. The people who commute daily to college or work are considered. The age group from 18-40 is considered. The user profile is made considering both men and women.

CUSTOMER PROFILE

Name : Ashwin Choudary
Age : 18-40 years
Occupation : College student/ office employee
Daily Commute : 15-30 kms
Vehicle : Honda Dio/Alto
City : Mumbai

TRAITS:

Plays cricket with friends on Weekends

Hangs out with friends/ visits relatives.

Brand Savvy / tech Savvy

Phone addict

Smokes and Drinks occassionaly

Uses Ola /Uber once in a while

Takes rickshaw/local

Watches ipl/tv serials/Movies

Has a girlfriend / single /married

Bollywood songs/EDM

IComputer games/PUB G

NETFLIX

7.Concepts

After finding out the problems faced by drivers and passengers ideas were generated through sketching and all the ideas were collated and different concepts were made. Initial concepts were made to get a better understanding and to find out what changes have to be made before making the main concepts and final design. Initial Concepts are then narrowed down and main concepts are made after that.

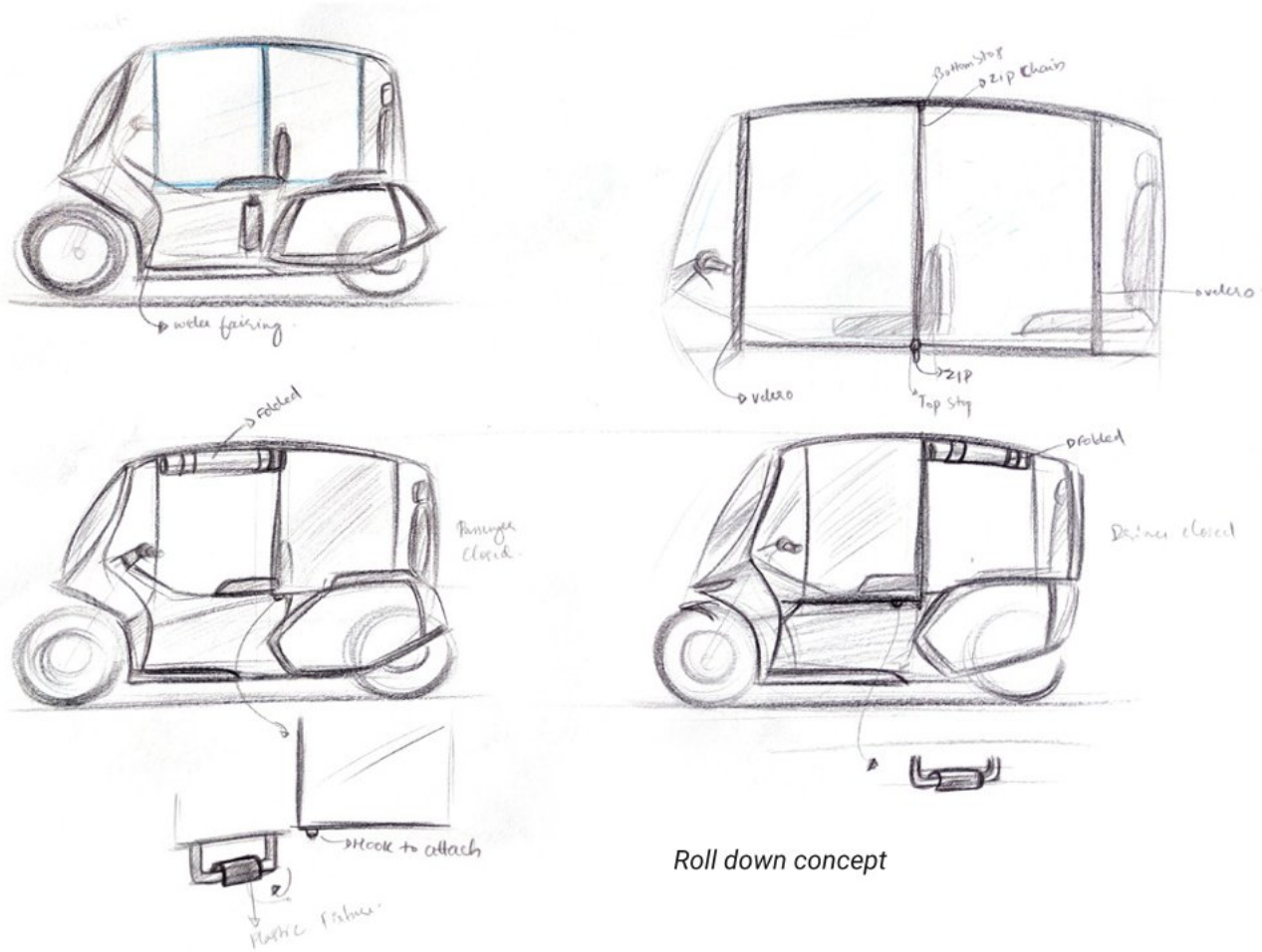
7.1 Ideation's for solving weather protection problems

After making initial concepts and looking at the possible existing design solutions for various problems listed earlier, some more ideation's were made to solve the weather protection problems.

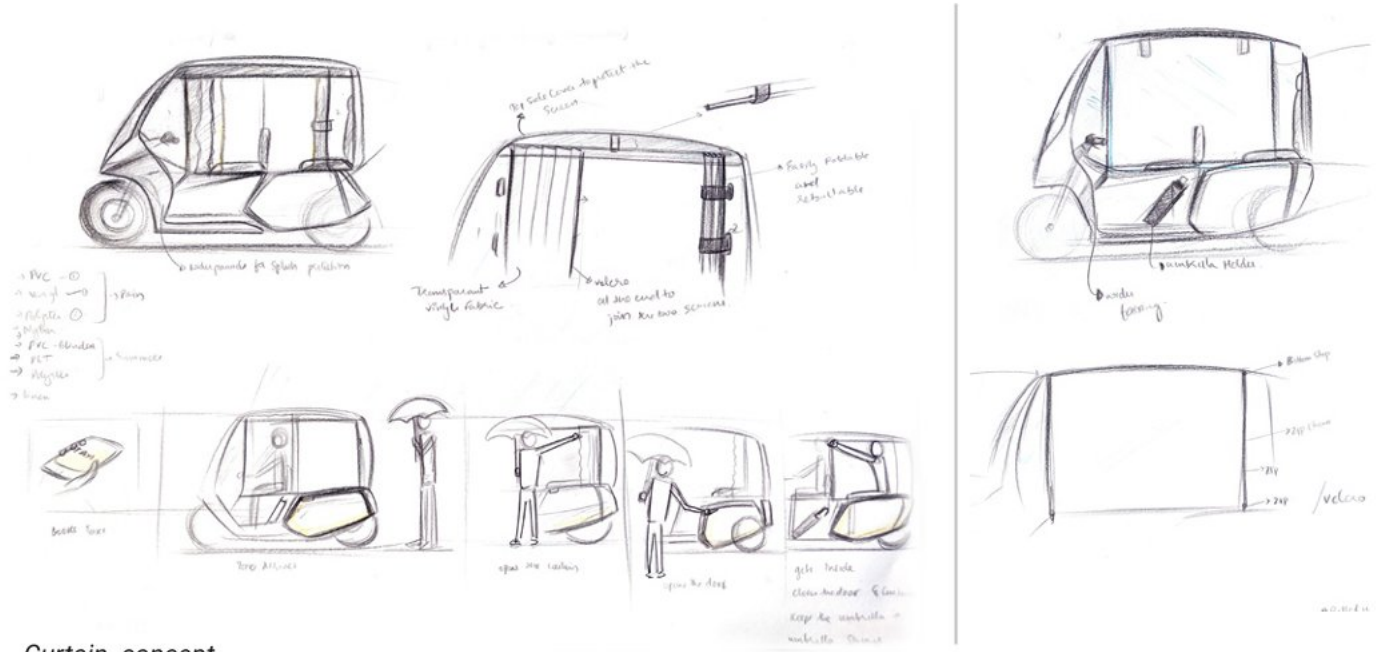
Direction 1: Enclosed Concept

Adding a structural member to fix the door panels would add up to the weight of the scooter and make it difficult for the driver to balance so further ideations were carried on.

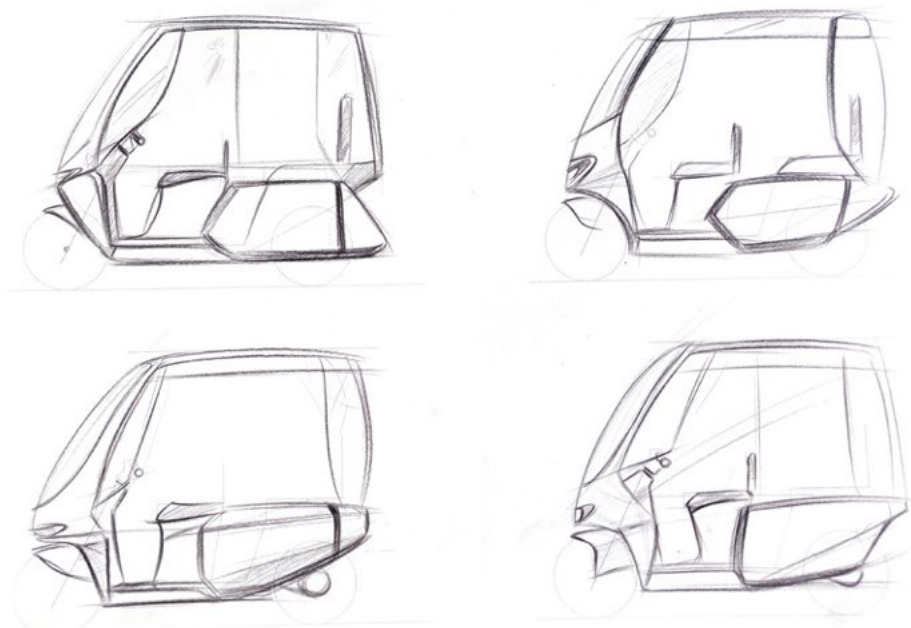
Direction 2: Rain covers



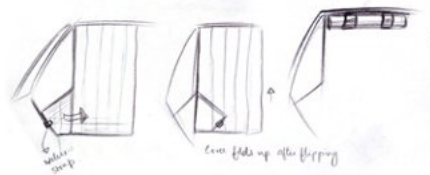
Roll down concept



Curtain concept



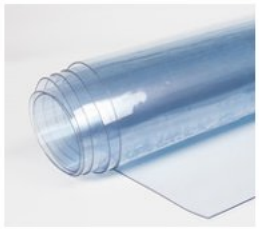
Curtain concept



Roll down concept

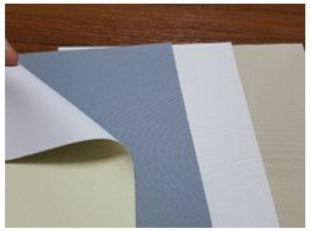
Materials

For Rain



Transparent PVC sheets

For summer

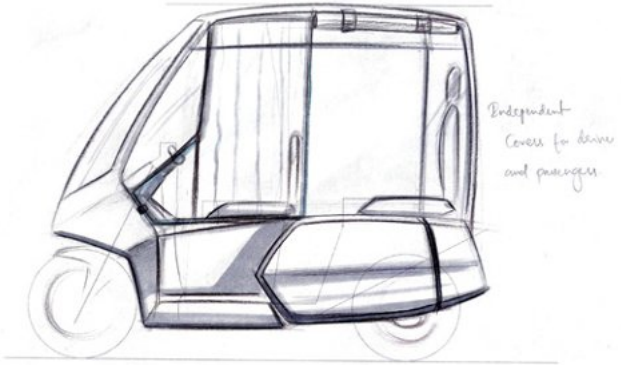


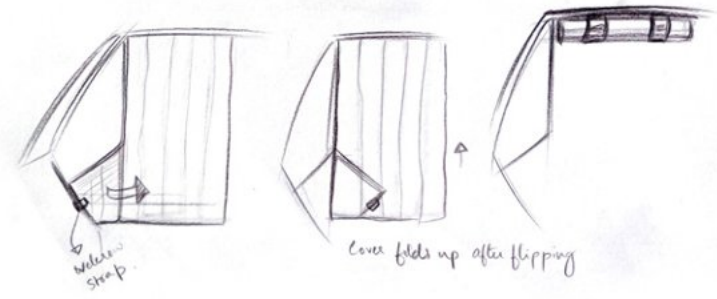
Polyester blinds

LDPE Sheets

PVC coated blinds

Final direction





7.2 Inferences

From the above ideations, the roll down concept was made final as it is easy to fold and unfold, it will stay on top after folding it without any hindrance to the Line of sight to the driver and the passengers. Whereas in the curtain type of opening and closing, the rain cover would restrict the field of view of the driver and passengers and is not as easily detachable like the roll-down type.
Materials to be used are considered according to the ease of availability and the cost.

7.3 Mood Board

Mood board is intended to create a sophisticated feeling of comfort, safety, and luxury but at the same time not boasting about the luxury and staying subtle.

The second mood board creates a feeling Of excitement with sportiness, sharp and angular surfaces with expressive aggression.

Sophisticated

Stealth ,Luxury

Angular

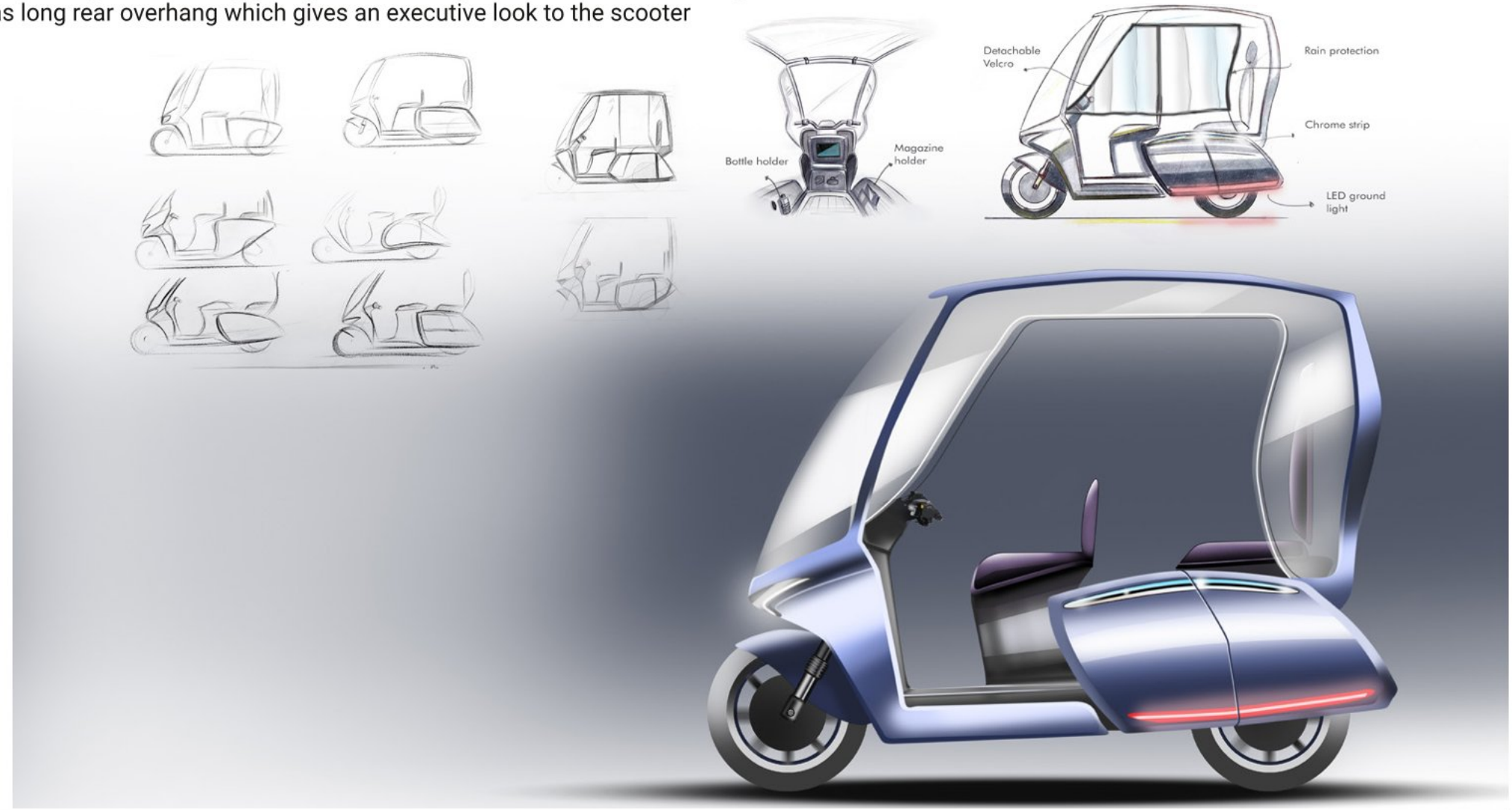
Aggressive,Fast

7.4 Final Concepts

Initial concepts are narrowed down after discussions and feedbacks and finals concepts are made

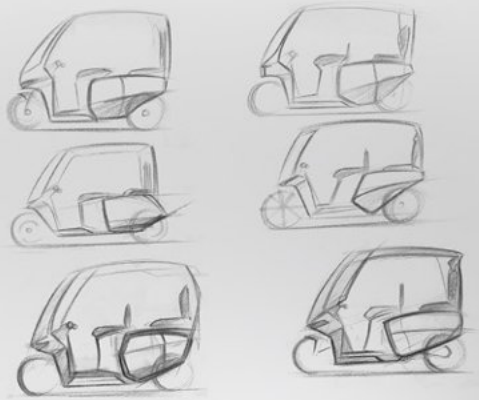
7.4.1 Concept 1 : Pronounced Luxury

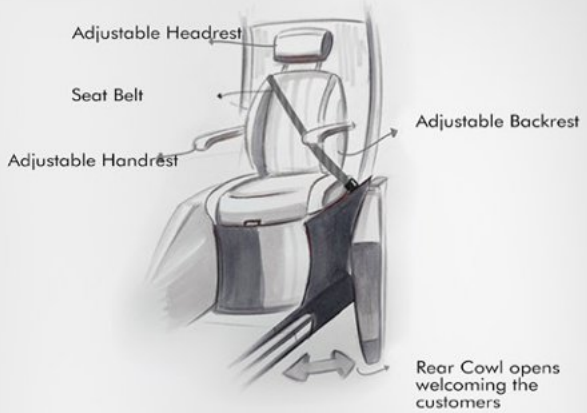
This concept Intends to give a comfortable experience to users the design has long rear overhang which gives an executive look to the scooter



7.4.2 Concept 2: Tranquil Luxury

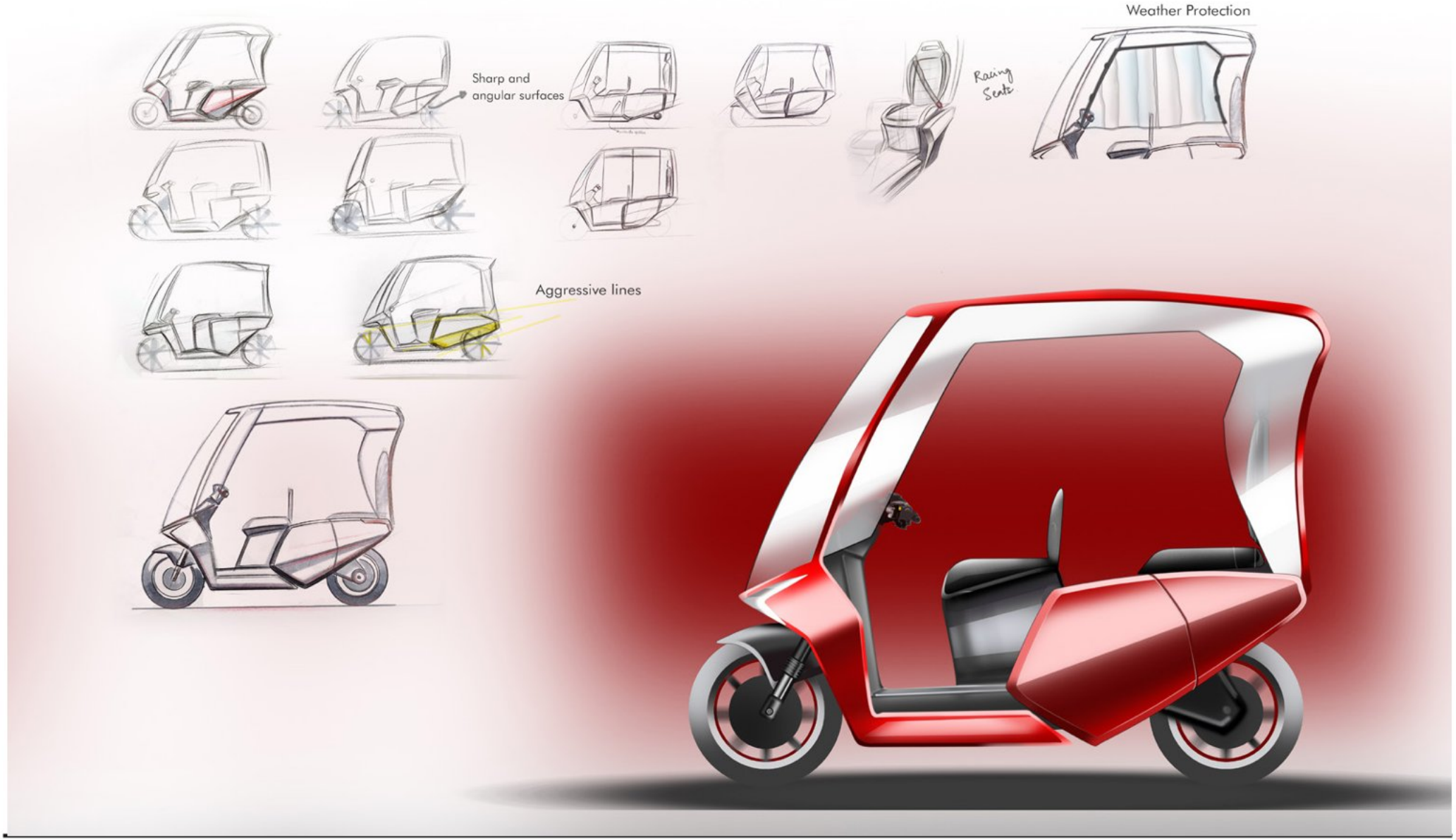
This concept has a sophisticated design but is not trying to announce it is luxurious which makes it intimidating to the users. It has all the comfort,good weather protection.The design is classy but subtle.





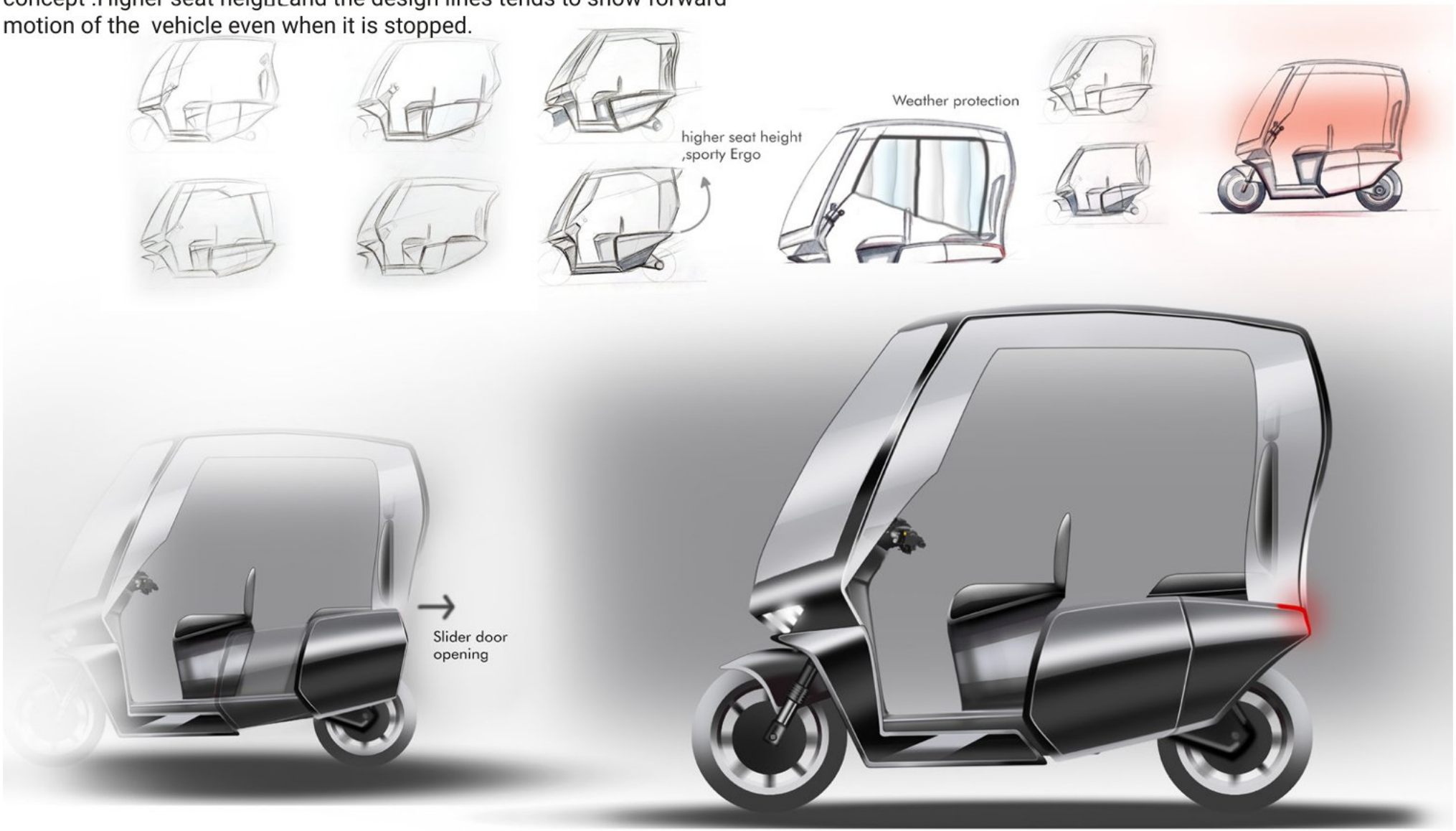
7.4.3 Concept 3: Expressed aggression

This concept intends to give a sporty and exciting experience to the users. With sharp and angular surfaces and forward-moving aggressive stance, it intends to express the aggression in the design



7.4.4 Concept 4 : Controlled aggression

This concept also intends to give an sporty and exciting experience to the users. The surfaces and lines are less aggressive than the previous concept .Higher seat height and the design lines tends to show forward motion of the vehicle even when it is stopped.



7.5 Concept Evaluation

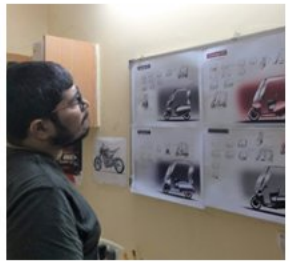
Concept Evaluation is done to narrow down the concepts to a final one. Concept evaluation is done based on several factors which are main design consideration while concepts were made. The pros and cons of each concept on that factor are evaluated and ranked accordingly.
User evaluation is one of the main criteria to evaluate which concept to carry forward. Different users from students to elder age groups were asked opinions about the concepts.

Concept Evaluation by users.

Prakash Patel

35+

Shop owner



Suraj

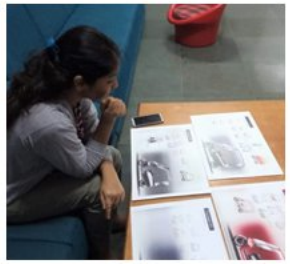
26

Student

Faisal Khan

33

Mechanic



Shraddha

25

Phd student

Navya

25

Student

Jagdish

56

Shop owner

Apoorva

25

Design Student

Sumeet

20

Sticker Shop owner

Naeema

26

Phd student

Abhijath

25

Design Student

Concept Evaluation

Concept 1

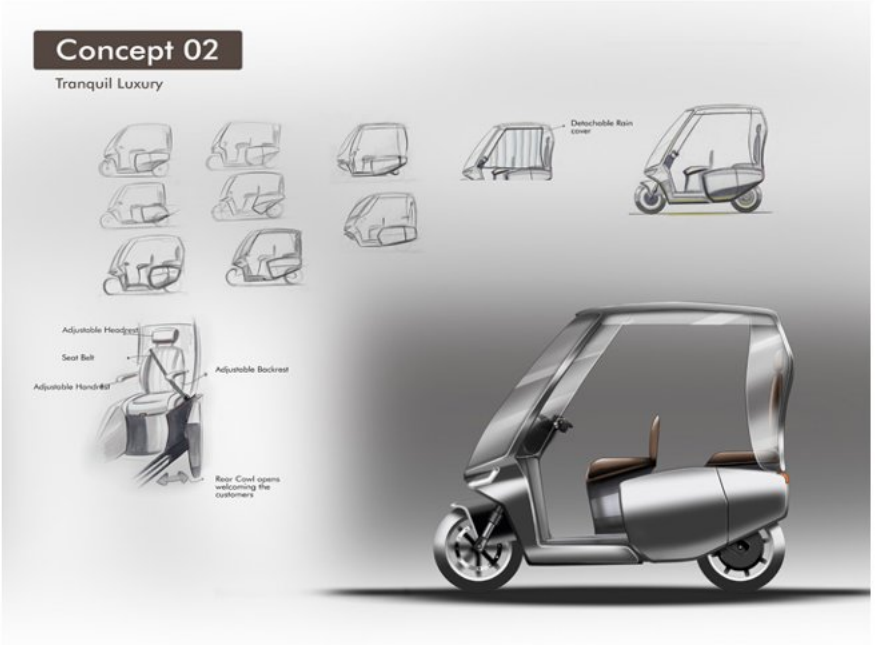
Good points
- Looks Strong.
- Looks premium.
- Curvy design.
- Looks like Retro.

Bad Points
- Looks heavy.
- Maneuverability issues.

Concept 2

Good points
- looks premium
- Compact design
- Comfortable seating
- Good colour
- Good weather protection

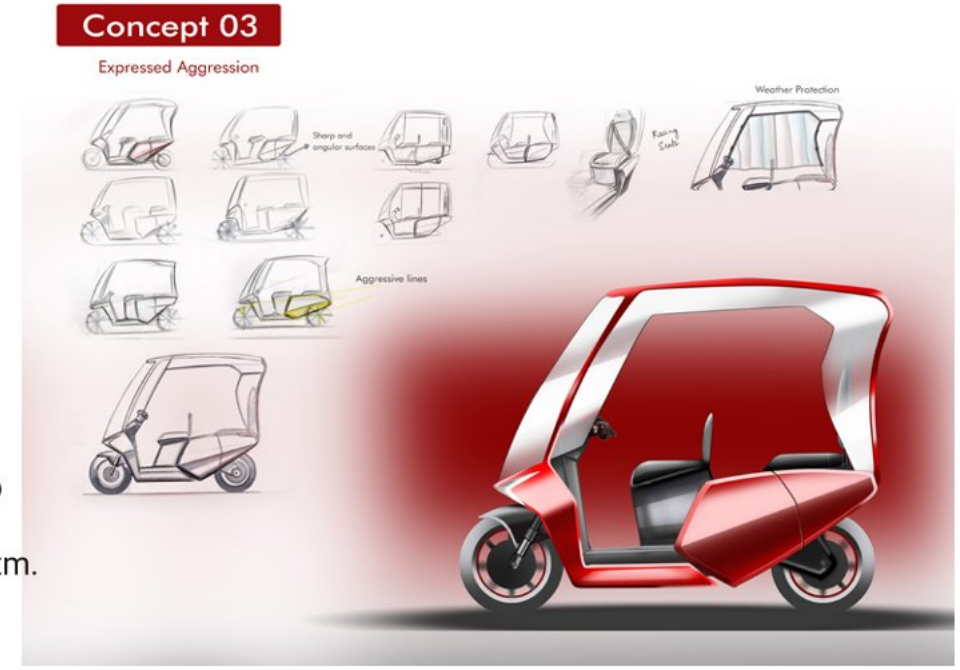
Bad Points
- Confused with how to enter the vehicle



Concept 3

Good points
- Looks sporty
- Looks fast
- Nice design
- Good colour

Bad Points
- The Seat looks too high
- Doesn't look comfortable to Older users.
- It looks like a racing bike ,Ktm.



Concept 4

Good points
• Looks good in black

Bad Points
• Not so comfortable
• Door opening mechanism is not
• Familiar to most users
• Less weather protection

Concept preference by users

Users were asked to select one concept which appealed to them the most and which one would they use if there existed such scooters.

Concept 1

2 Users

Concept 2

5 Users

Concept 3

2 Users

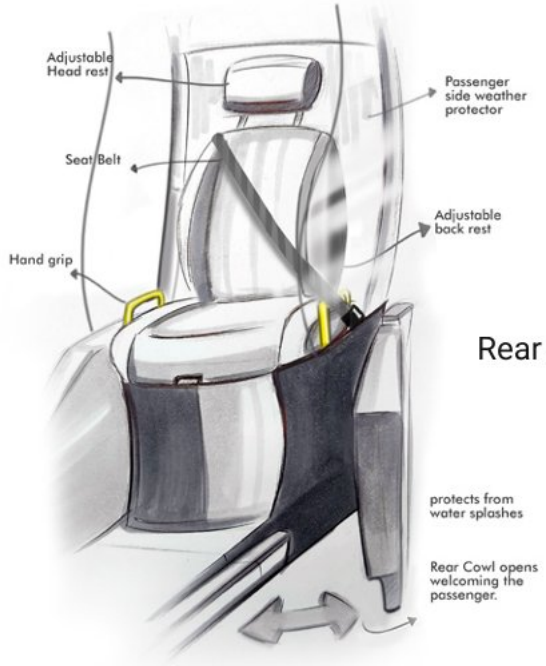
Concept 4

1 Users

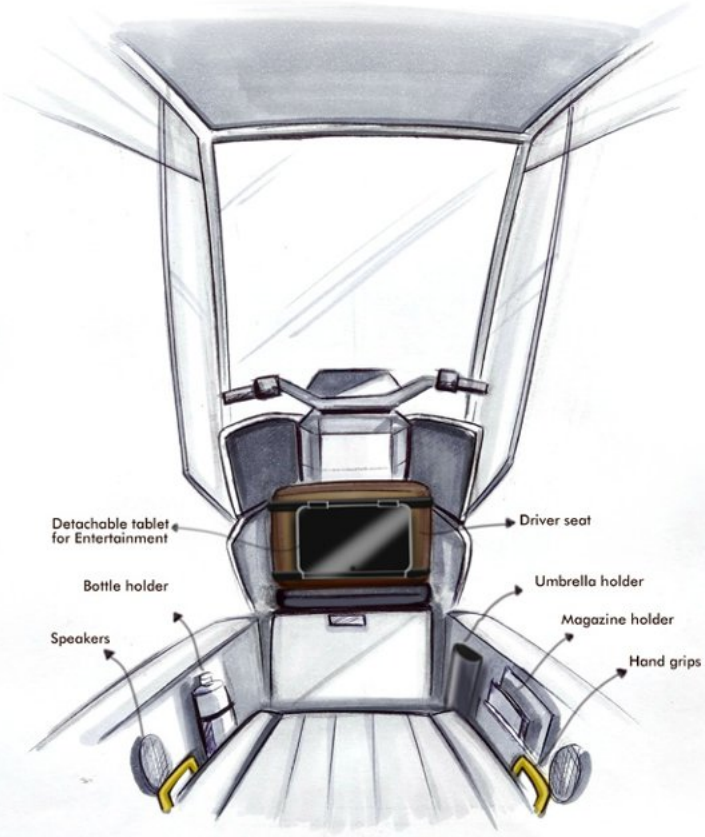
7.6 Concept Evaluation Inference

In the concept evaluation stage, it is inferred that users preferred comfortable seating and Aesthetics with seemed safer. Some younger age group users liked the sportier concepts. When it came to being a taxi more than a personal driven vehicle ,comfort and safety mattered over speed .Further development & detailing of concept 02 is done.

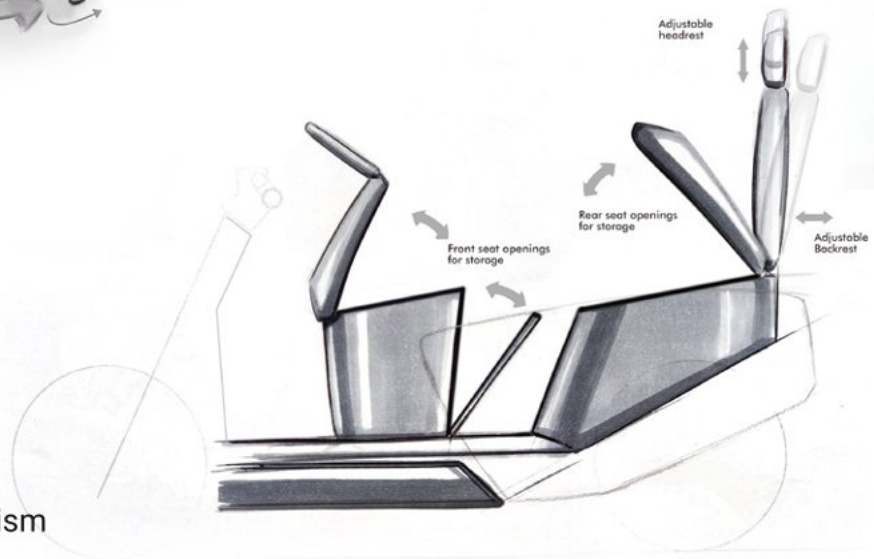
7.7 Final Concept renders



Rear seat design

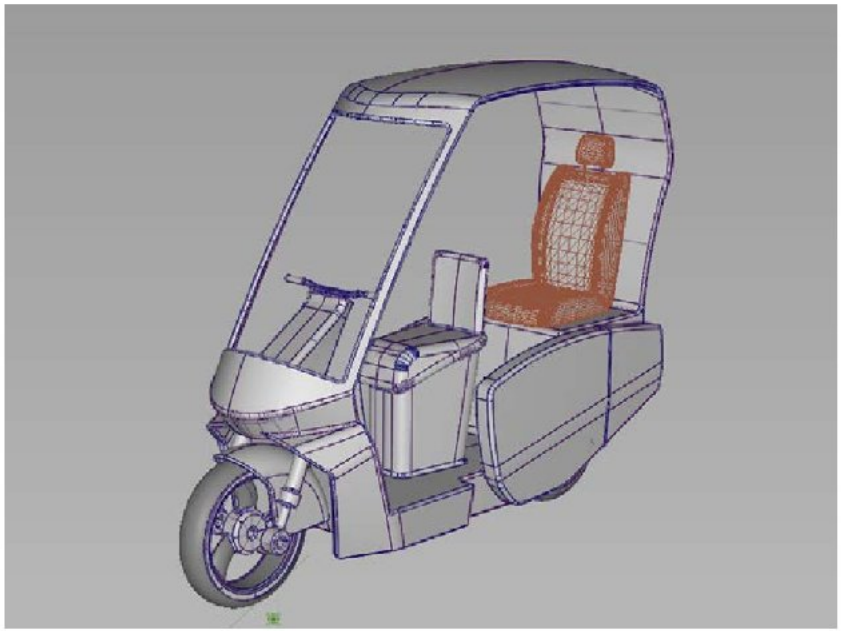


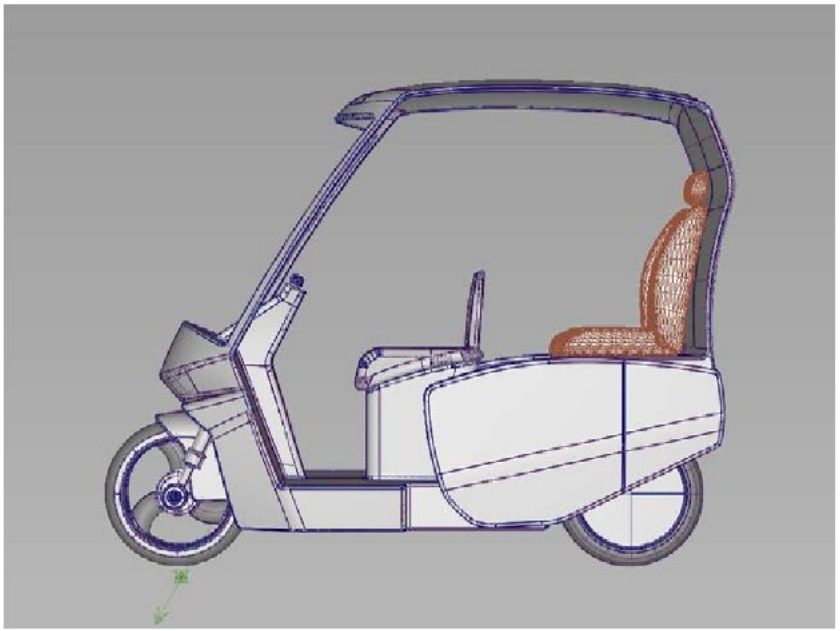
Interior features

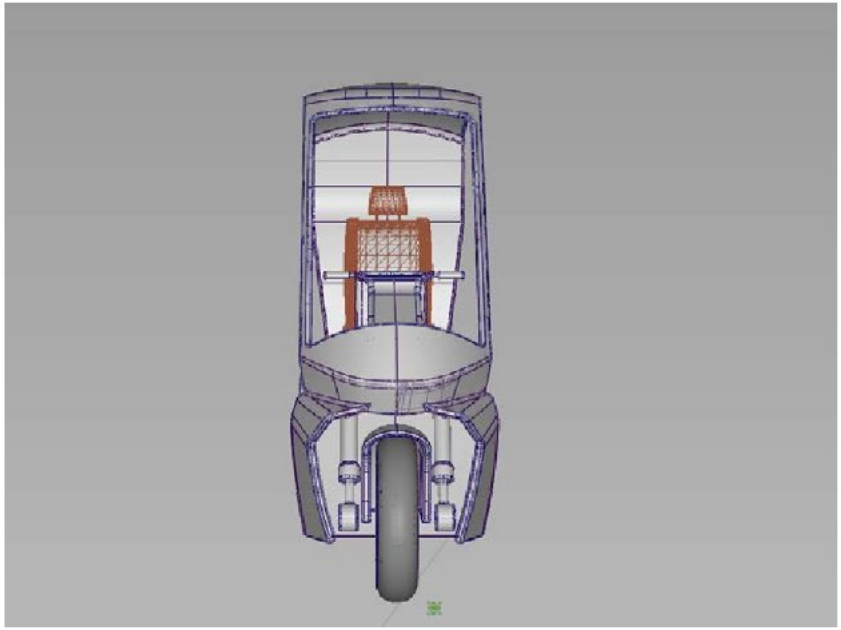


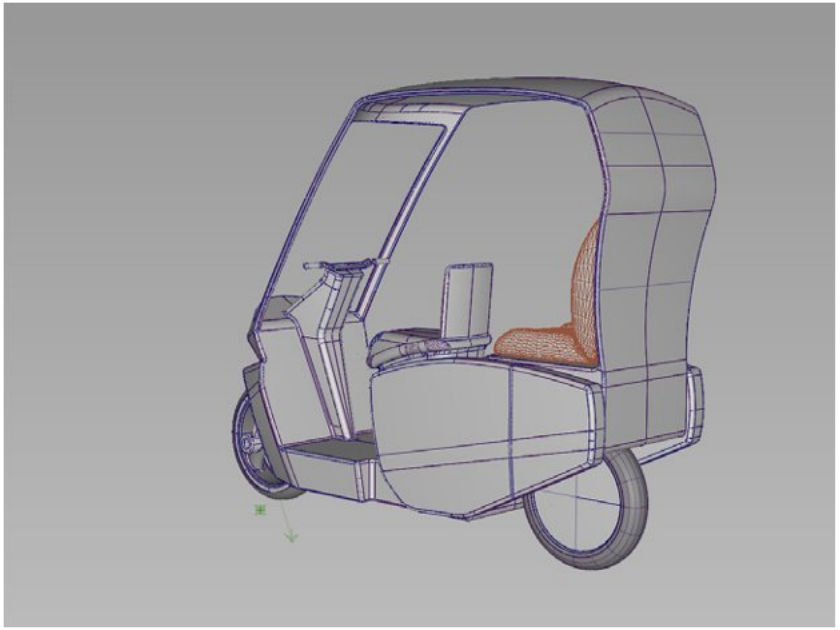
Storage opening mechanism

8. CAD Model





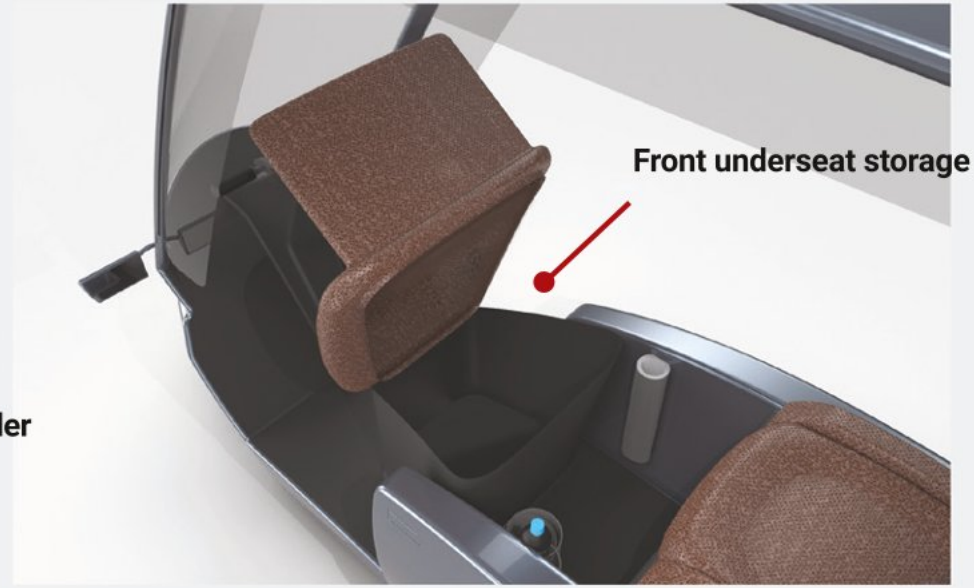




9. CAD Renders

Interior


Umbrella Holder
Bottle Holder


Front underseat storage


Rear underseat storage


Door Opening


Rain cover
Rain cover

10.Annexure

Questionnaires and detailed responses are given in this section.

10.1 Showroom Study

Showroom Study of top selling brands was done to understand Which scooters sell the most for its practicality. It also gave me an understanding of what are the features that the sales person uses as to meet the specific needs of the users.

Question: planning to buy a scooter for college use which i will use in the morning and my friend will use in the evening as he is doing part time delivery with uber eats.

Sales person:

- Go for Activa.
- Dio is good but fiber body.
- Activa has metal body
- Highest selling
- Rest scooters are of the same engine,no much difference.

Sales person:

- Burgman is stylish and best for cruising. It has two rider positions .
- Access is the best for both normal and rough use.
- Metal body parts for impact protection,cheap parts.
- Perfect size for traffic use.
- Activa has cast iron engine parts ,its heavy and inclines little towards side .
- Its almost 10 kg less than Activa.
- Free accessories
- I personally know a Zomato guy who uses Access and is very happy with the scooter.
- Full face helmet space and charger .
- Scratch card Offers .

Sales person:

- Both hero destine and Maestro are good.
- For rough use Maestro would be better.
- Pep will be very small .
- Accessories will be free.

Heera Motors

Sales person:

- Go for Access as it is good looking ,best price,better mileage.
- For delivery buy Activa, metal body so it is easy to repair.
- Accessories will be free.
- Jupiter is good ,its cheapest among good scooters.

Thayee Motors

Sales person:

- Which one do u have in mind?
- (Honda Dio,but we need it for delivery use also)
- Activa and access is better choice as Dio is fiber body.
- Good luggage space.
- Easy to maintain.

Insights

- When it came down to delivery , everyone focused on points like metal body, storage spaces.
- affordability such as service cost,mileage are important factors.

10.2 User study

Questionnaire

Name:.....
Profession:.....
Age:.....

1)Do you ride /Own a two wheeler ?...

2) What do you think about two wheeler taxi?

Advantages

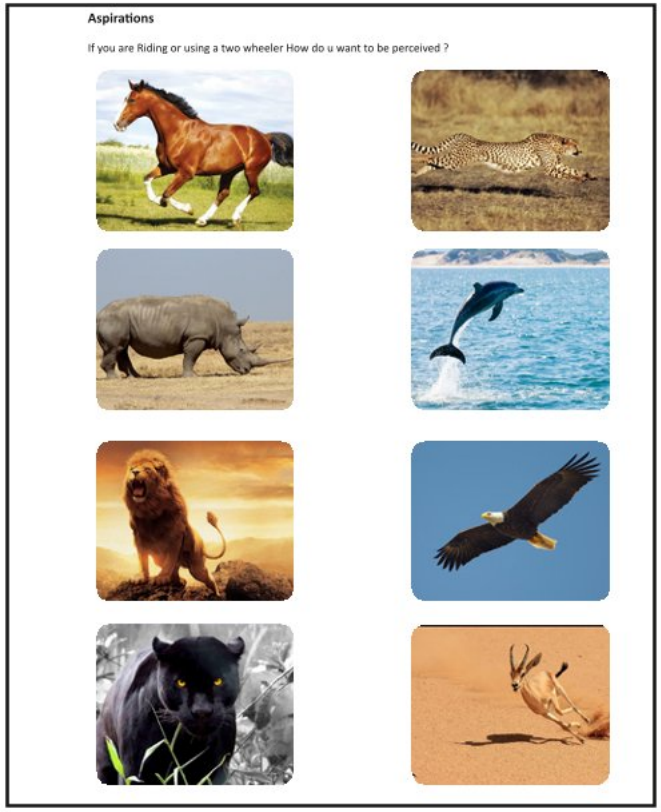
Disadvantages and suggestions

3)Are you comfortable sitting behind a random driver?

4) Why ? and suggestion to improve it?

5) If you were a designer and you could design the scooter in any way you want ,how would you do it?

Questionnaire to know the aspirations



Questionnaire to know the aspirations

Preference mapping

Things Arrangement for mapping.

Name : Harish

Age : 24

Occupation: Student own/Ride : Rides

Thoughts and Advantages on bike taxi.
Good idea
Beats Traffic
Cost effective
Takes less space

Disadvantages
Weather :Rain
Less space for lugguage

Suggestions
Top cover maybe,Removable
Better lugguage space

Aspirations
Q1:7 (Trendy)
Q2: Black Panther

If you had an option to design ,how would you do?
Top cover for rain
Better Weight balancing
Solar stations for bikes
Removable lugguage compartments at side

Name : Ashwin Chowrasya

Age : 25

Occupation: Delivery associate own/Ride :Owns

Thoughts and Advantages on bike taxi.
Trafic friendly
Cost effective.

Disadvantages
Rain
Comfort

Suggestions
Big wheels for rains as small one slips
RainCoat
Better seat for comfort

Aspirations
Q1: 3(Fast)
Q2:Cheeta (Fast)

If you had an option to design ,how would you do?
Good wheels for potholes
Rain Coat/Cover stable ones
Plastic ones are unstable

Name : Mantu
Age : 30

Occupation: Zomato own/Ride : Rides

Thoughts and Advantages on bike taxi.
Good idea
Beats Traffic
Cost effective

Disadvantages
Weather :Rain
Safety:Accidents
Puncture

Suggestions
Rain: Top cover
Accident:Helmets ,Shoes
Good tyres

Fav colour:Light blue

Aspirations
Q1: 2 (confident to ride)
Q2: horse(Fast and strong).

If you had an option to design ,how would you do?
Rain: Top cover
Accident:Helmets ,Shoes
Good tyres

Responses of users

Name : Suraj

Age : 27

Occupation:Job own/Ride : NA

Thoughts and Advantages on bike taxi.
Good idea
Beats Traffic
Cost effective
Less Pollution

Disadvantages
Accident

Suggestions
Something like seat belts

Aspirations
Q1: 2 (CONFIDENT,COMFORTABLE)
Q2: RHINO (STRONG)

If you had an option to design ,how would you do?
Top cover for rain
Better Hand grip
Saree guard

Name : Prateeth

Age:21

Occupation:Student own/Ride : Rides

Thoughts and Advantages on bike taxi.
Convient
Cost effective.
Time saving

Disadvantages
Accident
Rain
Comfort
Vehicle condition
Behaviour of driver

Suggestions
Good Breaking ,ABS,Good Mirrors,Helmets.
RainCoat
Better seat,Footrest,Hand grips.
Details of driver on app,Condition of vehicle

Aspirations
Q1: 7(TRENDY) ,ADVENTOROUS
Q2:PANTHER (STEALTH)

If you had an option to design ,how would you do?
Better fairing
Covered topand side for rain or rain coat
Good tyres and suspension
should look bulky for confidence of user

Name : Sachin

Age : 24

Occupation: Job own/Ride : Owns

Thoughts and Advantages on bike taxi.
Beats traffic.
Cost effective.
Time saving
Less footprint

Disadvantages
Accident
Rain
Comfort
Balance
Space

Suggestions
Crash guards,riding gears.
RainCoat,Top cover
Bigger wider wheels,Back rest
Better lugguage space

Aspirations
Q1: 3(Should reach my destination quicker)
Q2:Panther (Stealth and looks great),Eagle

If you had an option to design ,how would you do?
Helemt storage from sides maybe without rider getting up from seats
Electric
more spacious
Maybe 3 wheeler for better balance.
Big mirrors(Camera mirrors),Big tyres,Better Shock absorber,Wifi,Bottle holder.
should look bulky for confidence of user

Name : Yasir

Age : 24

Occupation: Student own/Ride : Owns

Thoughts and Advantages on bike taxi.
Good idea
Beats Traffic
Cost effective
takes less time

Disadvantages
Weather :Rain
Accidents
Contact with driver
unknown driver

Suggestions
Top rain cover or integrated sun shades
Accident: Side bumbers and rear protection(Crash guards)
handles in between for passengers to hold
proper license and paperwork should be done

Fav colour:NA

Aspirations
Q1:1(feels comfortable,back support and tension free)
Q2: Dolphin (swifty moving through traffic)

If you had an option to design ,how would you do?
Comfortable seats
Handles for passengers to hold on to.

Name : Abhishek

Age : 25

Occupation: Student own/Ride : NA

Thoughts and Advantages on bike taxi.
Trafic friendly
Cost effective.

Disadvantages
Rain
Comfort
sitting behind unkown skilled driver

Suggestions
Check the condition of vehicle
Covering in any way
provide proper branding/uniform/colour code
good safety measures.

Fav colour: NA

Aspirations
Q1: 4(Friendly and happy environment in taxi)
Q2:Eagle (Precision)

If you had an option to design ,how would you do?
Comfortable seating
Rain cover(convertible)

Name : Mohammed jamil

Age : 22

Occupation: Delivery guy box 8 own/Ride : Rides

Thoughts and Advantages on bike taxi.
Saves time.
Cost effective.

Disadvantages
Rain

Suggestions
Rain coat
better tyres to avoid puncture.

Fav colour: Red

Aspirations
Q1: 2(Calm)
Q2:Rhino(Strong)

If you had an option to design ,how would you do?
Rain coat

Name : Sumit

Age : 25

Occupation: Uber own/Ride : Owns

Thoughts and Advantages on bike taxi.
Good idea
Beats Traffic
Cost effective
takes less time
less maintanance cost,good economy

Disadvantages
Weather :Rain
Accidents
safety for women

Suggestions
Rain: Top cover,Rain coat
Accident:Navigation integrated,Rear camera
Safety via app,
Separator

Fav colour:NA

Aspirations
Q1:5(Adventorous,fFeels happy and interesting)
Q2: Cheeta and gazella (Fast and quick).

If you had an option to design ,how would you do?
Top cover
Friends also can use it to complete the delivery trips.

Name : Faisal Khan

Age : 34

Occupation: Mechanic own/Ride : Owns

Thoughts and Advantages on bike taxi.
Saves time.
Cost effective.

Disadvantages
Rain
Comfort
Ntorq is the best one now and Old activa.

Suggestions
Rain coat
Better suspension
Better economy
Removable top cover

Fav colour: Any

Aspirations
Q1: 6(Calm)
Q2:Rhino(Strong)

If you had an option to design ,how would you do?
Rain coat
Better suspension
Better economy
Removable top cover

Name : Prakash patel

Age : 30

Occupation: Shop owner own/Ride:Owns

Thoughts and Advantages on bike taxi.
Saves time.
Cost effective.

Disadvantages
Safety for women
Comfort
Accident

Suggestions
Timings should be strict
Side cars for balancing
Better balance

Fav colour: Dark Blue

Aspirations
Q1:1(Relaxed)
Q2: Horse(Fast)

If you had an option to design ,how would you do?
Should design in a way that it should be acceptable by public,(Due to their mentality.)

Name : Sumit

Age : 20

Occupation: Sticker Shop owner own/Ride:Owns

Thoughts and Advantages on bike taxi.
Good idea
Beats Traffic
Cost effective

Disadvantages
Weather :Rain
Safety:Accidents

Suggestions
Rain: Top cover
Accident:Helmets and gears
Exhaust on top to ride during rain.

Fav colour:Neon Colours

Aspirations
Q1: 3,Superbike(Fast)
Q2: Cheeta (Fast).

If you had an option to design ,how would you do?
Top cover
Good graphics

Name : Matthew

Age : 25

Occupation: Job own/Ride : Owns

Thoughts and Advantages on bike taxi.
Beats traffic
Cheaper

Disadvantages
Safety
Comfort
Body contact

Suggestions
Comfortable seats + body grip
Small barrier between driver and passenger

Fav colour: Blue

Aspirations
Q1:8(Comfort)
Q2: Eagle.

If you had an option to design ,how would you do?
Comfortable and body gripping seats
small movement in seat which should not distrub the driver ,as sitting in one position will cause back pain.

Name : Dheeraj

Age : 24

Occupation: Delivery guy box 8 own/Ride : Rides

Thoughts and Advantages on bike taxi.
Saves time.
Cost effective.

Disadvantages
Cant accomodate more than 2 people
Puncture
Accident

Suggestions
Should check the bike condition
Rain Coat
Better tyres and safety gears.

Fav colour: Dark Blue,Red

Aspirations
Q1:1(Relaxed)
Q2: Horse(Fast)

If you had an option to design ,how would you do?
Charger Rain coat
Storage
Better front suspension for scooters

Name : Karthik
Age : 25

Occupation: Job own/Ride : Rides

Thoughts and Advantages on bike taxi.
Saves time.
Cost effective.

Disadvantages
Accident
Rain

Suggestions
Rooftop cover
Airbag ,crash guard

Aspirations
Q1: IMAGE 8 COMFORT
Q2:RHINO (STURDY AND STRONG)

If you had an option to design ,how would you do?
More Safe
Crash guards
Equal weight distribution.

Name : Sunil

Age : 24

Occupation: Swiggy own/Ride : Owns

Thoughts and Advantages on bike taxi.
saves time
safer than bike ,can jump during accidents

Disadvantages
petrol is expensive
Rain
no tank to stop us when brakes are applied.

Suggestions
Rain coat
Better front suspension

Aspirations
Q1:2(Confident)
Q2:Black panther (Stealth) ,looks nice.

If you had an option to design ,how would you do?
Rain coat
Better front suspension

Name : Thanvi
Age : 23

Occupation: Job own/Ride : Rides

Thoughts and Advantages on bike taxi.
Good idea
Beats Traffic
Cost effective

Disadvantages
Safety (Accident)
Rain

Suggestions
Helmet,Trained riders, Time limit .
Rain Jacket.

Are you ok sitting behind a stranger ,Why?
OK but it is time based .

Aspirations
Q1: 1(happy and relaxed)
Q2:Lion (pride,royal)

If you had an option to design ,how would you do?
Light weight
Split seat
More comfortable for rider and pillion.

Does having a lady driver make a difference
Yes

Name : Shraddha
Age : 22

Occupation: student own/Ride : Rides

Thoughts and Advantages on bike taxi.
Less fuel is consumed
Cost effective.
Time saving

Disadvantages
Accident
Timings
Safety

Suggestions
Helmets.
Trained Drivers
Better Brakes and tyres, SOS.

Are you ok sitting behind a stranger ,Why?
Yes

Aspirations
Q1: 1(relaxed)
Q2:Eagle(Gliding)

If you had an option to design ,how would you do?
Rain Coats
Travelling is interesting so no cabin
First aid kit
Wifi
Should give info of shops in the route of travel ,improves user exprience.

Does having a lady driver make a difference
Yes

Name : Monica upadhyay
Age : 25

Occupation: Phd Student own/Ride : NA

Thoughts and Advantages on bike taxi.
Good idea
Beats traffic
saves money
less pollution

Disadvantages
not so women friendly.
Less safe

Suggestions
Women drivers
Covered vehicle if one wants to go out somewhere.
Seperate seats

Are you ok sitting behind a stranger ,Why?
No ,Body contact during speed breakers.
seperate seats

Aspirations
Q1: 8(Comfort), 1 (Enjoyable)
Q2: lion(confident)

If you had an option to design ,how would you do?
Two seater which are seperate
covered vehicle

Does having a lady driver make a difference
Yes

Name : Naeema Manika
Age : 25

Occupation: Student own/Ride : NA

Thoughts and Advantages on bike taxi.
Good idea
Beats Traffic

Disadvantages
Speed
Comfort,Storage space

Suggestions
Speed limit
More space for lugguage

Fav colour:Black

Are you ok sitting behind a stranger ,Why?
No ,Body contact.
Lady driver would be the solution

Aspirations
Q1: 2(Confident aas i am nervous on 2 wheels)
Q2:6(glide through traffic)

If you had an option to design ,how would you do?
Shouldnt skid,Better tyres
Comfortable handle
More comfortable for rider and pillion.
Roof like structure for rain.

Does having a lady driver make a difference
Yes

Name : Sharmila
Age : 30

Occupation: Job own/Ride : NA

Thoughts and Advantages on bike taxi.
Short distance travel is good
Beats traffic
Time saving

Disadvantages
Accident
Speedi

Suggestions
Speed limits.
Trained Drivers

Are you ok sitting behind a stranger ,Why?
Yes if Professional behaviour is considered.

Aspirations
Q1: 2(Confidence)
Q2: lion(confident and dominant)

If you had an option to design ,how would you do?
Better seats
Rain coat or roof for rains
Better engine
Better wheels for safety on road

Does having a lady driver make a difference
Yes

Name : Bhanushree
Age : 25

Occupation: Job own/Ride : Rides

Thoughts and Advantages on bike taxi.
Beats traffic.
Cost effective.
Time saving

Disadvantages
Accident
Harrasment
Comfort

Suggestions
Helmets Compulsory,Maintanance of the bike
Balanced Weight
Tracking

Are you ok sitting behind a stranger ,Why?
Ok

Aspirations
Q1: 4 (Calmness)
Q2:Dolphin(playful)

If you had an option to design ,how would you do?
Charging point
Storage(Mobile,Bag,Bottle)
Better comfort ,Foot rest,Support to back.
2 helmet space.

Does having a lady driver make a difference
Yes

Name : Prerna
Age : 30

Occupation: Job own/Ride : Owns

Thoughts and Advantages on bike taxi.
Good idea
Beats Traffic
Cheaper

Disadvantages
Safety for women
Comcomfort

Suggestions
Speed limit
SOS ,trained drivers
Better seating for comfort,Back rest adjustable(back Hurts in avenger).

Are you ok sitting behind a stranger ,Why?
Its ok
Its ok if there is a seperator

Aspirations
Q1: 1(Calm)
Q2:Dolphins(likes the movement)

If you had an option to design ,how would you do?
Seperator
Roof like structure for rain which is removable.

Does having a lady driver make a difference
Yes

Name : Samanda
Age : 23

Occupation: Student own/Ride : NA

Thoughts and Advantages on bike taxi.
Beats traffic

Disadvantages
Contact with driver
Getting on to the vehicle might be uncomfortable
Rain

Suggestions
Barrier between driver and passenger
better footrest for all heights
Protection from rain or sun.

Are you ok sitting behind a stranger ,Why?
NO,Contact with driver
Barrier between driver and passenger

Aspirations
Q1: 8(Comfortable and entertainment)
Q2: Horse(like horses)

If you had an option to design ,how would you do?
Covered vehicle like auto
problem with auto is ,one cannot see if someone is already inside it.
Some entertainment system.

Does having a lady driver make a difference
Yes

Name : Athena
Age : 24

Occupation: Student own/Ride : Rides

Thoughts and Advantages on bike taxi.
Beats traffic.
Cost effective.
Time saving

Disadvantages
Accident
Comfort

Suggestions
Safety gears,pod like
Better seating

Are you ok sitting behind a stranger ,Why?
Ok ,if seperator is there

Aspirations
Q1: 2(confident , rides thunderbird)
Q2:Black panther

If you had an option to design ,how would you do?
Better balancing
Crash guards
POd like
Spherical wheels to turn in any direction

Does having a lady driver make a difference
Yes

Name : P. Pallavi
Age : 23

Occupation: Student own/Ride : Rides

Thoughts and Advantages on bike taxi.
Good idea
Beats Traffic
Saves time and money

Disadvantages
not so women friendly.
Accidents
less space
Suggestions
More space for lugguage
better seating with back support

Are you ok sitting behind a stranger ,Why?
No ,Body contact.
Lady driver would be the solution

Aspirations
Q1: 8(Travel should be comfortable)
Q2:Black panther

If you had an option to design ,how would you do?
More space for lugguage ,will help during rain.
better seating with back support
comfort and spacious

Does having a lady driver make a difference
Yes

Name : Rani
Age : 25

Occupation: Job own/Ride : Rides

Thoughts and Advantages on bike taxi.
Beats traffic.
Cost effective.
Time saving
Less footprint

Disadvantages
Accident
Rain
Comfort
Suggestions
Helmets Compulsory
something like Air bag.

Are you ok sitting behind a stranger ,Why?
No, Body contact
Detachable seperator for rider and user.

Fav colour:grey

Aspirations
Q1: 6(peace of mind)
Q2:lion(safe and speed)

If you had an option to design ,how would you do?
Something like Seat belt
Top cover for rain
Space
Speed limit

Does having a lady driver make a difference
Yes

Name : Chanthingla
Age : 26

Occupation: Phd Student own/Ride : NA

Thoughts and Advantages on bike taxi.
Saves space in road
Less fuel consumption
Disadvantages
Accident
personally not comfortable sitting behind random driver.
Comfort
Suggestions
Helmets Compulsory,and other safety measures
Tracking
lady driver

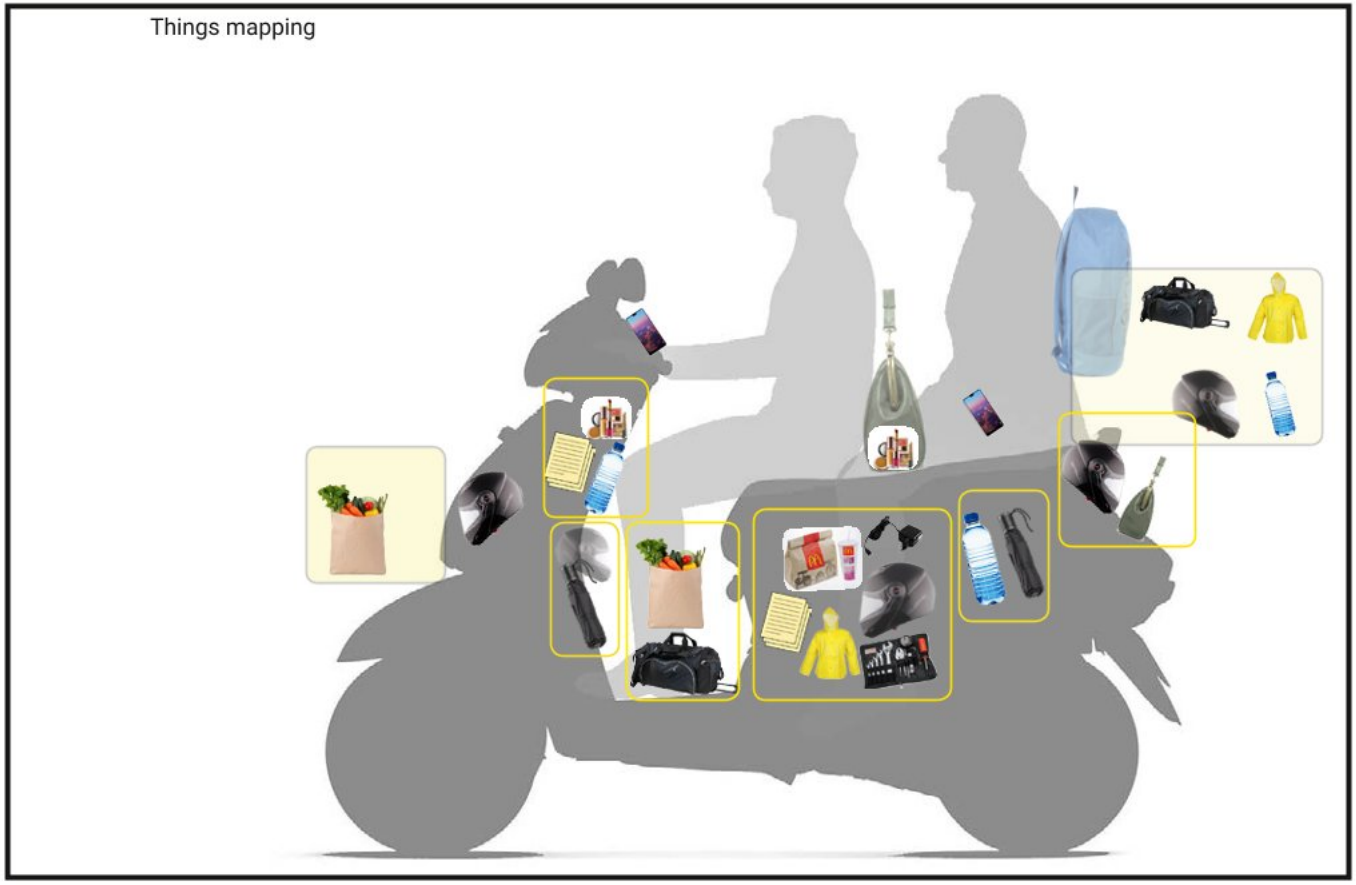
Are you ok sitting behind a stranger ,Why?
No,not a two wheeler person
might consider if therte is a lady driver

Aspirations
Q1: 8(Safe and secured).
Q2:horse

If you had an option to design ,how would you do?
Spacious seats
A tracker

Does having a lady driver make a difference
Yes

Preference mapping Inference



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