

# Two Wheeler for Middle Aged

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## ***In This Presentation-***

- Automotive Industry Scenario India
- Vehicle growth Pattern in india
- Upgrowing Two Wheeler Scenario
- Shift from Motorbikes to Scooterettes, Scootys, and Scooters
- Two Wheeler Sales growing both in Domestic and Export Market
- A Potential Two Wheeler Owner
- Increasing Middle Aged Participation in Two Wheeler Market
- Keywords: Elegance and Comfort
- Changing Market and Design Language in India over the last decade
- Two wheeler Vehicle Segments in India
- User Research
  - Quantative
  - Qualitative
- Key Inferences
- RTO Norms
- Study of Honda Activa
  - Aesthetics
  - Functionality
  - Technology
  - Structure Model
- Cell Phone Study
- Colour Trends
- ReferenceBoard
- Design Brief
- Explorations
- Ideations
- Concepts and Evaluation
- Model Making
- Model

### ***Initial Design Brief***

A city commuter vehicle for middle age [35-55 y], based on a basic vehicle architecture of a two wheeler

***Need:*** Most of the city commuter vehicles are designed keeping in mind the youth, Aesthetics also are borrowed from the younger age group vehicles. City commutation doesn't only comply to youngsters.

## Vehicle Scenario in India

Today India is the 2nd Largest Two Wheeler Market, only behind China and 4th Largest Car Market in Asia

Two wheeler Population has been on the increase

Table 2 – India: Composition of Vehicle Population (% of total)						
Year end	Two Wheelers	Cars, Jeeps & Taxis etc.	Buses	Goods Vehicle	Others Vehicles	Total
March	(as % age of total vehicle population)					(Million)
1951	8.8	52	11.1	26.8	1.3	0.31
1961	13.2	46.6	8.6	25.3	6.3	0.66
1971	30.9	36.6	5.0	18.4	9.1	1.86
1981	48.6	21.5	3.0	10.3	16.6	5.39
1991	66.4	13.8	1.5	6.3	11.9	21.37
2001	70.1	12.8	1.2	5.4	10.5	54.99
2002	70.6	12.9	1.1	5.0	10.4	58.92
2003	70.9	12.8	1.1	5.2	10.0	67.01
2004	71.4	13.0	1.1	5.2	9.4	72.72
2005	72.1	12.7	1.1	4.9	9.1	81.5
2006	72.2	12.9	1.1	4.9	8.8	89.61
2007	71.5	13.1	1.4	5.3	8.7	96.69
2008	71.5	13.2	1.4	5.3	8.6	105.33
2009 (p)	71.7	13.3	1.3	5.3	8.4	115.0

Ministry of Road Transport and Highways, New Delhi-Yearbook



## A Potential Two Wheeler Owner

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A potential two wheeler owner is a progressive upgrowing customer.

In recent times, specially in the past decade there has been a considerable down flow of '*the information*' in this lower and middle income group also.

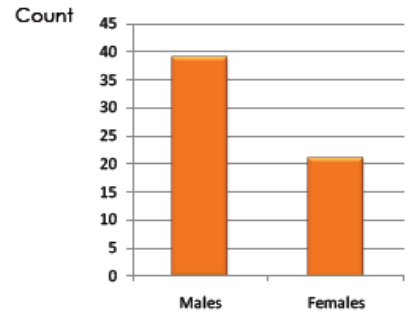
### Demographics of a Potential Two-wheeler Owner!

- Lower middle class to upper middle class households
- 45% own a Desktop
- 87% own at least 1 mobile phone
- Surfs internet more than 8 hours a week
- Average household income above Rs 15,000 a month
- Single: 55% Married: 45%

Source: Two wheeler Industry Analysis, Sify

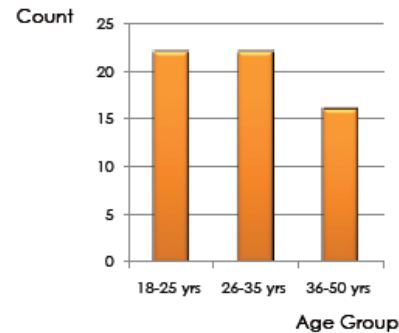
# A Potential Two Wheeler Owner

## Gender wise Distribution



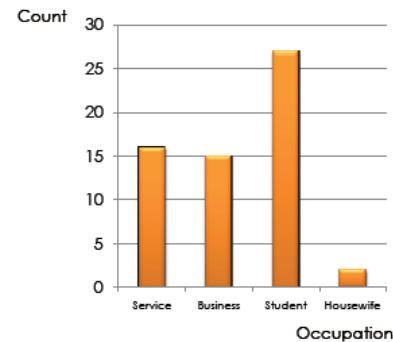
Gender	Count	Percentage
Males	39	65
Females	21	35
Total	60	100

## Age wise Distribution



Age Group	Count	Percentage
18-25 yrs	22	36
26-35 yrs	22	36
36-50 yrs	16	28
Total	60	100

## Occupation wise Distribution



Age Group	Count	Percentage
Service	16	26
Business	15	25
Student	27	45
Housewife	2	4
Total	60	100

## Past has changed

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In 90's and early in this century a most potential two wheeler customer was a person in his middle ages (30+)

So, Aesthetics were also placed in this segment

Now the earning capacities are grading younger and so the idea of two wheeler is also becoming younger



LML NV 149.56 cc



Bajaj Chetak 145.5 cc

## New Vehicle Launches



According to the Italian company, the time is right to launch Vespa in India as people are looking for scooters to make lifestyle statement.

"Right now there is no premium segment in the Indian scooter market but we believe there is a significant number of brand conscious young people who would like to make a statement. Vespa is creating a premium segment by targeting those customers," said Ravi Chopra, Vehicles Chairman and Managing Director at Piaggio

### Piaggio re-launches Vespa LX-125 in India at Rs 66,000

Ruchita Saxena, NDTV, 27 Apr 2012 | 09:20 AM

Email 5 | Share 7 | Twitter 53 | Share 142 | +1 4 | Like 122



## THE TIMES OF INDIA | India Business

RELATED KEYWORDS: [Yamaha Motor](#) | [Scooter](#) | [Bajaj Auto](#)

### Yamaha to venture into scooter segment

Ketan Thakkar, ET Bureau | Jul 24, 2012, 10:19AM IST

MUMBAI: Even as [Bajaj Auto](#) tries to get its act together in the motorcycles segment that matters most, Japanese rival Yamaha is betting on a category that the Pune-based bike maker has abandoned production of scooters. Better known for its stylish and power-packed bikes, India [Yamaha Motor](#) is looking to break even operations in a year or two and become a volumes player by riding on scooters.



## 5 Distinct Two Wheeler Segments in Indian Market



Scooter



Moped



Scooty



Scooterette



Motorbike

# The New Scooterette Segment

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- A unisex Segment
- Hybrid Crossover of Scooty and Scooter
- Comfort of Automatic Transmission

# User Research

# User Research

## **Quantative Study: 21 Respondents**

Medium: Questionnaire

Language: English and Hindi

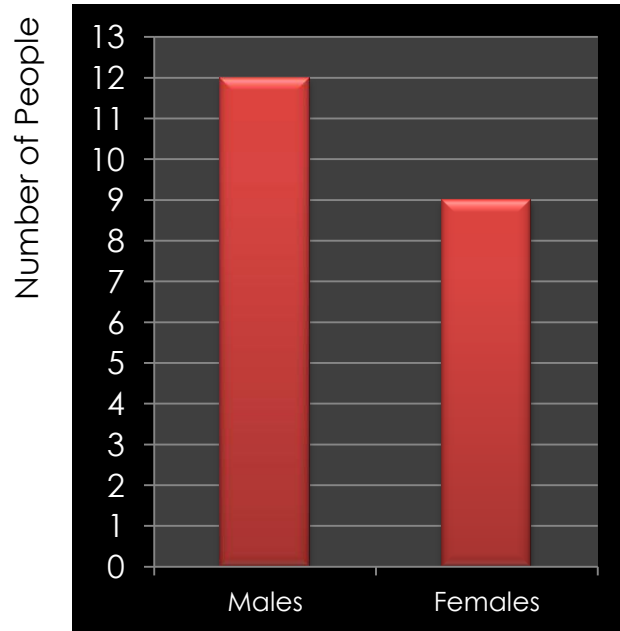
All the Respondents were Employed

Areas: IIT Bombay, Hiranandani, Bandra Kurla Complex, Andheri [E]



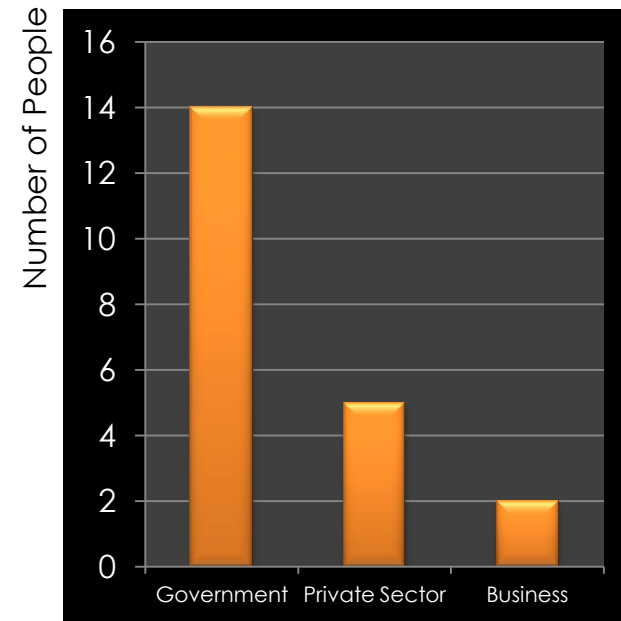
Total number of Respondents: 21

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## Gender

Out of the sample of 21 two wheeler users 12 are males and nine are females



## Type of Employment

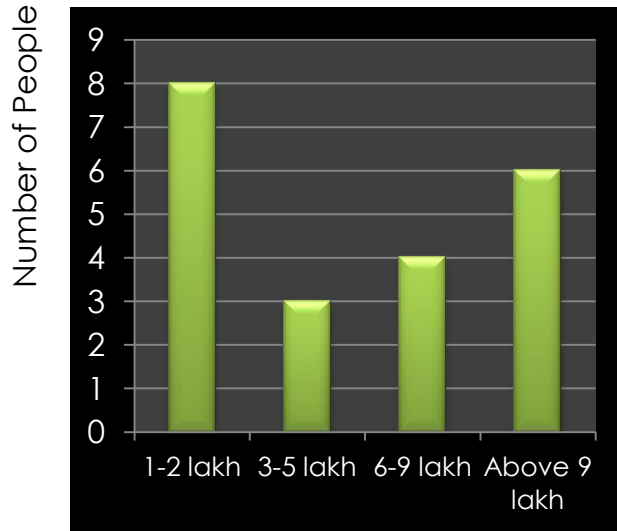
All the respondents in the sample are employed.

14 in Government sector

5 in Private Sector

2 engaged in Business

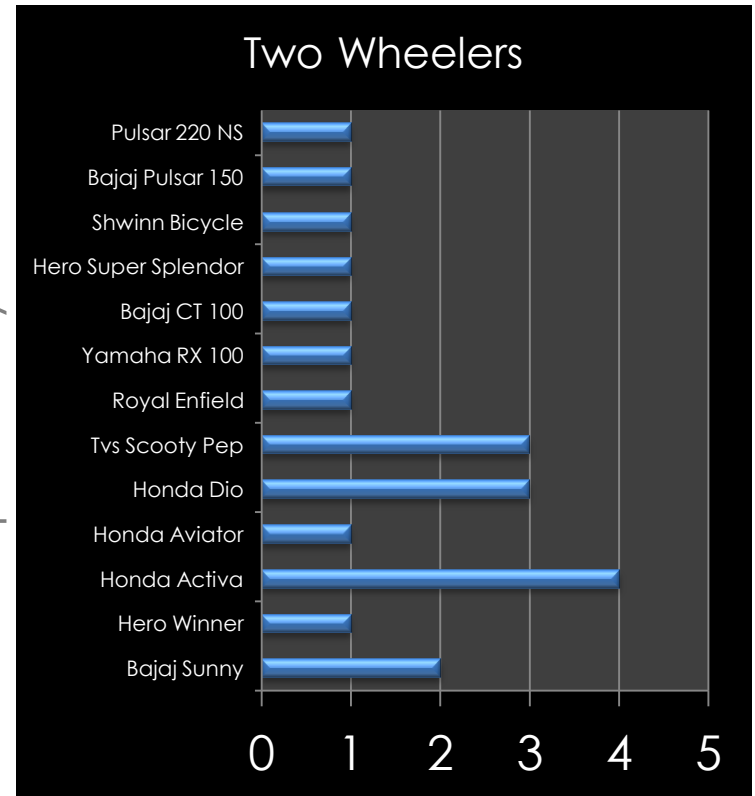
Total number of Respondents: 21



Annual Income Groups

- 8 people earn 1-2 lakhs annually
- 6 people earn above 9 lakhs
- 4 people earn 6-9 lakhs
- 3 people earn 3-5 lakhs

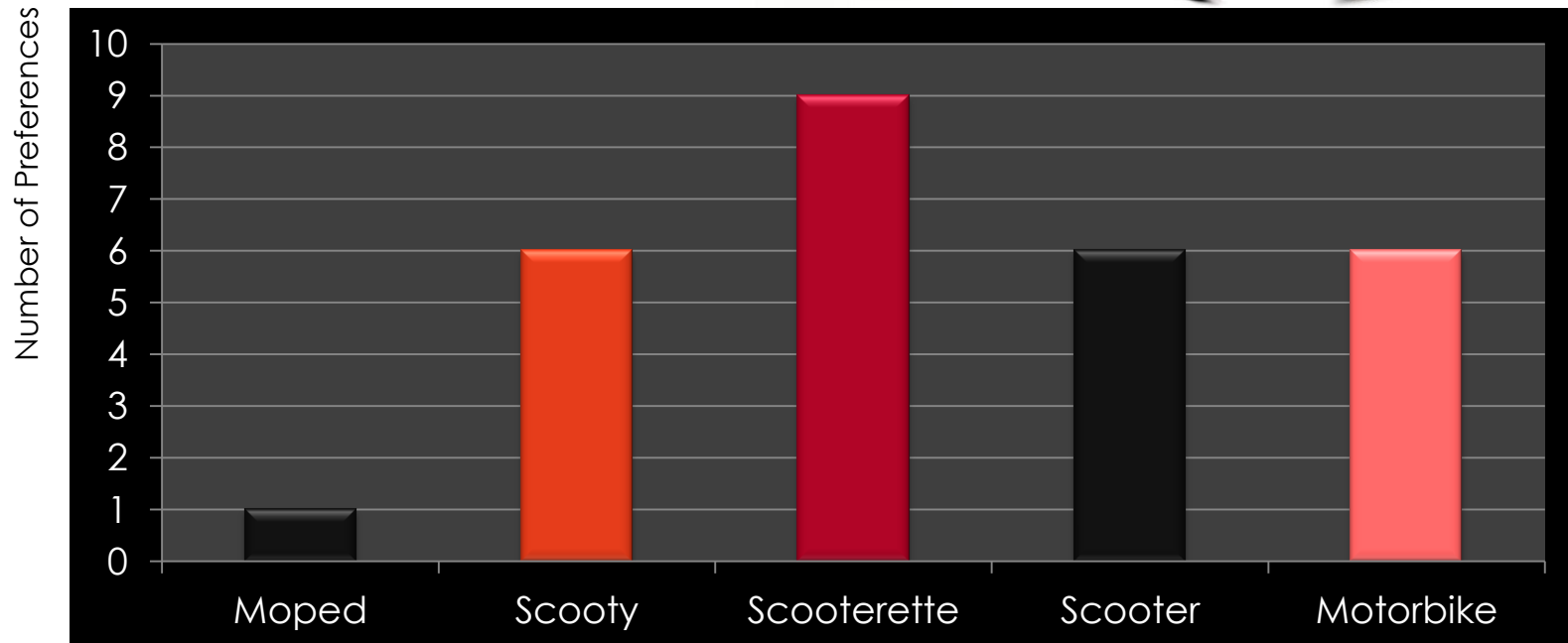
Vehicle Model and Make of  
vehicles presently owned



Number of Vehicles

- Activa is most common 4
- Second is Scooty Pep and Honda Dio
- Third is Bajaj Sunny [discontinued model]
- 6 users respondents own Bikes
- 8 users own Scooterettes

Total number of Respondents: 21



Preferred two wheeler Segment

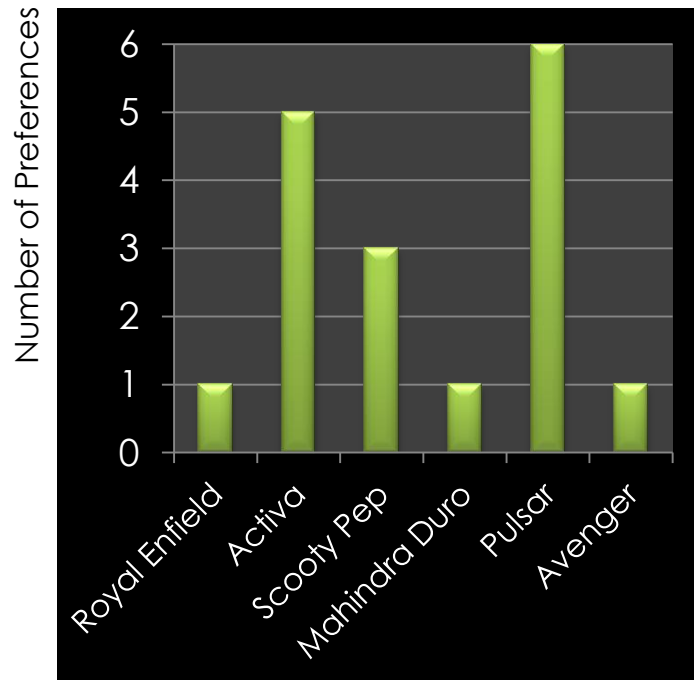
9 preferences are for Scooterette

6 preferences for Scooty, Scooter and Motorbike

1 preference is for Moped

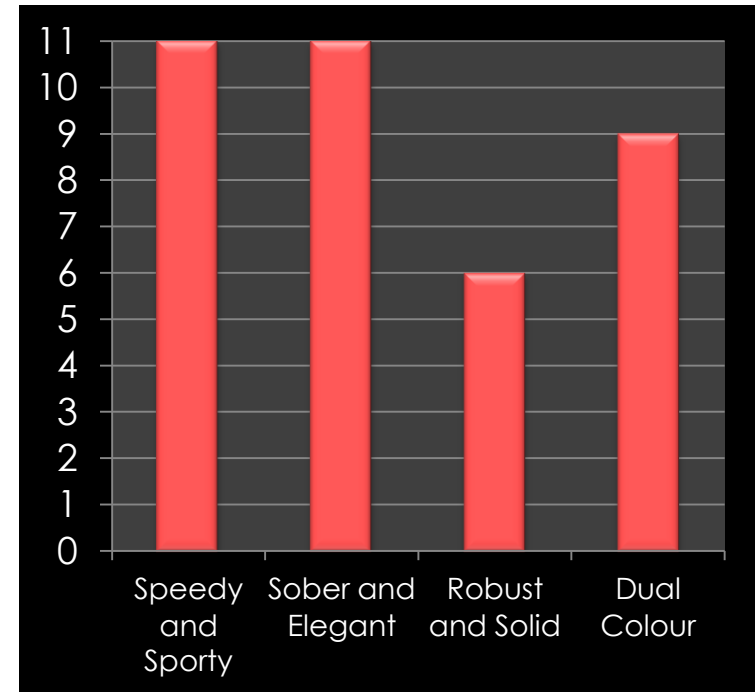
[users have multiple preferences]

Total number of Respondents: 21



Personal Liking for any other two wheeler

- Pulsar is the most preferred vehicle even though the most owned vehicle is Activa
- Activa is Preferred second after Pulsar

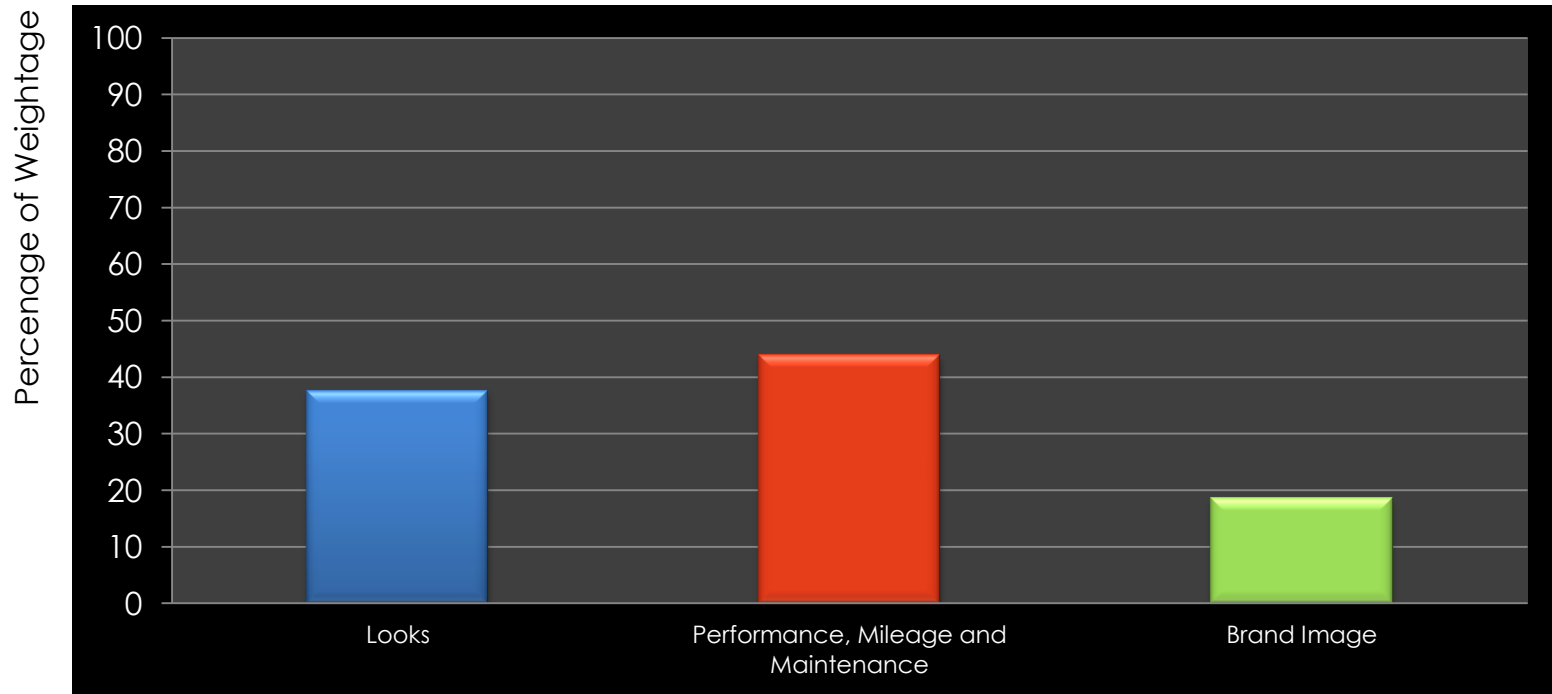


Preferred looks of the Vehicle

**Colours Preferred:** White, Red, Black, Grey  
Light Colours

Total number of Respondents: 21

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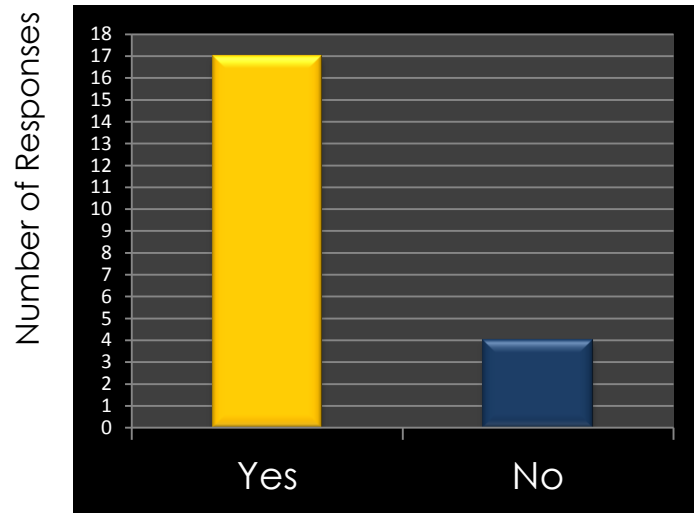
### Purchase Parameters

- Performance, mileage and Maintenance is the most important parameter with 44 %
- Looks come secondary with 38 %
- Brand image 18 %

- Indian Two Wheeler Market is governed by Performance mileage and Maintenance
- Looks play a second important role in buying decisions

Total number of Respondents: 21

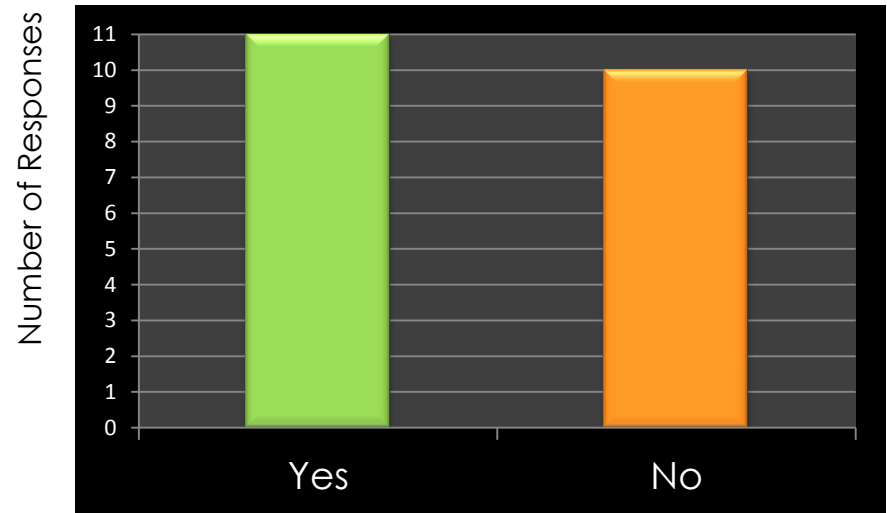
Utilities



Responses

### Luggage space

- Luggage space is required by users
- Open and handy luggage space for objects like umbrellas, raincoats are preferable
- Small closet for valuables like documents and tool kits

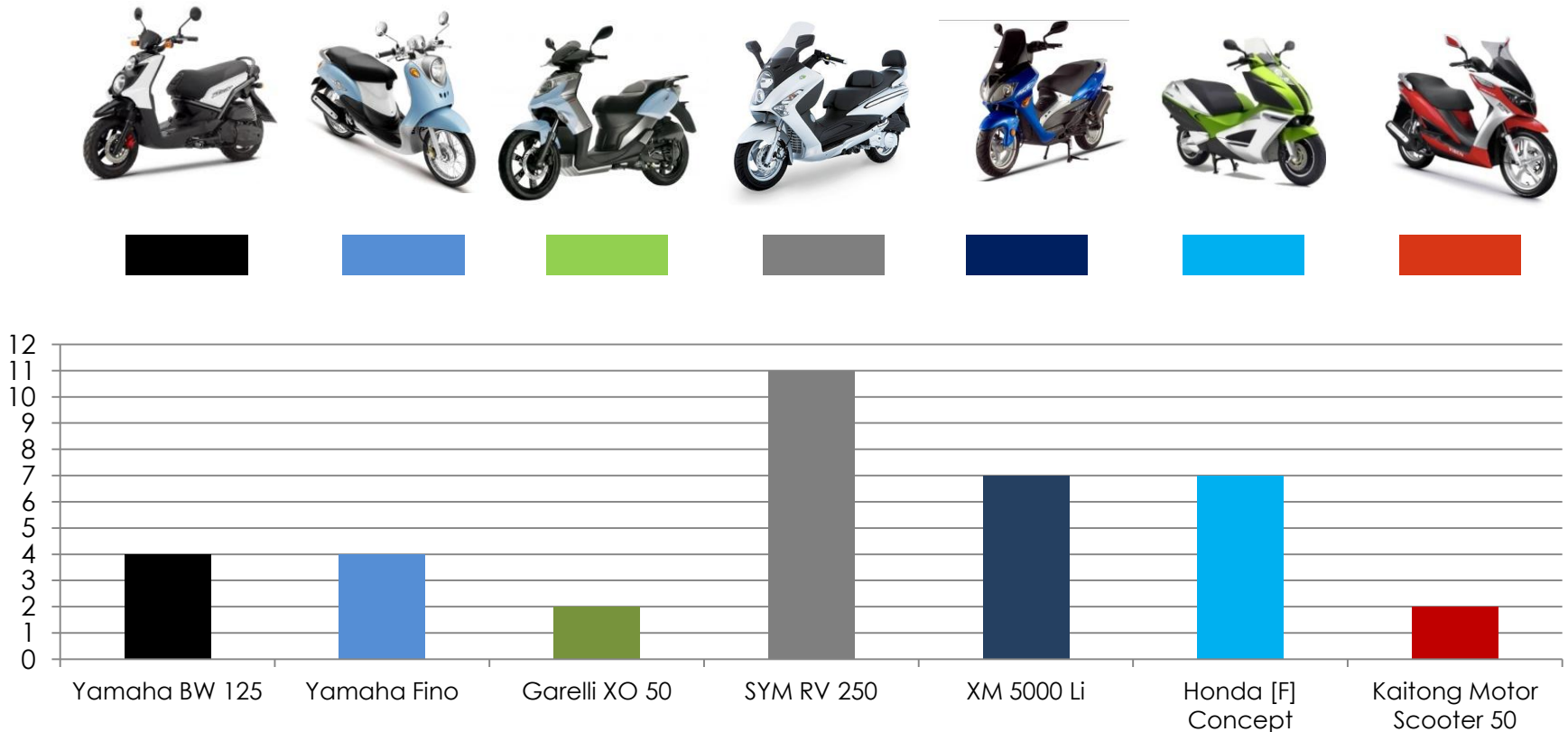


Responses

### Cell phone Holder

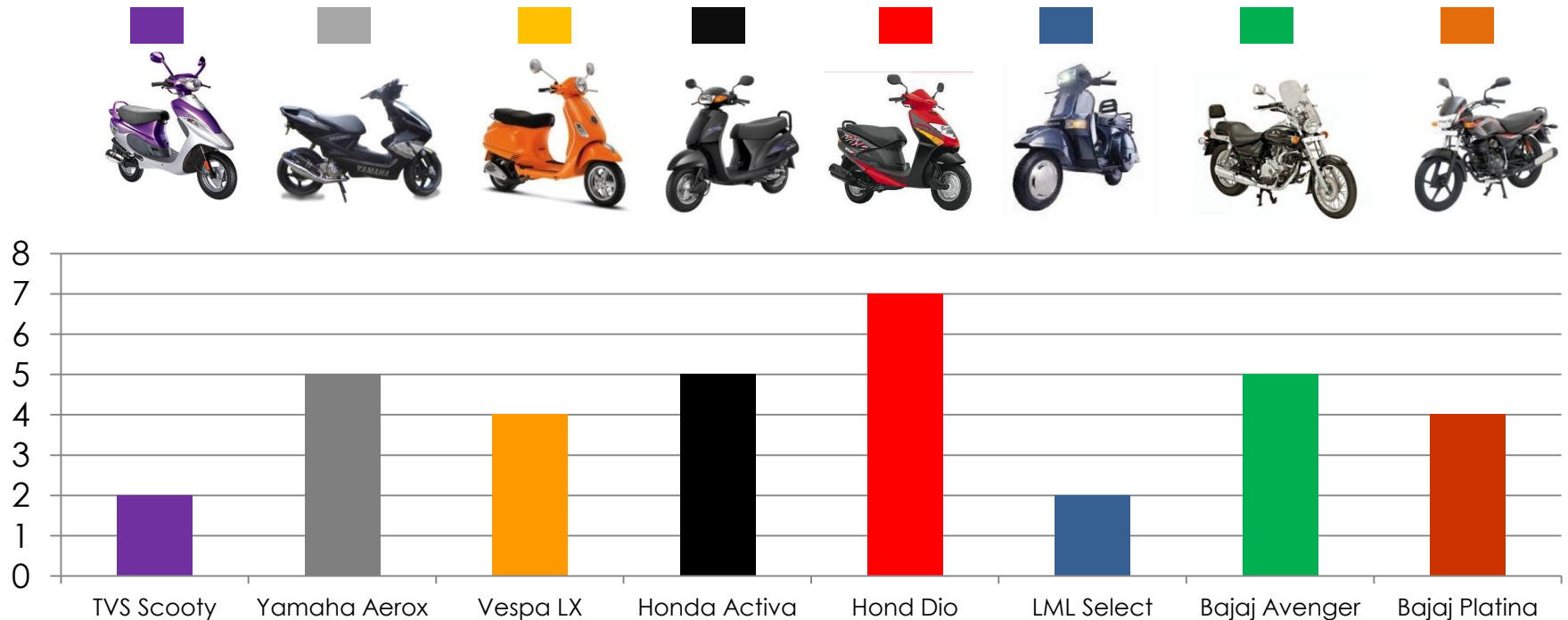
Cell phone holder is needed so that their calls are not missed on the way due to noise and vehicle vibrations.

## Aesthetic sensibilities towards foreign two wheelers



- Unfamiliar vehicle forms
- Visually larger volumes preferred
- Slim forms are less preferred
- Liking towards monolithic forms and continuous volumes

## Aesthetic sensibilities towards two wheelers in Indian Market



- In Familiar vehicles forms, likings are influenced by experiences and opinions
- Activa has an image of success which is one reason why it is preferred
- Dynamic forms are preferred in familiar forms as well
- Dio has a bigger preference ratio but sales are lower than Activa
- Yamaha Aerox has an equal preference ratio with that of Activa
- Users have a wide spectrum of likings in terms of looks



## Preferred Vehicle Forms and Ideas

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# *Dynamism*

Monolithic Form

## COMBINATION

Colours  
Textures

Comfort

Continuity

Visually Heavy



# User Research

## Qualitative Study

- **8 Respondents who are using Honda Activa**
- **All the eight users have a four wheeler but use it only when going for shopping or with family**

Medium: Face to Face Discussions and Observations

Language: Hindi and English

Areas: Hiranandani, Bandra, Cuff Parade, Andheri [E],

Goregaon [E]

User 1: Mrs. Rashmika Sachdev

Honda Activa User

Gender: Female

Age: 42

- Seat width of Honda is large which makes it difficult to sit cross legged for long distances
- I like to drive bikes but can not drive because it looks odd in society
- Bikes pose a problem when I am wearing Indian Outfits
- Distance of the rear footrest is too long for short heights, if I am sitting as a pillion
- My Husband is 6 feet tall, Activa seat is flat so I face a problem in talking to him on the go



## INSIGHTS

- Women admire the look of bikes and want to drive it
- Indian Ladies when wearing western outfits prefer to sit across over as they feel safe and better connected to their husband
- Form of the seat can be changed to suit the sitting posture and also possibly add to the aesthetics.
- Footrest distance has to be redesigned w.r.t. Indian Anthropometry

User 2: Mrs. Hetal Shroff

Gender: Female

Age: 46

- Feet hit the vehicles floor when starting after stops at red lights
- I really like Honda Dio as it looks very fast, but it looks Blind/Faceless
- Footrest is not easy to unfold
- Foot support is not enough while sitting one sided as a pillion



Honda tried to experiment by bringing the bike touches to Dio but despite its success there is a missing identity to the scooterette

## INSIGHTS

- If the floors ground clearance is increased towards sides, it can also add to aesthetics and better function as well.
- Rear footrest has to be considered in the redesign
- A two wheeler is recognised by its face which is formed by its headlamp and nose

User 3 : Mr. Partho Ghosh

Gender: Male

Age: 53

- Round Headlamp on scooters of old times like LML look good
- I like Pulsar new design but bikes don't offer luggage space
- Sporty looks are good in bikes but they don't offer enough utilities like, storage and easy getting on and getting off
- Trouble shooting in a bike is easy
- In Activa access to Engine is a tedious task



## INSIGHTS

- There is a liking for the scooters of old times, which had round headlights
- Sporty and speedy looks of a vehicle are important
- Activa engine shell is fastened with four screws to the chasis and a wiring harness connector has to be unlatched to open it for repair, Users find it difficult to open even when they know the fault and repair technique

User 4: Mrs Pratigya Banerjee

Gender: Female

Age: 49

Honda Activa User



- Electric start should definitely be there, which is a good thing about Activa
- Honda Activa is very hard and heavy to put on stand, I have dropped it many times while standing
- Since I am fat so the vehicle should also look heavy, but in reality it should be light weight
- Extra and open storage space should be there

## INSIGHTS

- Users' physique also plays a role in the form of the vehicle they choose
- Putting the stand should be made easy
- Side stands are easier and safer, which can be installed
- Users need open and handy storage space

User 5 : Mrs Brij Kumar Pandey

Honda Activa User

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Gender: Male

Age: 46



- Every time to put the helmet inside, I have to lift the seat, so many times I carry it along
- Honda Dio looks good
- My Favourite bike is Pulsar 220 NS, though now I cannot buy it

## INSIGHTS

- The form of Honda Dio is preferred
- Simplicity and elegance are not the only aspirations in middle aged group
- There is an inside liking for the speedy forms.



User 6 : Vishnu Smarak Patil

Gender: Male

Age: 51

Honda Activa User

- It should look light weight and spare wheel should be there
- I have Activa and my wife faces a problem to sit on it as there is no permanent footrest.
- I have Arthritis and face problem in Kicking
- I have also put guard rails to prevent my Activa body from scratches if it falls, a sticker of lord Ganesha to bring good luck while driving



## INSIGHTS

- Permanent footrest can be added as a functional and aesthetic element
- Users have a tendency to put scratch prevention accessories
- Guard rails also serve as permanent footrest for the pillion
- Users have this tendency to protect their vehicle



User 7: Shrikant Khandolkar

Gender: Male

Age: 41



- Body weight of the vehicle should be more for stability at high speeds
- I prefer to drive bikes because they are light and sporty but do not drive bikes because they do not have storage and don't suit my profession, but really like to own one for my own use
- The first Pulsar is still my Favourite
- Utility wise my Activa suits me better

## INSIGHTS

- Visually heavy forms are preferred
- Bike like forms are preferred
- Storage space is an important feature

User 8 : Aditya Chauhan

Gender: Male

Age: 39

- Rear View mirrors do not look good
- Activa looks to be Indian but to me it looks slow, Dio looks better as it is sporty looking
- Activa's name does not suit the vehicle
- Storage space is limited
- Cover put on the Handle



## INSIGHTS

- Rear view mirrors are redundant in their styling
- A touch of 'activeness' and 'sportiness' to the vehicle is an expectation
- Utility wise open storage space is preferred by users
- Users have this tendency to protect their vehicle
- Larger helmets don't fit properly [347 mm major axis]

# Inferences

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- Women face a problem in the usage of the rear footrest
  - Women show a liking towards bike like forms even though they are not able to drive them
  - The social paradigm forces them towards scootys and scooterettes
  - Visually heavy speaks for more storage space
  - Honda Dio is preferred by males as well as female users because it looks speedy and sporty
  - A two wheeler is identified as a face with eyes, Dio seems like a faceless/blind vehicle
- 
- Men have a liking towards bikes, but their age forces them towards the scooterette
  - In the scooterette segment there are not many two wheelers with the definition of speedy and sportiness
  - The likings of this group is not the same now as conceived as that of purely 'Sobriety and Elegance'
  - Fat body suits a heavy vehicle
  - Central round headlight relates to LML NV and Bajaj Chetak so are liked
  - More volume concentration on the front is preferred in looks

## Merits of Honda Activa

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- Stand mounted on the engine
- Moderately Slanting seats
- Battery and horn have been placed inside the front panel so that storage space is created for luggage beneath the seat

## Demerits of Honda Activa

- Women face a problem in travelling with kids
- Rear view mirrors seem to be an external fixture
- Ladies face a problem in sitting cross legged
- Footrest is too low for low percentile female users
- Stand is difficult to operate
- Tedious to open and reach the engine

## RTO Norms for Two Wheelers

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Nature of Offence	Legal Provision	Penalty (Rs)
Carrying persons on footboard	123-177 MVA	100
Carrying persons causing obstruction to the driver	125-177 MVA	100

*Source: Mumbai Traffic Police Manual*

Female Users wanted to have fixtures to support kids in front and visor to protect kids eyes from wind

According to RTO rules, carrying any passenger more than the prescribed limit is an offense and is liable to be penalised.

# Study of Honda Activa

Medium: Discussions and Observations  
Language: Hindi

**Areas:**

IIT Bombay

Raman Auto Garage, Pawarwadi

Munna Bike and Scooter garage, Panchkutir

Azhar Auto Center, Kanjur Marg

# Specifications of Honda Activa

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## ENGINE

Engine	4 Stroke, Single Cylinder, Air Cooled
Displacement	109 cc
Bore and Stroke	50 X 52
Compression Ratio	9:1
Max. Power	7.1 PS (5.22 KW) @ 7000rpm
Max. Torque	0.8 Kgm @ 5500rpm
Transmission	Variomatic
Clutch	Dry Automatic Centrifugal
Ignition	CDI
Fuel Supply	Carburettor Keihin

## CHASSIS

Chassis Type	High rigidity Underbone Type
Suspension (Front)	Bottom link with Spring loaded hydraulic damper (80mm Travel)
Suspension (Rear)	Unit Swing with Spring loaded hydraulic damper (75mm travel)
Brakes	Front - 130mm Drum / Rear - 130 mm Drum
Tyres	Front - 3.50 X 10 / Rear - 3.50 X 10

## ELECTRICALS

Battery	12V 5Ah
Head Lamp	35W/35W
Tail / Stop Lamp	5/21W

## DIMENSIONS

Seat Height	760mm
Wheelbase	1235mm
Ground Clearance	145mm
Weight	111 Kg
Fuel Tank Capacity	6 Litres
Colour(s)	Black, Silver, Gold, Blue, Red



# Aesthetics of Honda Activa

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- 2 redesigns of Activa have been done
- Engine, chasis, suspension and drivetrain have been same



- Seat has also been redesigned



Aesthetic changes on the front panel and also in material P.P. and M.S.



# Aesthetics of Honda Activa

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Body line makes the form dynamic  
Exposed exhaust makes the volume light in appeal

CVT, air filter and exhaust exposed



Lord Ganesha

Change in material and textures



# Aesthetics of Honda Activa

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Stylised grab handle

Stylised taillamp cluster



Stylised viewing panel inspired from Ganesha

# Functionality

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Twin Fork and suspension



Single rear suspension on left Side



Utility storage beneath the Seat



- Storage Space
- Space for Helmet



# Technology Study

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Air Circulation for  
CVT from the  
opposite arm of the  
chassis



- Engine:-4-Stroke, Single Cylinder
- Underbone Type Chassis
- Fuel Tank 6 Litres



# Technology Study

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Centrally mounted engine



Fuel tank at the back on the chasis



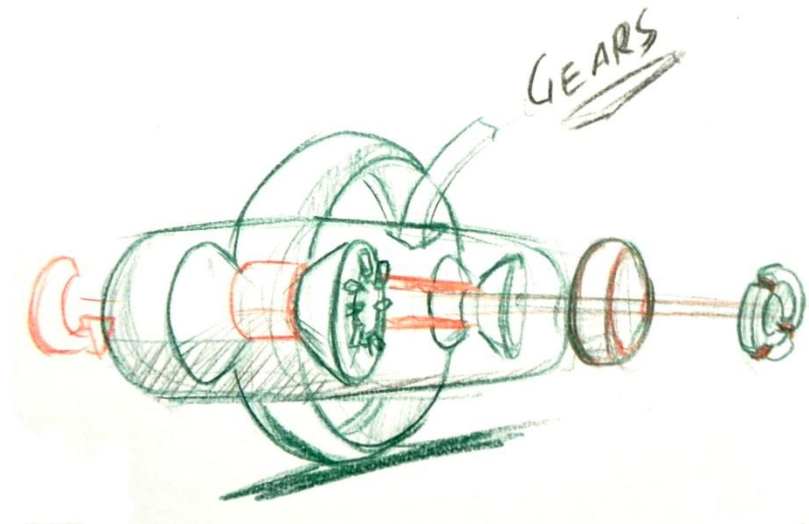
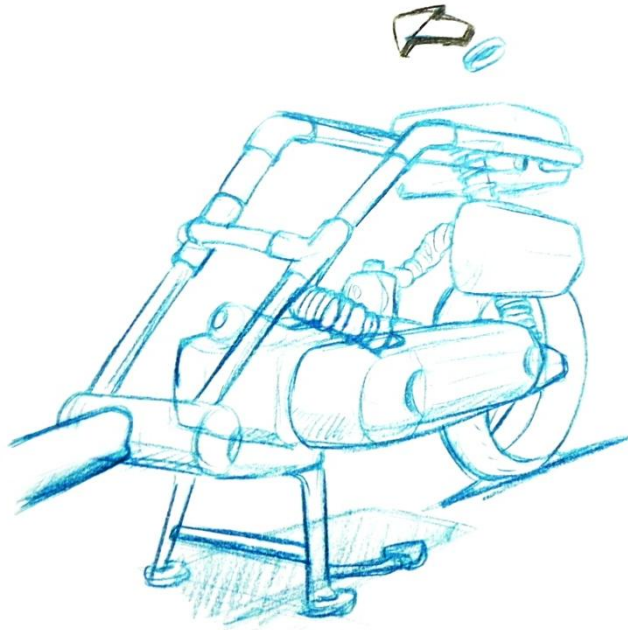
Horn and  
Battery

CVT and Clutch

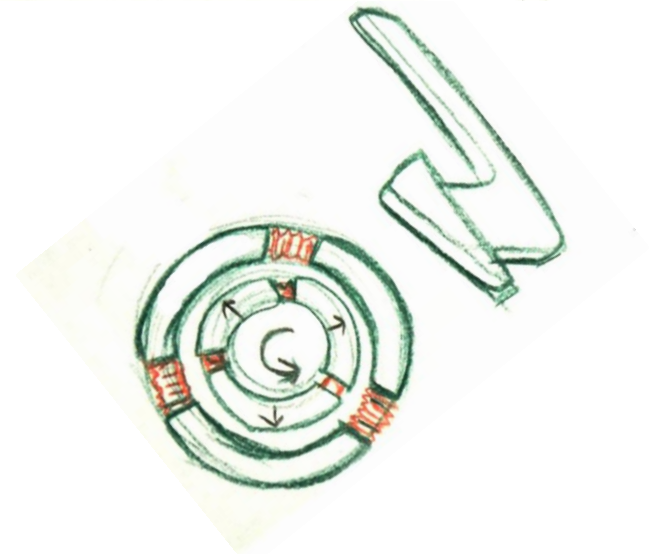


# Technology Study

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CVT  
Over running Clutch





# Structure Model

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To be used as template for fixing the body

## Cell Phone Study

**Sample Size:** 30 users

**Place:** IIT Bombay

**Aim:**

- Understanding the Users and their aesthetic sensibilities in a different product segment
- Understand their Habits, preferences and patterns of usage



# Cell phone study

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Functionality and  
comfort

QWERTY keypad



Combination of Textures  
and colours



Walkman Series Phone



# Cell phone study



5 years Old phone



Combination of colours

Modernistic flows and  
form transition



Dynamism



Emotional Attachment  
QWERTY



# Cell phone study



Dynamism  
Ultra Modern  
Colour

Female User



Combination of colours  
and texture



[COVER]

Large Touch Screen



\*

New Generation phone

Modern



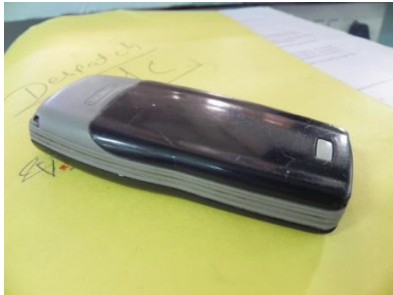
Emotive





# Cell phone study

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Old Phone



Large Screen + Modern

Modern Phone

X Press Music



Black

# Cell phone study

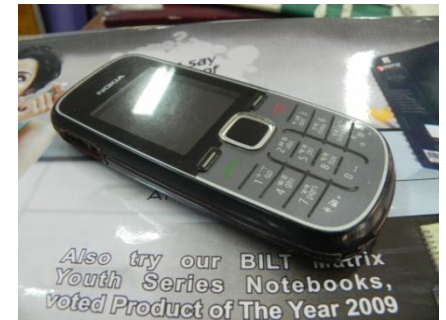
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Combination of Colours



Basic Phone with a cover



Old and Basic Phone

Qwerty keypad with basic functions



BLACK

# Cell phone study



Combination  
of Colours



\*

Basic Form and  
modern  
Functionality



Simple Function

\*

Protected with  
Cover





# Cell phone study



Modern Phone with  
dual surface texture  
and finish



3 year old Covered Phone, Chrome and Black



Covered

[COVER]  
\*



Combination of  
Surfaces, Basic Form

Touch Screen



# Cell phone study



Simple phone with Chrome  
and Texture



Dynamism  
Slider and touch Screen



2 years Old phone

Modern Phone in cover





# Insights

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- Black is seen as a dominant colour
- Endurance of the product, attachment of the user with the product
- 13 people touch screens
- 3 Qwerty keypad
- 6 phones with extra casing
- Mostly Basic Phones in functionality
- 3 Special music editions preferred by Women
- Also 3 phones with florescent and modern colours

PEOPLE ARE EXPERIMENTING WITH COLOURS, FLOURESCENT COLOURS, EVEN THOUGH BLACK IS THE DOMINANT COLOUR

CHROME IS SEEN ONLY AS A SECONDARY ELEMENT JUST IN THREE PHONES, THEY DON'T PREFER MANY SHINY SURFACES ANY JAZZY APPEAL (CONTROLLED MODERNITY)

THE MODERNITY THAT IS THERE IS COHERENT AND CONTROLLED, THERE IS NO DESIRE TO FLAUNT MUCH

THEY DON'T HAVE AN EAGERNESS TO SHOW OFF BUT MODERNITY EXISTS, EVEN THE ATTITUDE WITH WHICH THE PHONES WERE HANDED FOR STUDY WAS MODEST AND WAITFUL

MANY OF THE PHONES, EVEN THE OLD ONES HAVE LARGE SCREENS, AND WIDER KEYS, THEIR COMFORT SHOULD NOT BE COMPROMISED

WOMEN SEEM TO HAVE MORE PROGRESSIVE APPROACH THAN MEN IN MIDDLE AGED GROUP

Attachment , Care and Protection

Long Lasting

CONTROLLED MODERNITY

BLACK



# Colour Trends

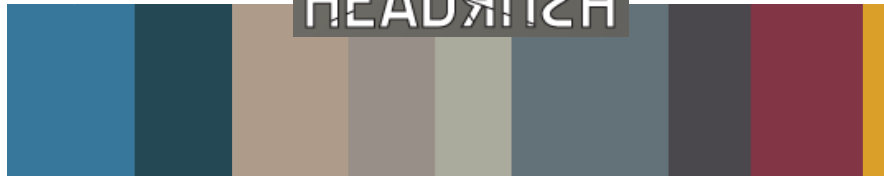
Source: Asian Paints Colour Trends for India

## Asian Paints' Colour Next 2012

There is a little voice inside us ready to be heard, A murmur resonating across as we connect with thousand we may never meet



HEADR02H



Shifting Landscapes, fragmented reality, Its about breaking the mould, and playing life by own visions. The biggest risk is not taking one at all

Beauty lies in many facets, clear yet complex, transparent yet reflective, demanding a closer look



Stop and feel the moment, Small joys you find everyday. Simple spontaneous experiences that come and go

## Colour Palette



Voice inside ready to be heard Breaking the mould

Many facets demanding a closer look Small daily joys that come and go everyday

# *Dynamism*



CONTROLLED MODERNITY

Long Lasting

Attachment , Care and Protection

COMBINATION

Colours

Textures



BLACK



Monolithic Form

Comfort

Continuity

*Visually Heavy*



# The brief

Design of a two wheeler for the middle aged users based on the Technology and Mechanisms of the existing Honda Activa Deluxe.

## Aesthetics

The vehicle should be more *Dynamic* than the existing Models, the side profile of the vehicle should appear unified and continuous in structure, and the form of the vehicle should look visually heavy

Emotions: Appeal of the vehicle should reflect the feeling of Attachment, care and Protection, The overall feel of the vehicle should reflect controlled modernism.

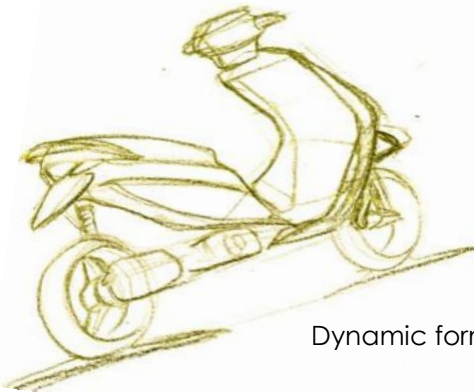
	Modernistic
	Contemporary
	Bike Like

# Explorations

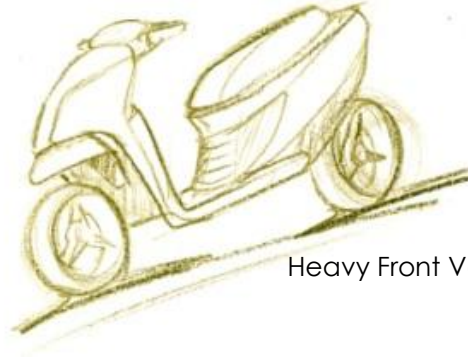


# Explorations

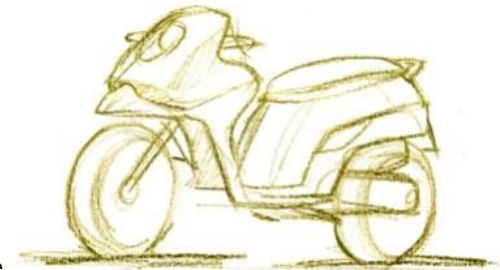
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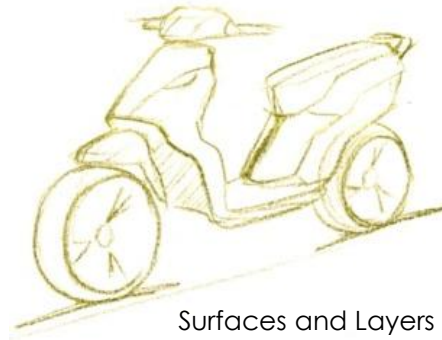
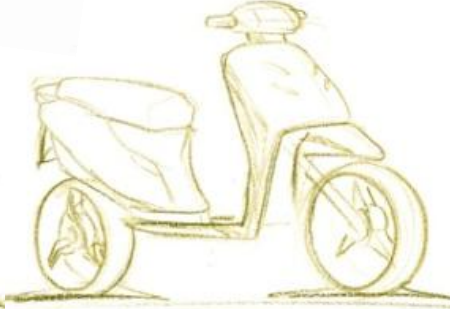
Dynamic form



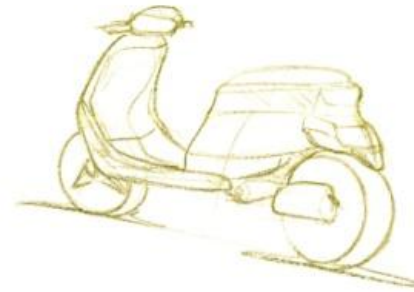
Heavy Front Volume



Heavy Volume



Surfaces and Layers



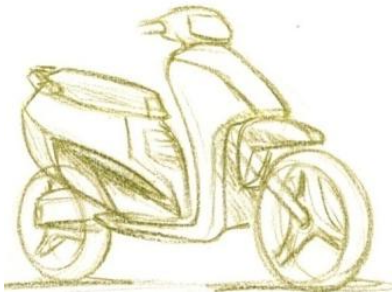
Dropping and integrated tail



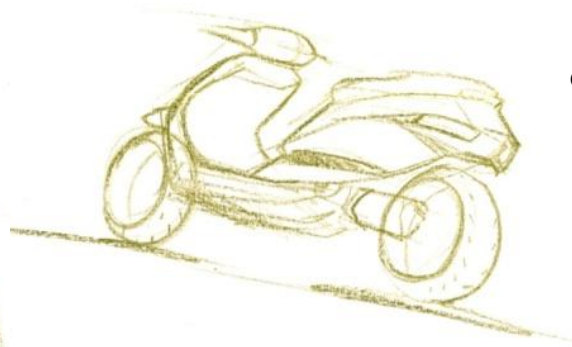
Heavy Volume



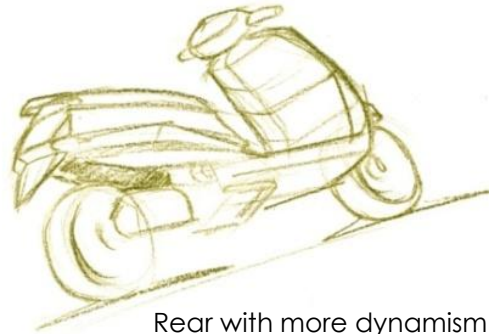
Different mudguard integrated with front panel



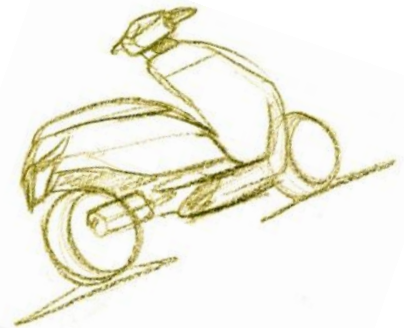
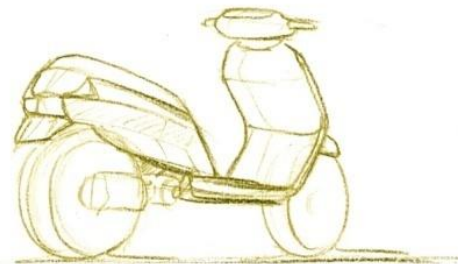
Layers on side panels



Continuous form into the rear



Rear with more dynamism and body lines



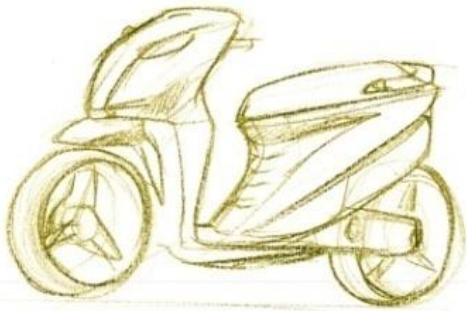
Heavy volume of rear



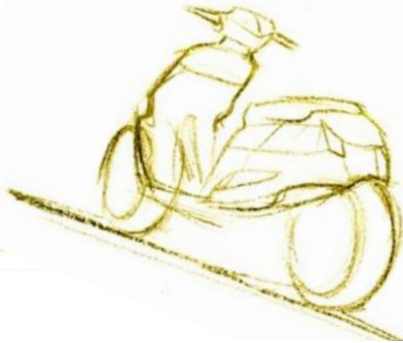
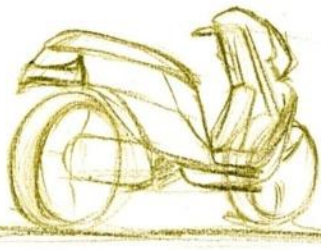
Bike inspired front volume

# Explorations

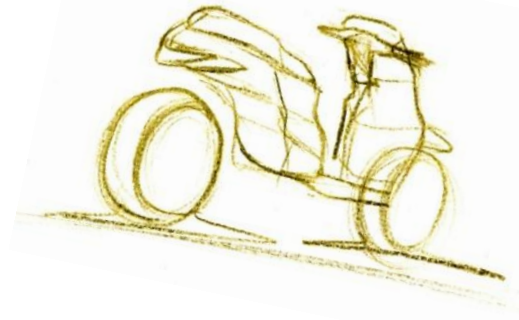
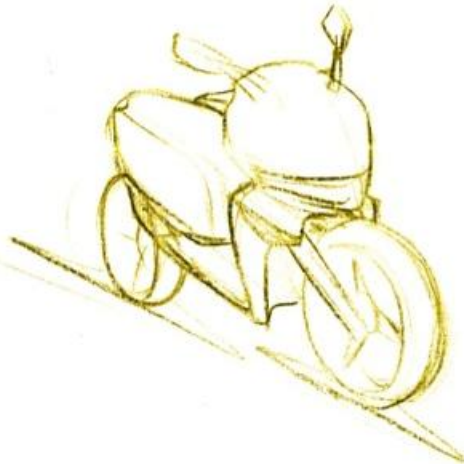
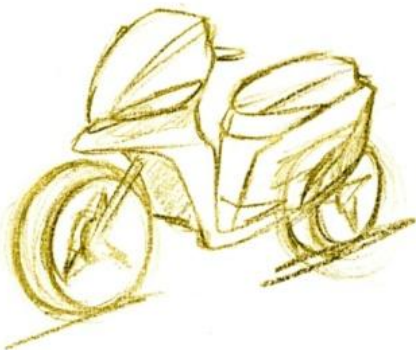
Sober



Ganesha inspired front



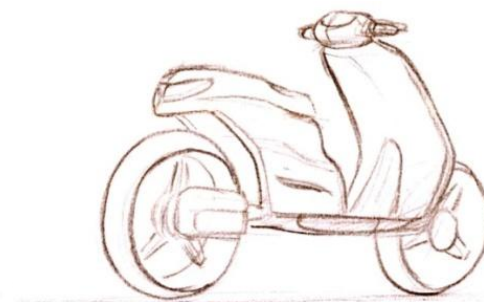
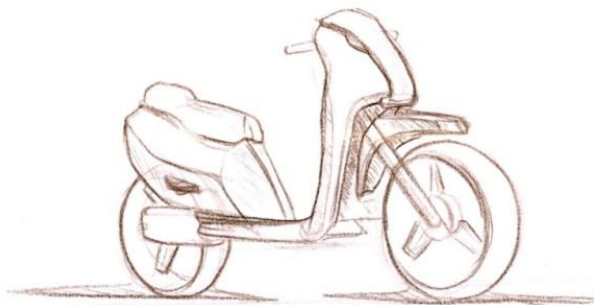
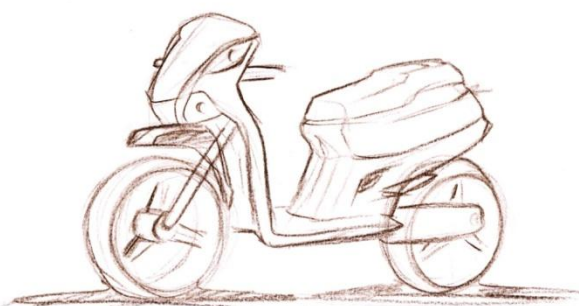
Integrated bike like mirrors



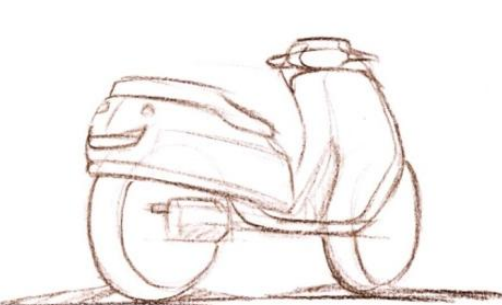


# Explorations

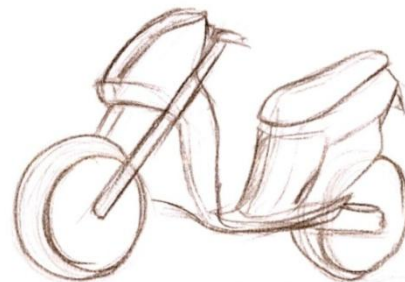
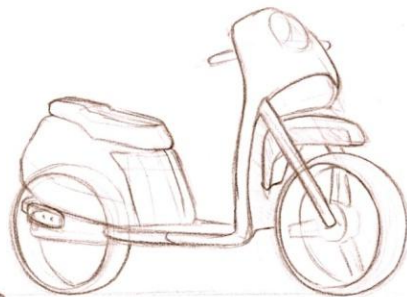
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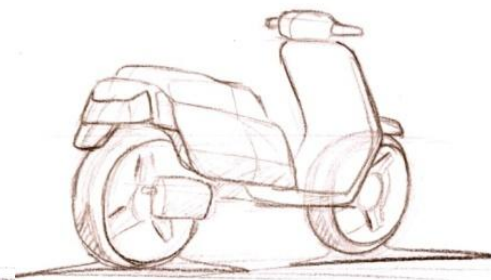
Exposed rear wheel



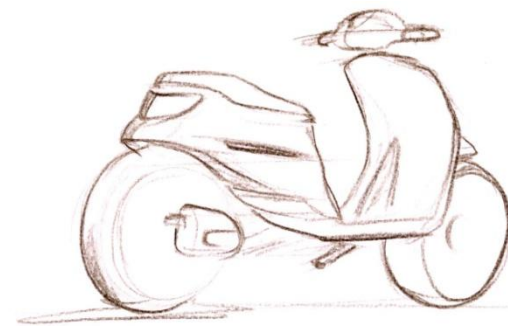
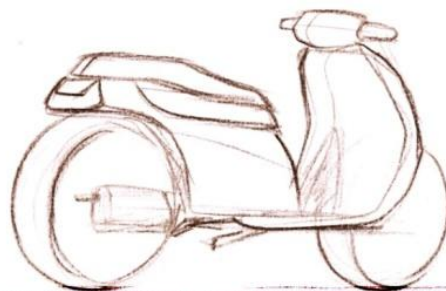
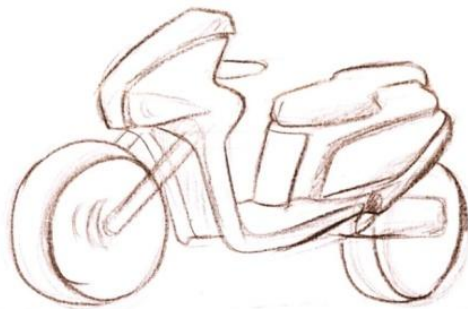
Round lamps



Exposed suspension



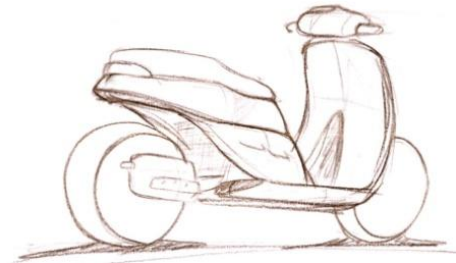
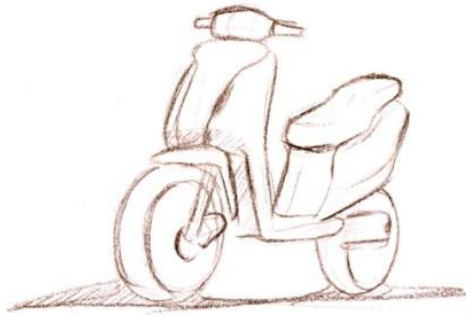
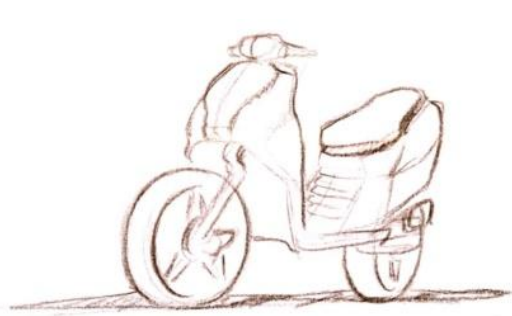
Robust looks



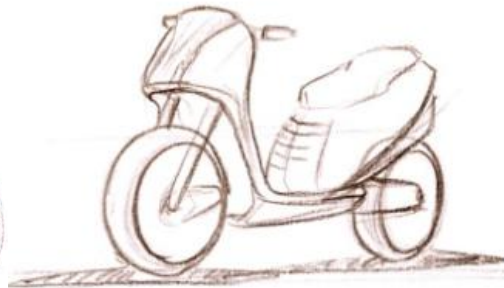
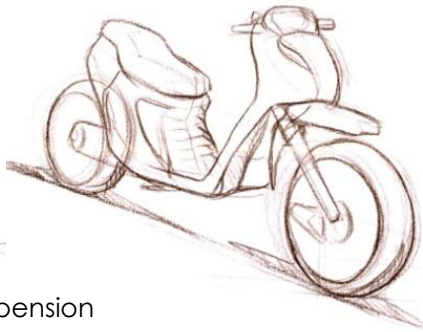
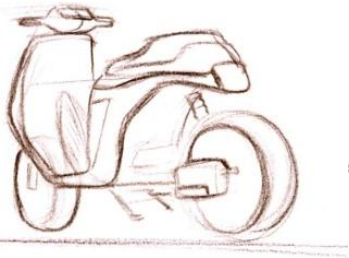
Vespa LX inspired rear

# Explorations

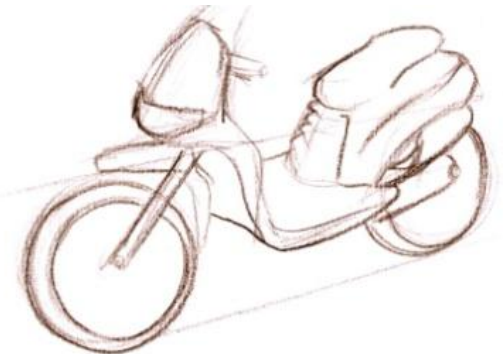
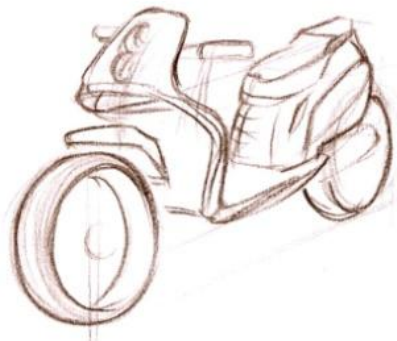
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Exposed rear wheel



Exposed wheel and suspension



# Explorations

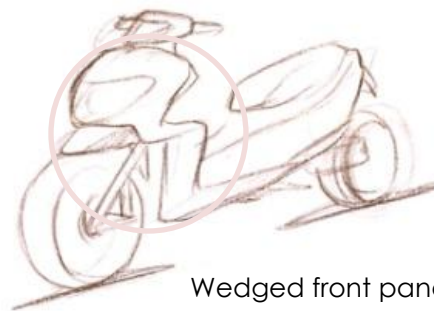
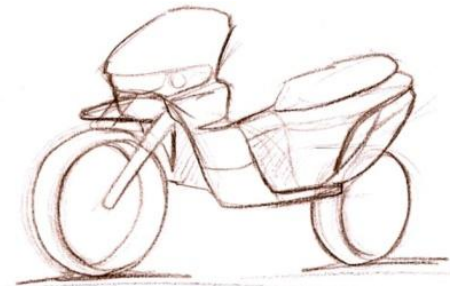
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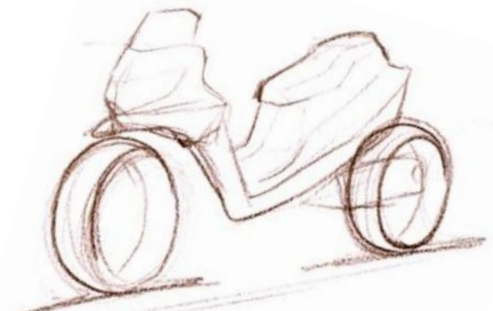
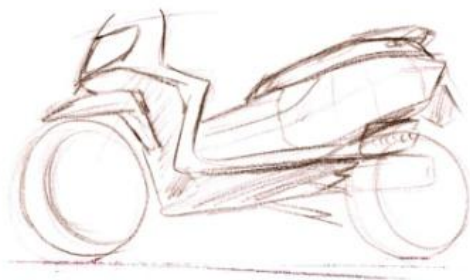
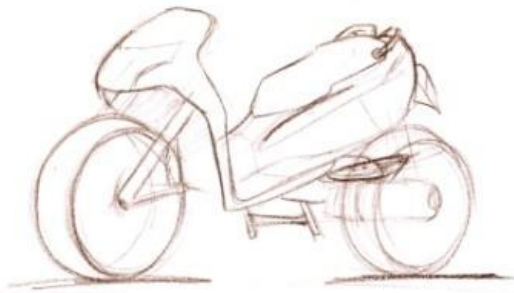
Dynamic stance



Horizontal elements



Wedged front panel

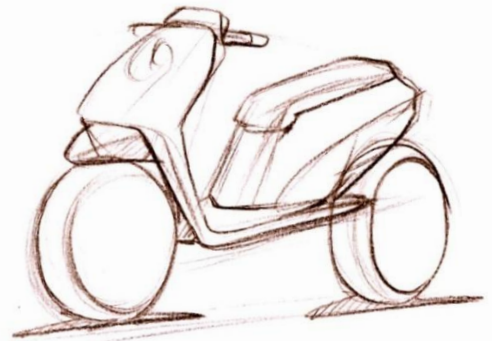
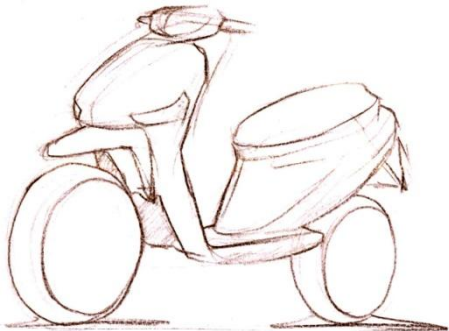


Front like mudguard in the rear



# Explorations

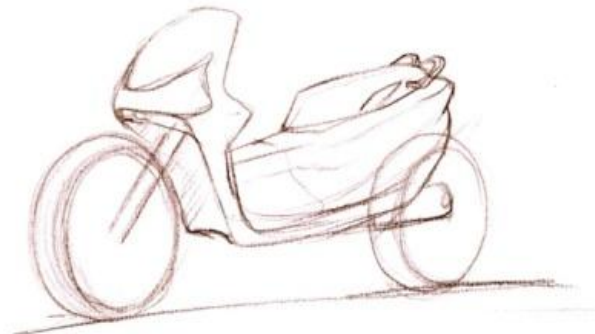
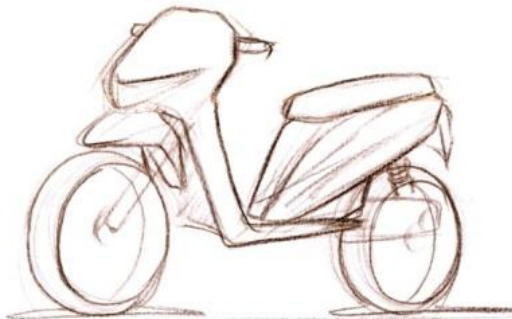
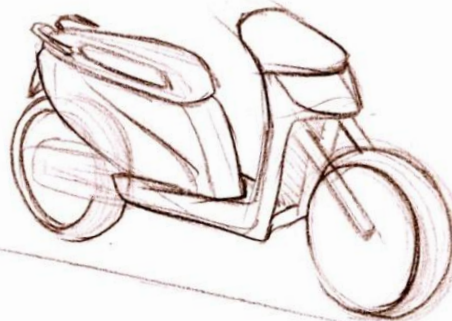
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Round headlamp

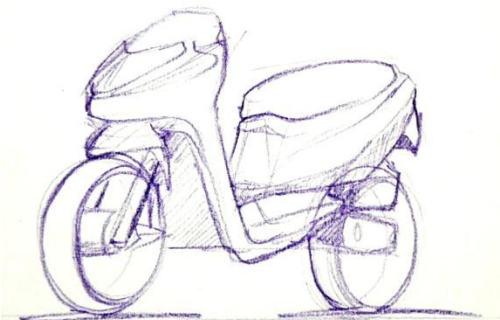
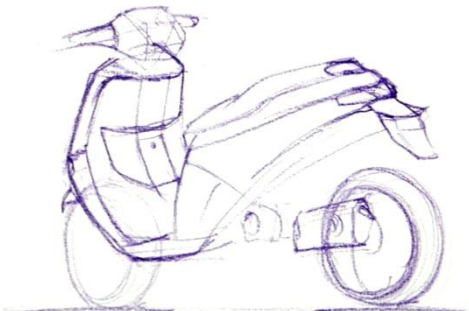
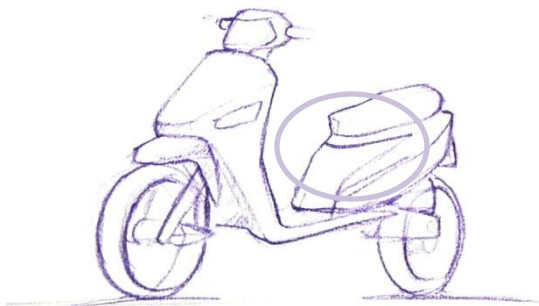
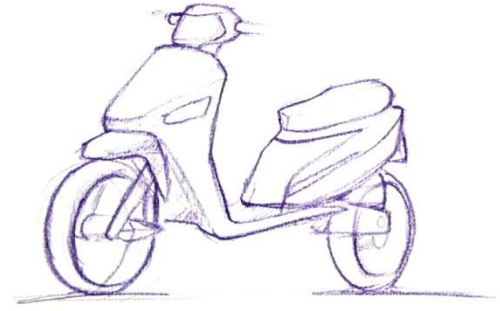
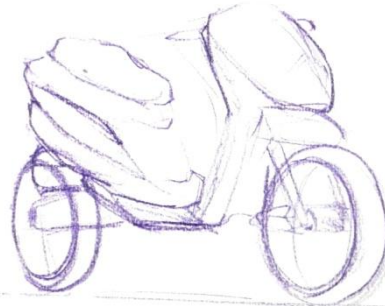


Seat continuing till the footboard



# Explorations

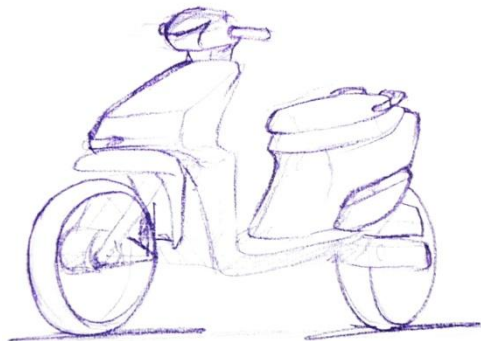
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Trailing plastic panel into rear



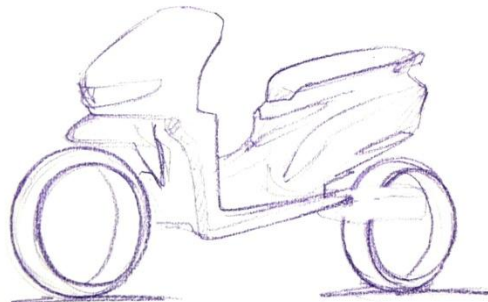
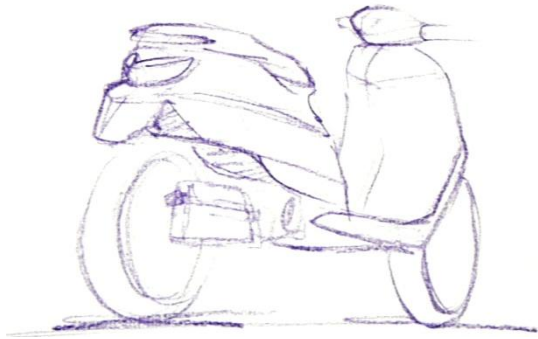
Bike like front



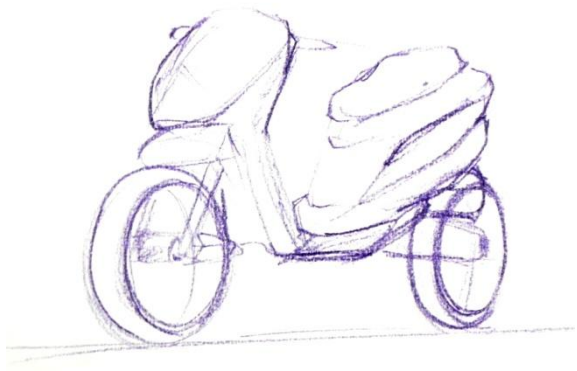
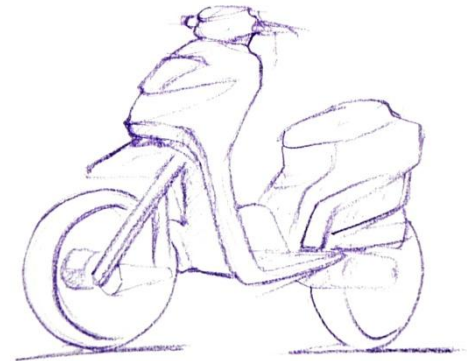


# Explorations

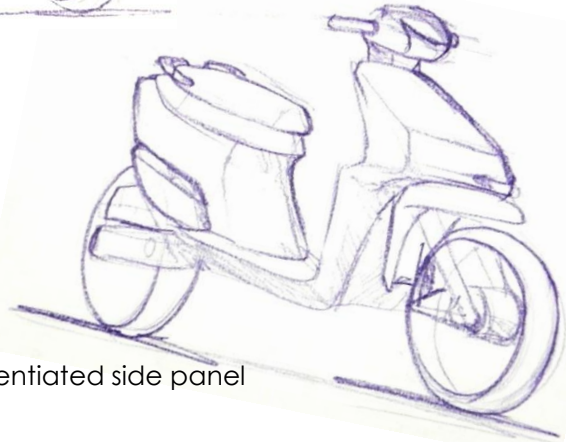
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Continuous volume

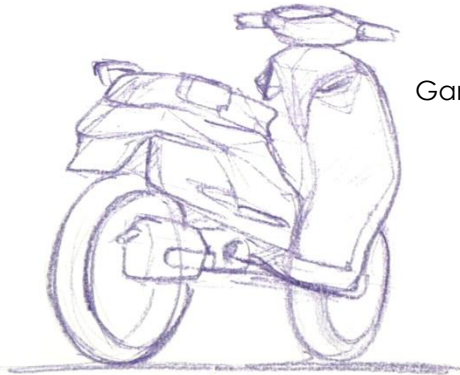
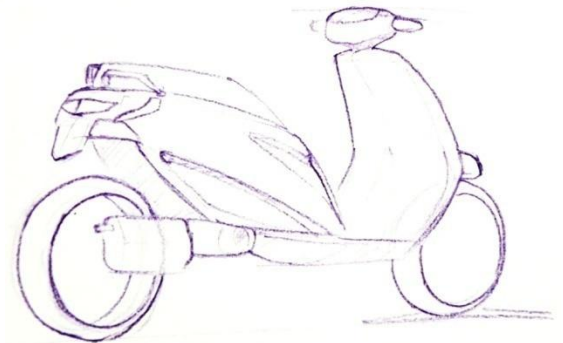
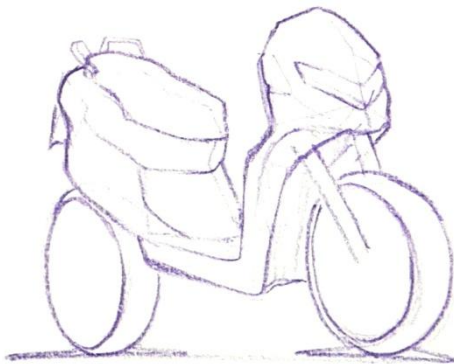


Differentiated side panel



# Explorations

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Ganesha facing th driver

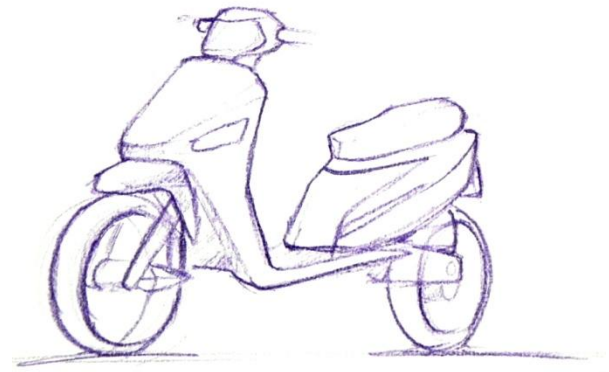


# Explorations

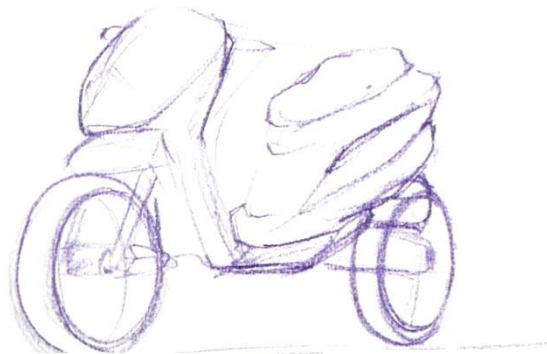
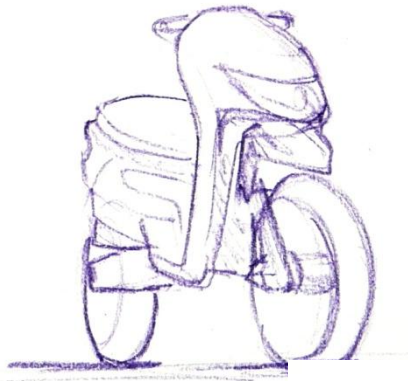
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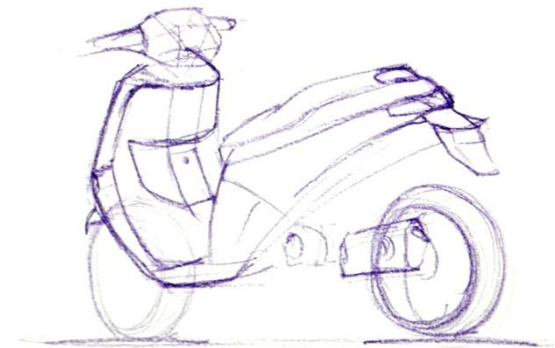
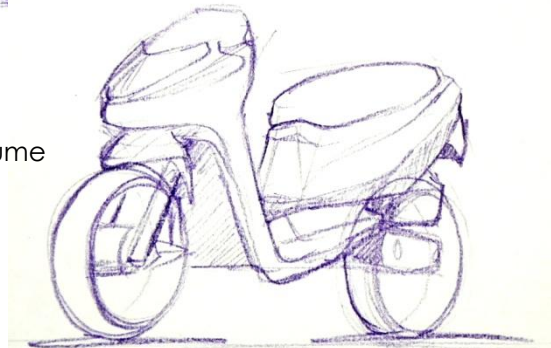
Twin grab handle



Twin Head lamp



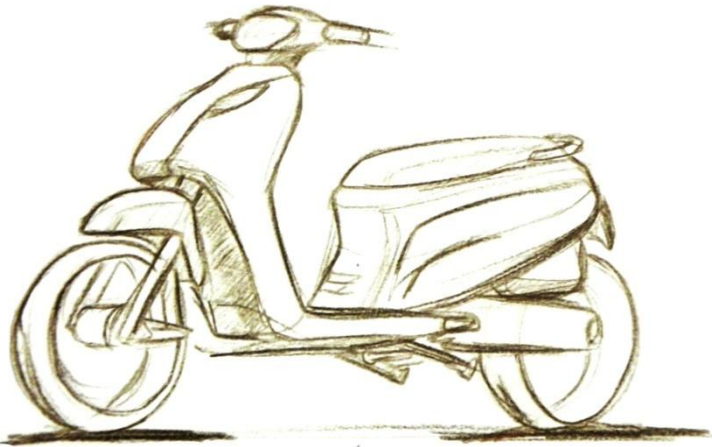
Unified front volume  
like a bike





# Theme Sketches

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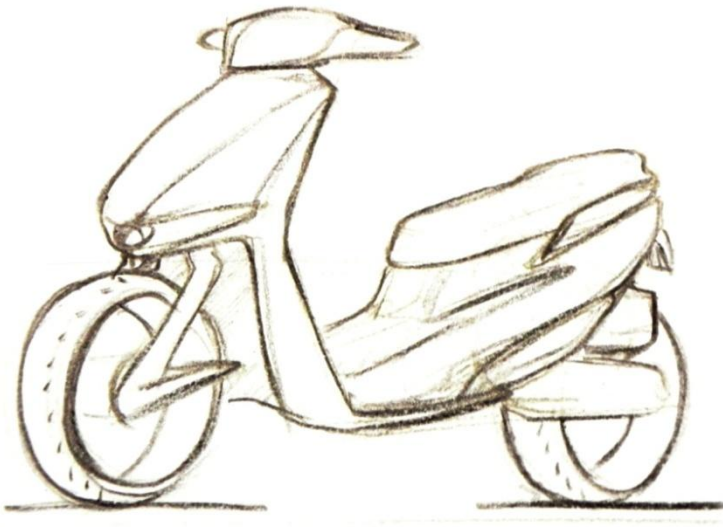


Modern  
Face  
Visually Heavy  
Dynamic

Sketch 1

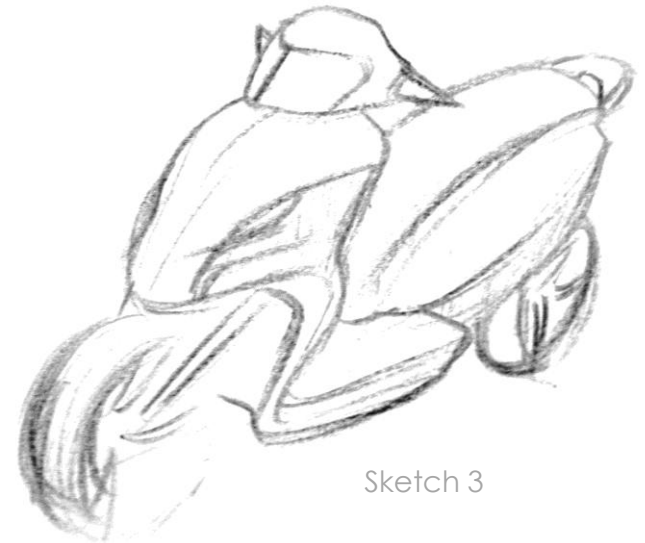
Explorations led to a mature understanding of design brief, these theme sketches were taken further in the direction of the brief, but the forms still were not very different from the existing ones.

Sporty  
Dynamic  
Face



Bike like  
Modern  
Continuous  
Visually Heavy  
Dynamic

Sketch 2

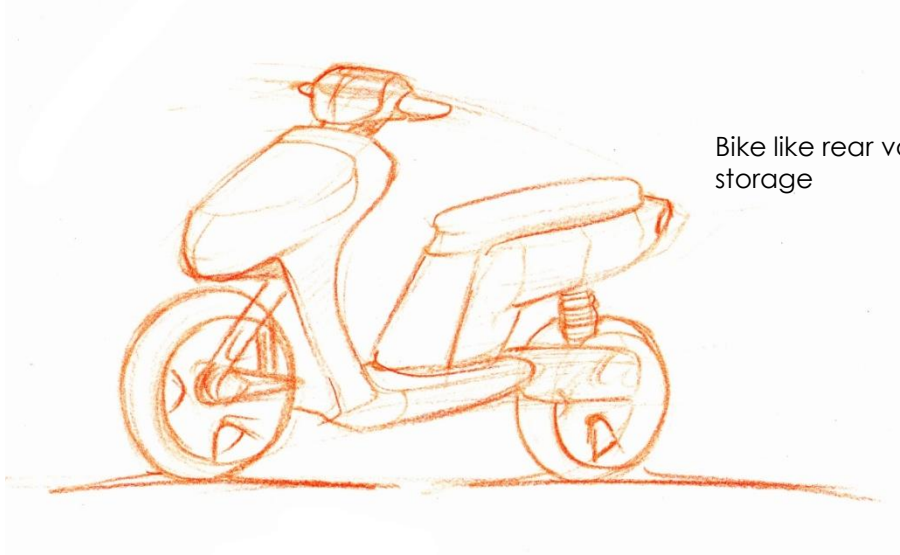


Sketch 3

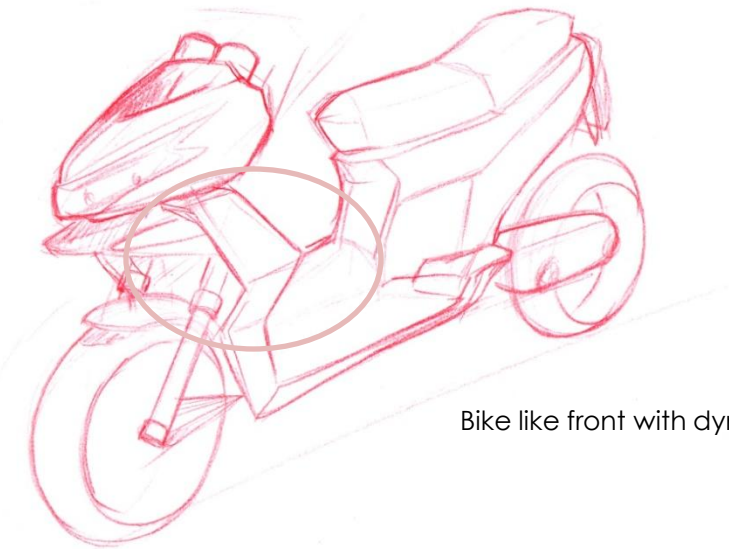
Ideations

# Ideations

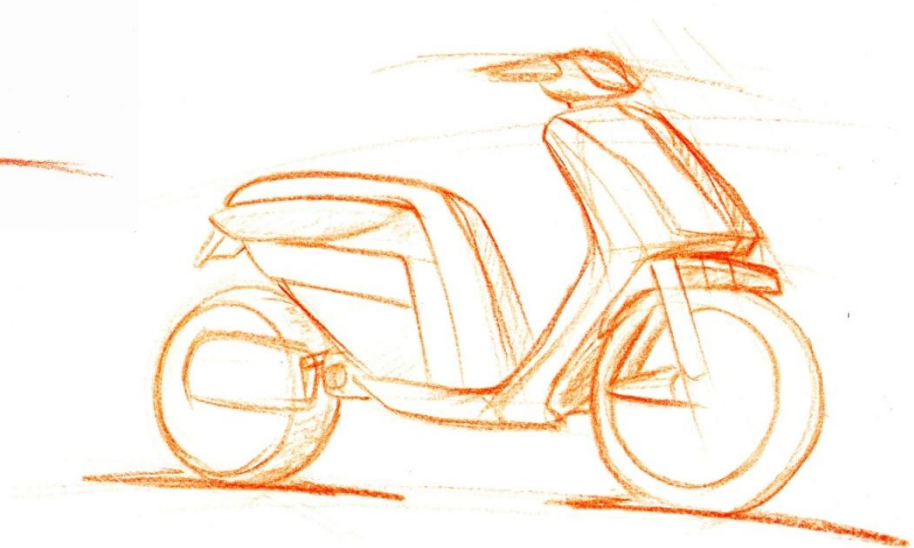
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Bike like rear volume and front storage



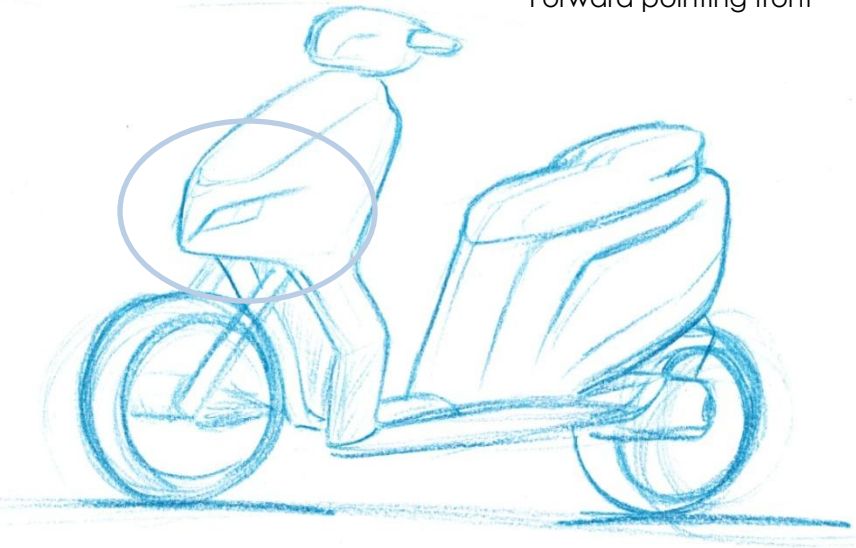
Bike like front with dynamism



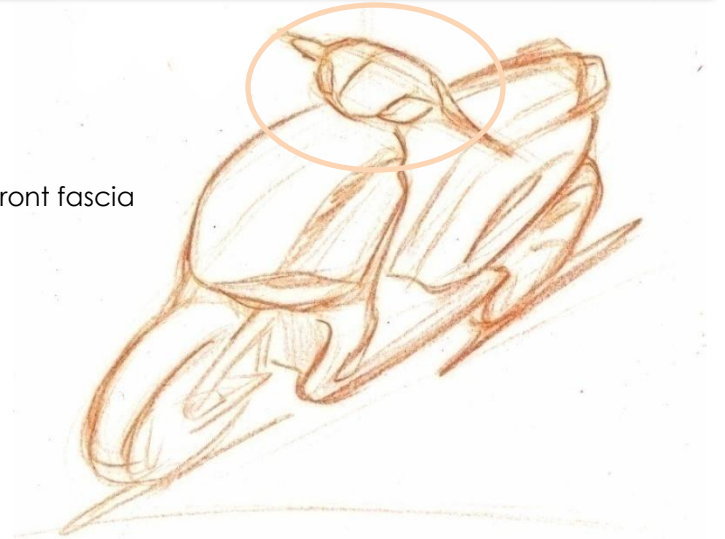
Continuity to the form with lines

# Ideations

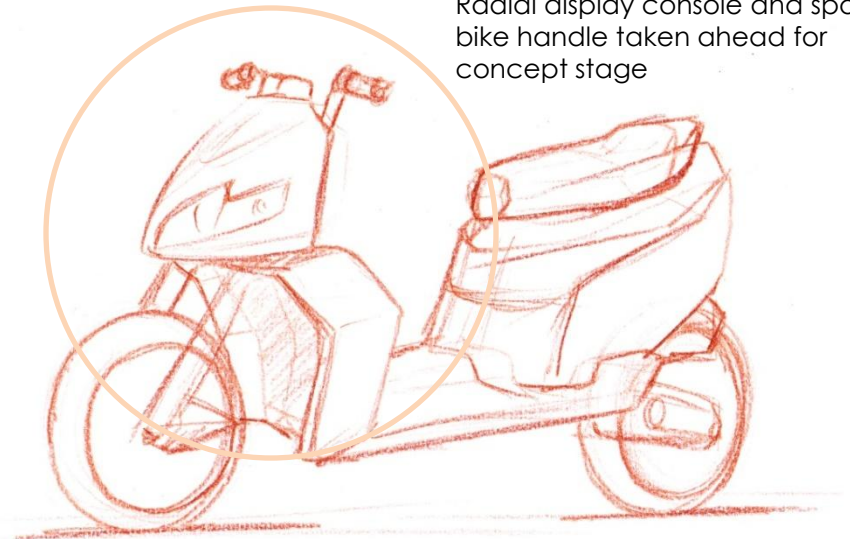
Forward pointing front



Human face in the front fascia



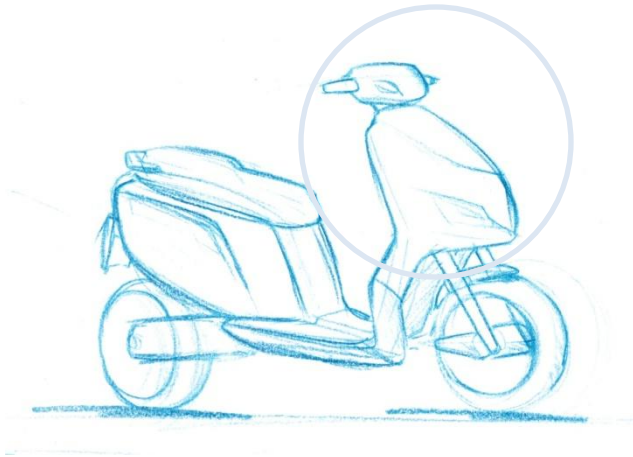
Radial display console and sports bike handle taken ahead for concept stage



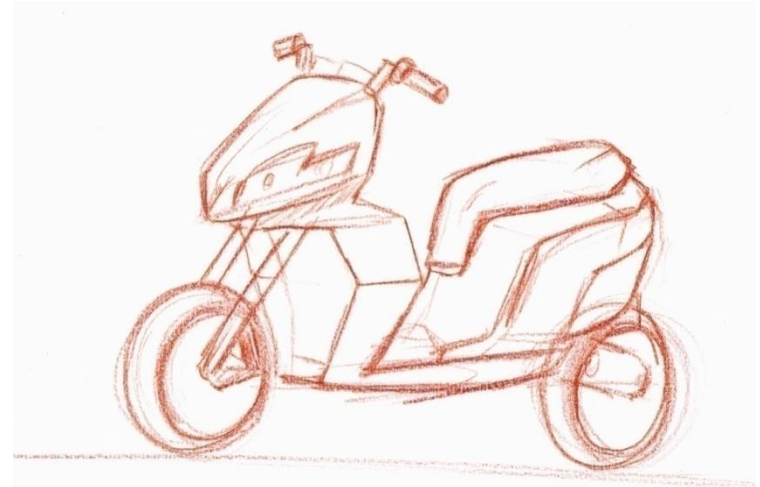


# Ideations

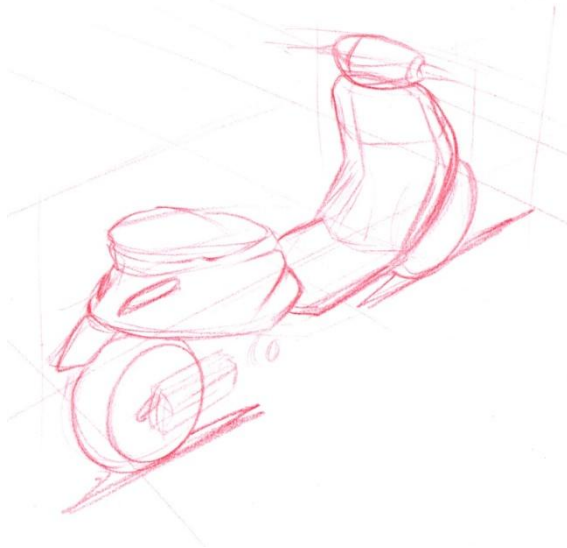
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Dynamic Front which was taken ahead for concept stage



Bulkier body with a bike like front, vehicle form was taken to concept



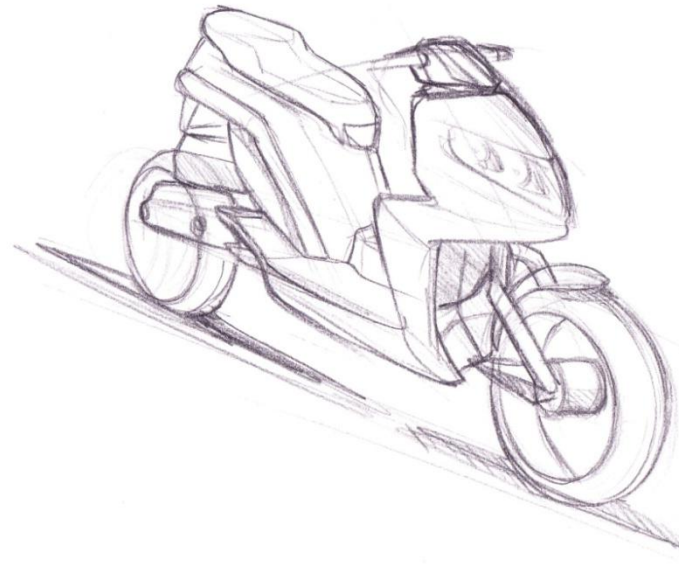
Grab rails taken to concept

# Ideations

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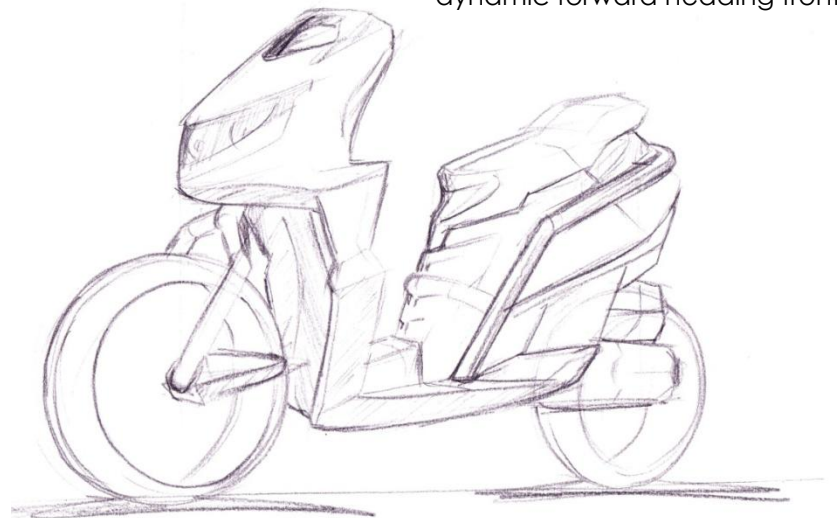
Dynamic front with bike like handle



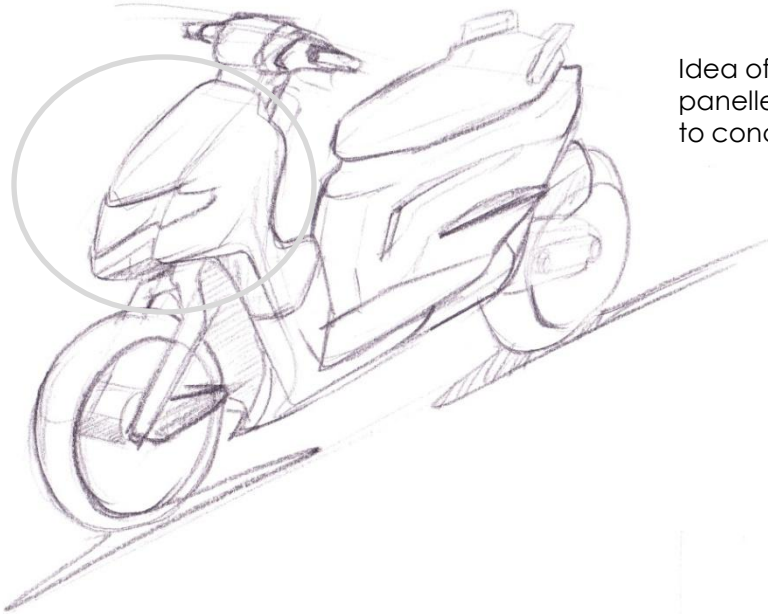
Ducati like exposed chasis with a dynamic forward heading front



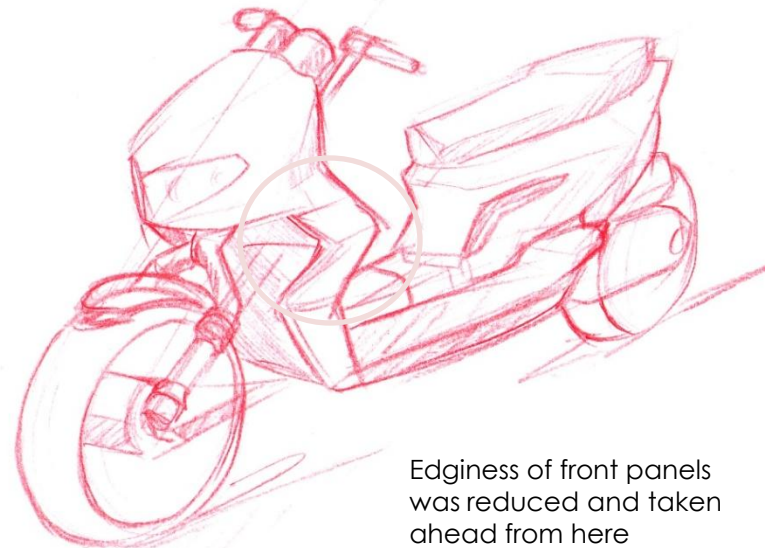
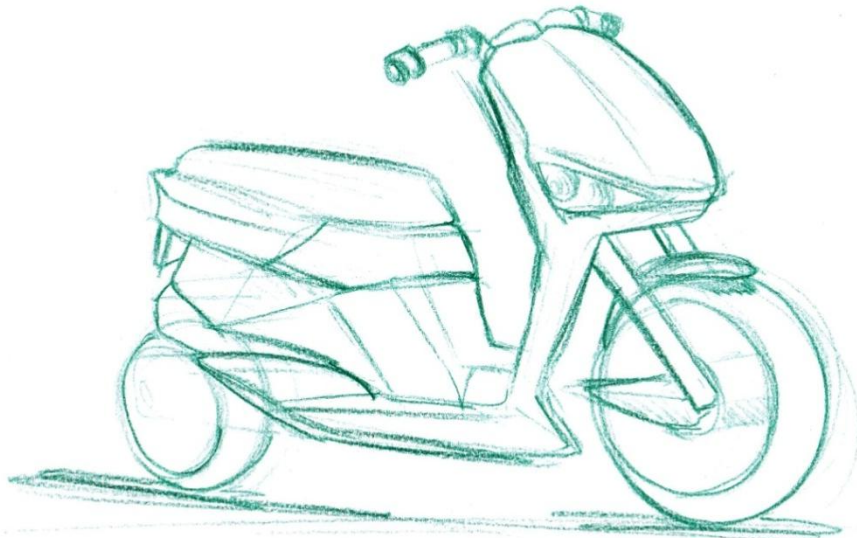
Bulky but dynamic rear



# Ideations



Idea of sporty stripe and panelled front was taken to concept from here

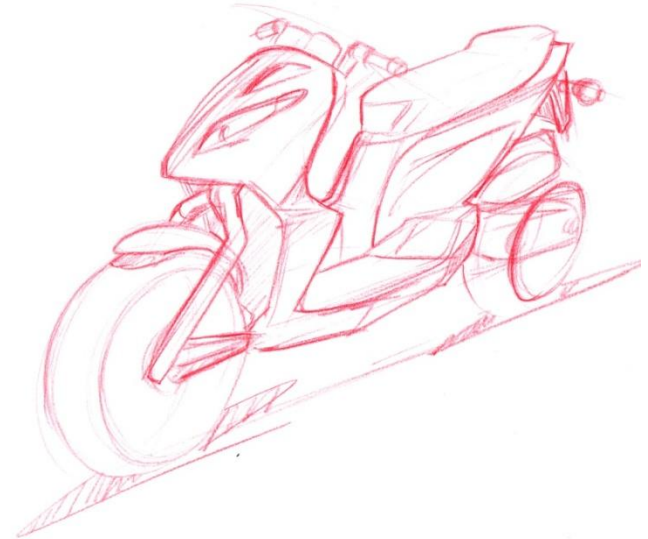
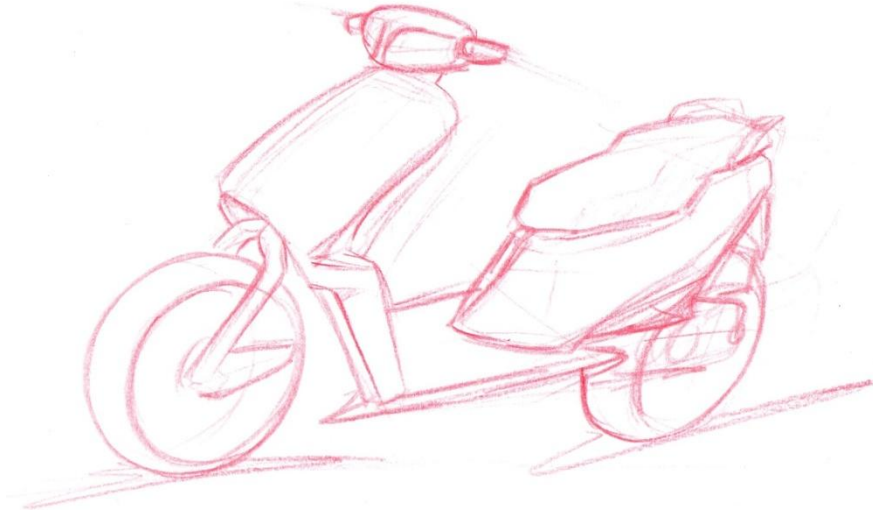


Edginess of front panels was reduced and taken ahead from here

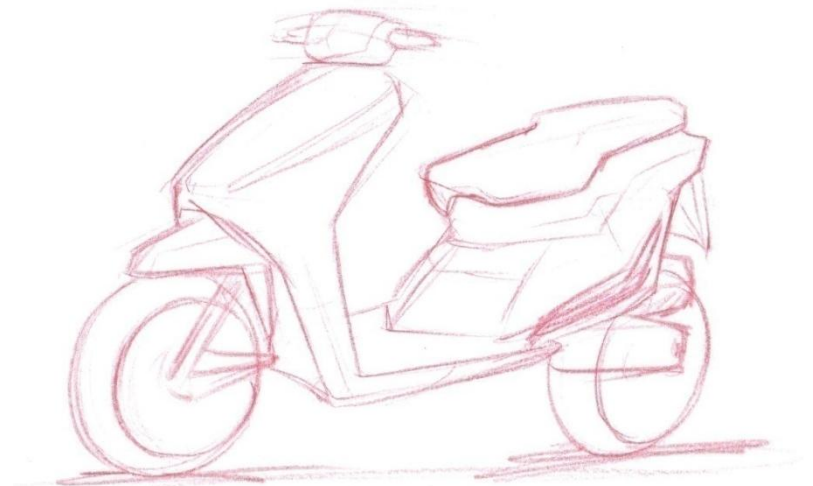
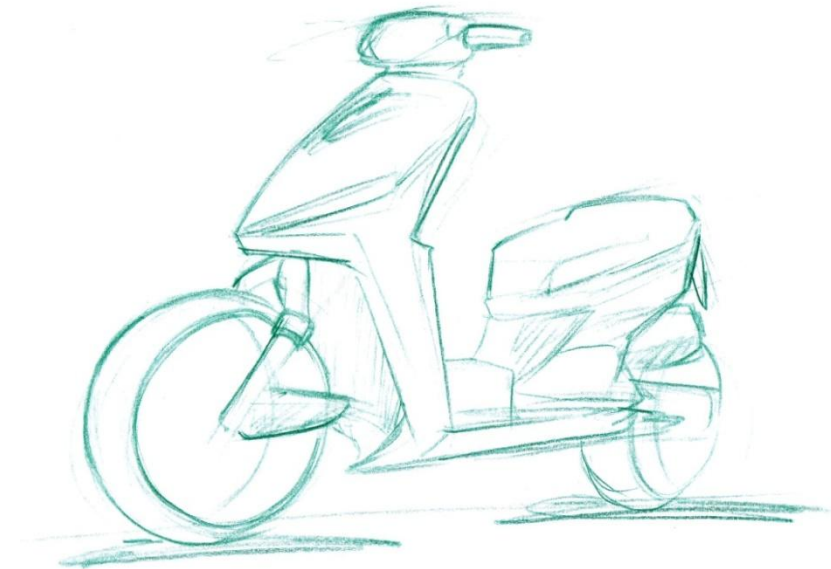


# Ideations

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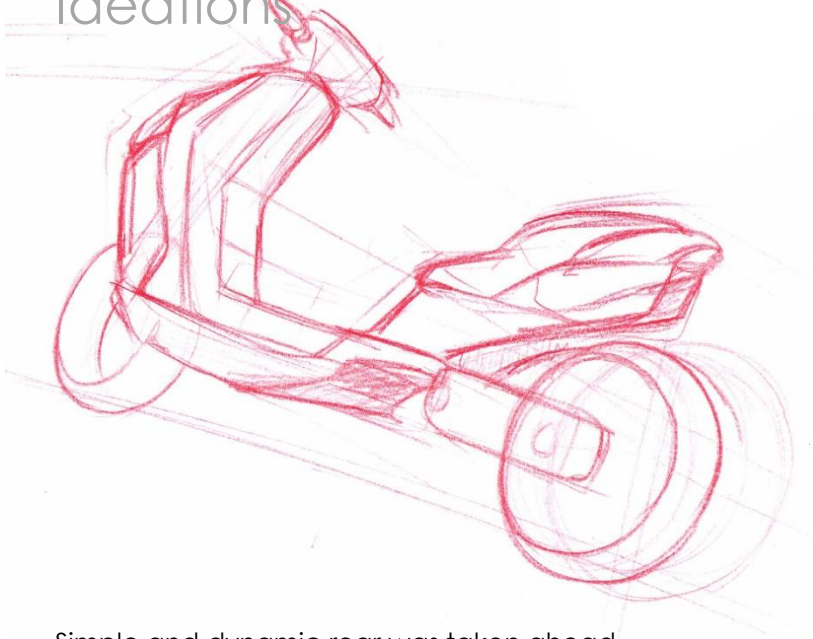


Adding more flows to the form with more layers of surfaces and pointed tail

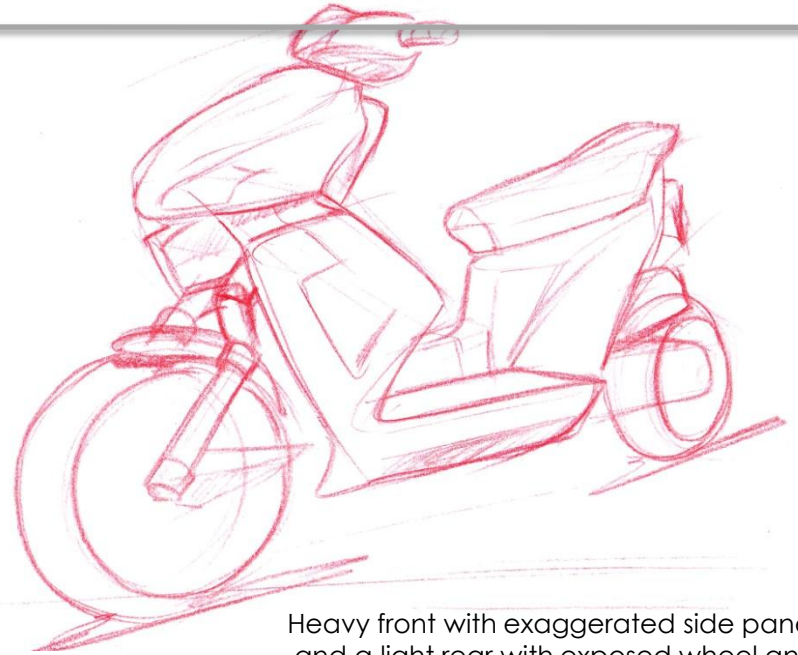


Expanded rear with a bulky and sturdy feel

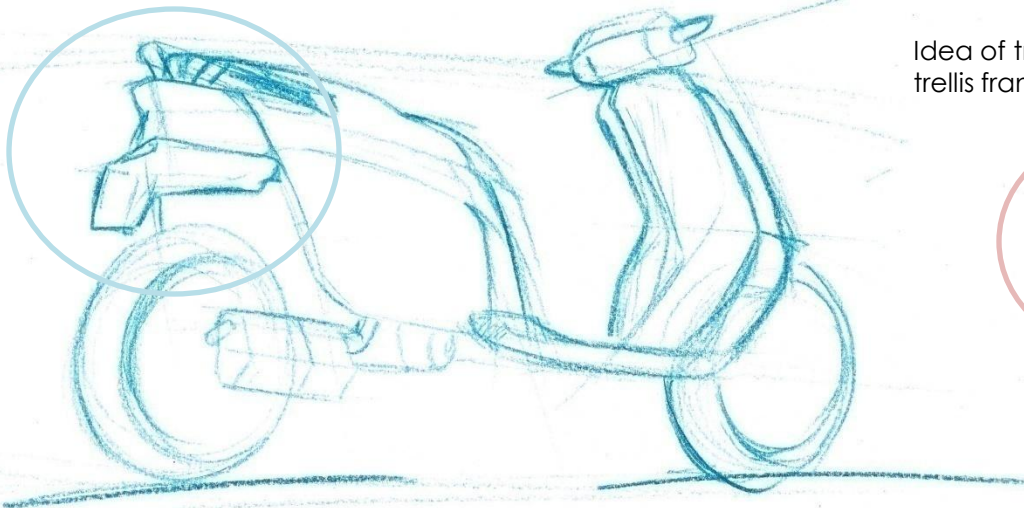
# Ideations



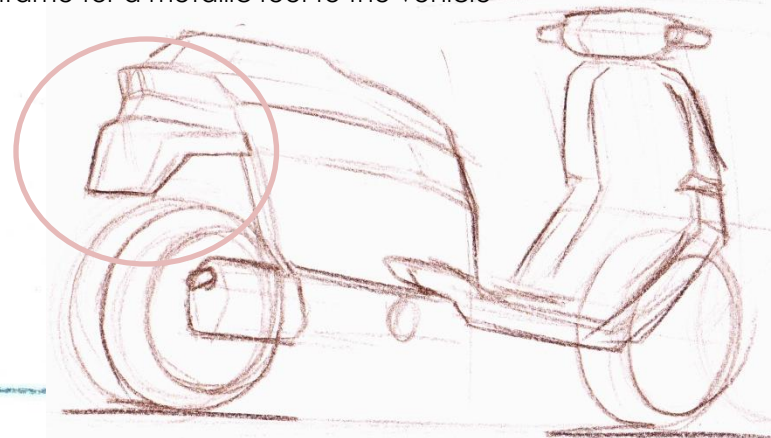
Simple and dynamic rear was taken ahead from here



Heavy front with exaggerated side panels and a light rear with exposed wheel and transmission

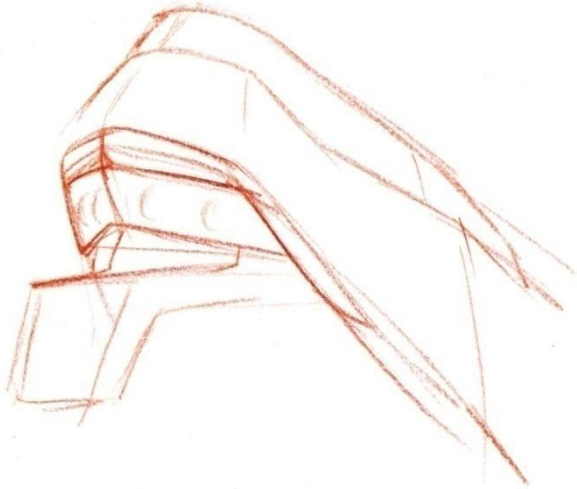


Idea of trailing mudguard was converted to trellis frame for a metallic feel to the vehicle

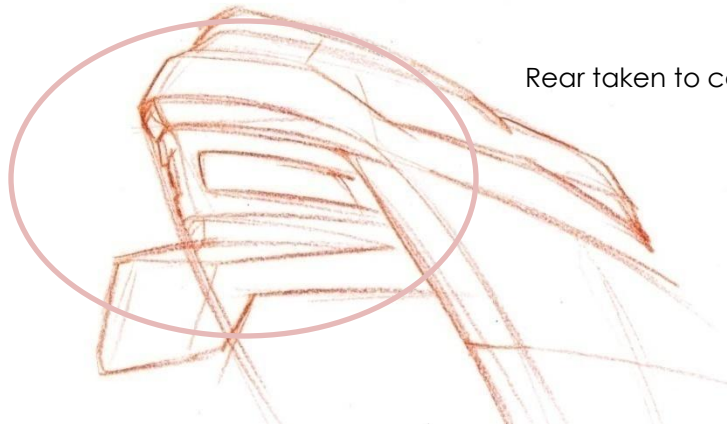
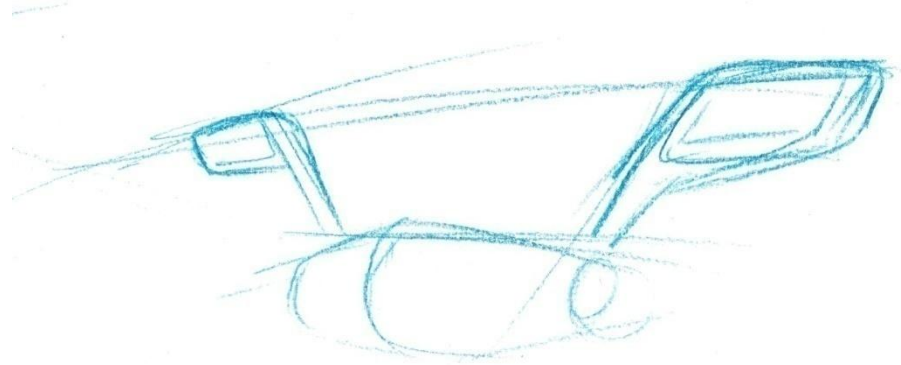


# Ideations

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Dynamism in the rear with backward pointing tail



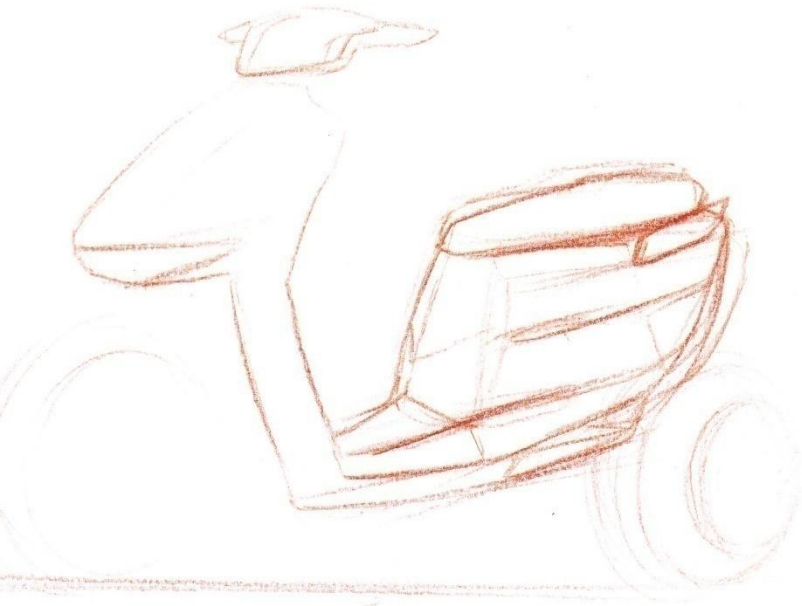
Rear taken to concept



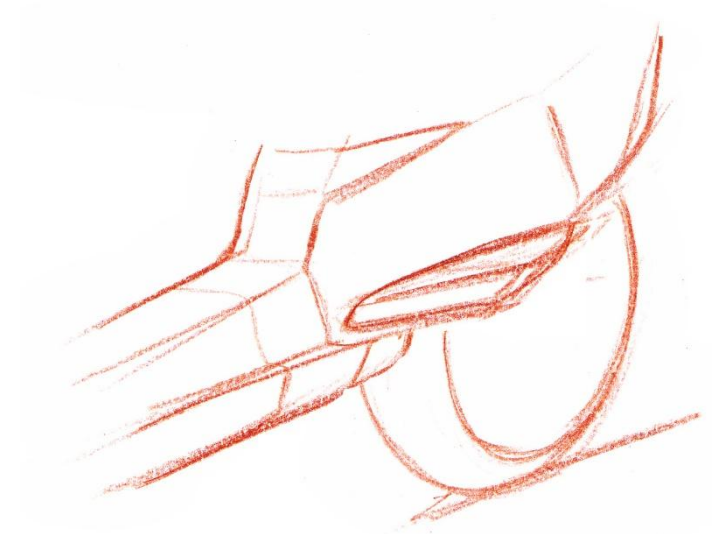


# Footrest Mechanism

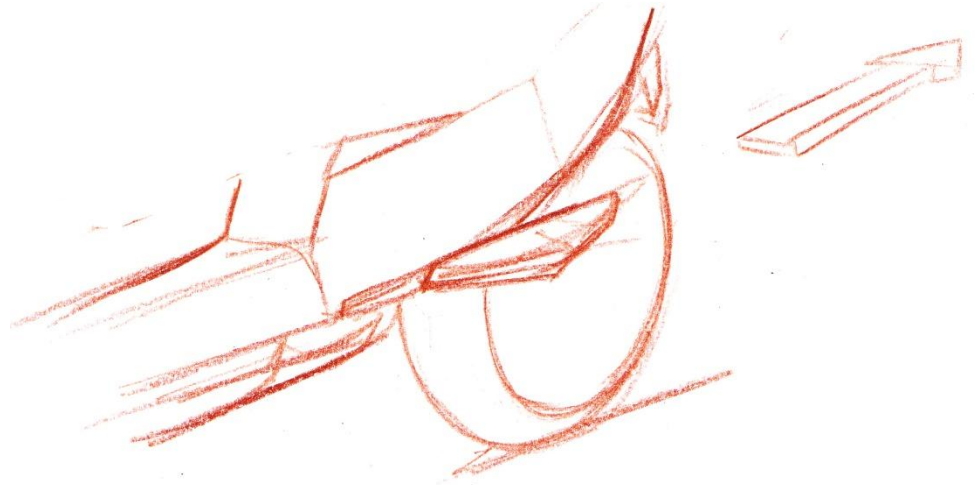
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Parallel foot rail and grab handle



Adjustable footrest can be guided back and forth as might be the way of sitting





# Concept 1

# Concept One - Scoobike



Dynamic form  
Visually Heavy in appeal  
Heavy Front  
Edgy Look  
Popping out instrument Panel  
Bulky Form  
Body coloured rear view mirrors  
Motorcycle like grab bars



Extended mudguard  
Exposed rear wheel  
Protruding Handle bars  
Faceted side panels  
Heavy rear  
Boomerang spokes in wheels

## Evaluation : Concept One

[illegible]

# Concept Two - Modernistic

Emulating a face on the front  
Indicators on the handle  
Pushed down headlamps  
Body coloured rear view mirrors  
Utilization of space in front of the vehicle  
Backward swept back by wind look



Trellis frame at rear for a bike like look  
Scratch prevention protruding plastic strip on the side panel  
Exposed rear wheel  
Quadra reflector tail lamp, integrated with indicators  
Rugged looking larger luggage compartment for a sense of safety, which camouflages with the rest of the panel

## Evaluation : Concept Two

USERS													
Criteria	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	Total	Weightage	Total x Weightage
Perceived Comfort	9	10	9	10	9	10	10	10	9	10	96	25	2400
Dynamic Form	10	10	8	9	9	9	9	10	9	9	92	15	1380
Vehicle Stance	10	9	8	9	10	10	10	9	10	10	95	10	950
Modern look	10	9	9	9	9	10	10	10	9	10	95	10	950
Visual Heaviness	9	10	9	9	8	9	9	9	8	9	89	10	890
Dual tone of Colours	10	10	8	9	9	10	9	9	9	10	93	10	930
Speedy and Sporty	10	10	8	10	10	9	10	10	8	10	95	10	950
Sober and Elegant	10	10	8	9	9	10	9	10	9	9	93	10	930
Total Score per User	Score out of 10											100	
Concept Score	78/80	78/80	67/80	74/80	73/80	69/80	76/80	70/80	71/80	77/80	748/800		9380/10000

# Concept Three- Contemporary



Emulating face on front fascia  
Aggressive front indicators  
Combination of Material and Textures  
Racing /Sport stripe on the soft nose  
Interlacing panels with sharp aggressive embrace  
Split swept back headlamps  
Adjustable footrest for pillion  
Flamboyant use of black in non metal parts



Rear Indicators cum grab bars  
Luggage space  
Extended mudguard  
Punched in tail lamp giving a sporty look  
Conventional/bland luggage box



## Evaluation : Concept Three

USERS													
Criteria	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	Total	Weightage	Total x Weightage
Perceived Comfort	10	10	8	10	9	9	9	10	9	9	93	25	2325
Dynamic Form	9	10	8	9	8	10	10	8	9	9	90	15	1350
Vehicle Stance	9	10	9	9	8	8	8	10	10	10	91	10	910
Modern look	10	9	9	9	9	8	8	8	9	9	88	10	880
Visual Heaviness	9	9	8	9	8	8	8	9	9	8	85	10	850
Dual tone of Colours	10	10	9	8	8	8	9	9	10	9	90	10	900
Speedy and Sporty	10	10	9	9	9	9	8	8	9	8	89	10	890
Sober and Elegant	10	10	8	9	8	9	9	8	10	9	90	10	900
Total Score per User	Score out of 10											100	
Concept Score	77/80	78/80	68/80	72/80	67/80	69/80	69/80	70/80	75/80	71/80	716/800		9005/10000

Result

After going through this evaluation with 10 middle aged users the results of the evaluation were as:

9005/1000



### Concept One

Males users preferred to buy this one if they were to use it themselves.

The fusion of elements from a bike into a scooterette was liked by the users.

Perceived driving comfort was assumed to be higher with this concept.

*Three out of ten users would buy this Vehicle.*

9380/1000



### Concept Two

Likings of female users was most for this concept.

The frontwards projecting footboard from behind the front wheel was admired by male users as well.

*Six out of ten users would buy this Vehicle.*

9005/1000



### Concept Three

Experiment with a third off beat colour was liked in this concept by males as well as females.

Combination of black and a base colour was also preferred , specially on the front panel

*Two out of ten users would buy this vehicle.*

.....[1 user would buy concept 1 for himself and concept 2 for his wife].....

# Modelling

# Modelling



- The basic parts were modelled on Automotive Alias and CNC Milled.
- Required sizing and shaping was done with hand and two layers of finishing putty were coated before painting

Scale of the model is 1:5

Most of the basic components of the model were made in PU Foam.



# Modelling

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A mock up of the wheel base was milled before and fixed to scale to take care of the dimensions during model making and joinery.

## *Changes in the Design*

- Backwards curved alloys were changed to boomerang alloys
- Form of the seat changed from traditional to one that drops down towards the footboard
- Removal of the black streak from the side panel





# Modelling



## *Materials Used*

LEDs for lamps

Acrylic sheet (3 mm) for rear assembly

Aluminum for trellis frame

PVC for handles

Polystyrene for levers and grab handles

Aluminum sheet (.5 mm) for glass and mirrors

Acrylic sheet (1.5 mm) for lamp covers

Cavities for lamps were scraped out from the model and the space for display cluster was also carved on the head

After painting, different components were assembled together in place



Model

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## Image References

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THANKS