European International University, EIU-Paris

Doctoral Thesis

Title:

AN ANALYTICAL STUDY OF DRIVER AND RIDER SATISFACTION IN APP BASED TAXI AGGREGATOR MODELS IN SELECT CITIES OF INDIA

Submitted by:

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Date:

2nd September, 2024

DECLARATION

I hereby declare that the work in this thesis entitled, "An analytical study of Driver and Rider satisfaction in App based Taxi Aggregator models in select cities of India" has been undertaken and completed by me for the award of the degree of Doctor of Management (D.Man) with European International University, under the guidance of Prof. NMK Bhatta, Professor & Dean, Xavier Institute of Management & Entrepreneurship, Bengaluru.

I also declare that this thesis is an original work and has not been submitted for any degree or diploma in any other university or institution. Further, I declare that the texts, figures, tables, and any other material taken from other sources have been acknowledged, referred, and cited to the best of my knowledge and understanding.

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CERTIFICATE OF ORIGINALITY

This is to certify that the thesis titled, "An Analytical Study of Driver and Rider Satisfaction in App-Based Taxi Aggregator Models in Selected Cities of India," is a bona fide research work conducted by Chandrakaladhar Reddy in partial fulfillment of the requirements for the award of the Doctor of Management (D.Man) degree from the European International University (EIU-Paris). This research was carried out under my supervision and guidance.

The thesis represents an original work undertaken in accordance with the academic regulations of the European International University. The content of this thesis reflects the independent research efforts of the candidate. This thesis has not been submitted for the award of any degree, diploma, or other qualification at any other university.



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UNIVERSITY APPROVAL

This dissertation titled, "An Analytical Study of Driver and Rider Satisfaction in App-Based Taxi Aggregator Models in Selected Cities of India," has been examined and approved by the European International University (EIU-Paris) for the award of the Doctor of Management (D.Mgt.) degree.

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Abstract of dissertation entitled

"AN ANALYTICAL STUDY OF DRIVER AND RIDER SATISFACTION
IN APP BASED TAXI AGGREGATOR MODELS IN SELECT CITIES OF INDIA".

Submitted by
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for the degree of Doctor of Management (D. Man)
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App based taxi aggregator business thrived India for few years from 2010, when Ola, one of the early pioneers of Indian App based taxi aggregator business. Later in the year 2013, Uber, the key International player of APP based taxi aggregator business entered in India. During the initial years of launch of the App based taxi aggregator business in India by Ola and subsequently by the entry of Uber, created so much of demand for the taxi drivers and looked very promising profession as livelihood. India with huge population of youth looking for steady and guaranteed source of decent earnings as employment and livelihood, made use of the opportunity fullest. Most of the unemployed youth from rural areas was lured into App based taxi aggregator business as drivers, as this was easy to take the opportunity with less hurdles of qualification and skills. In the beginning the earnings of these drivers was very handsome, because of which, some the low end IT professionals and other blue collared employees quit their jobs to become drivers of the App based taxi aggregator business.

However, from the latter half of 2016, there were lot of concerns and issues raised by these drivers of App based taxi aggregator business. There were protests and agitations staged by them. Post 2017, there were lost complaints and concerns raised by the users of the App based taxi aggregator business. App based aggregator business was in the news very often (in fact regularly) with concerns, complaints and issues of both the drivers and users of App based taxi aggregator business.

Later in 2019 there were news about App based aggregator companies, as they were "only burning and no earning". Ola was bleeding heavily with losses. Later the advent of Covid across the world in 2020 was double whammy for the Indian App based taxi aggregator companies, as the hospitality and transport industries were directly and hugely impact by the Covid. Also the aggregator companies are resorting to flout laws of the land and evade regulatory norms and not adhering to the compliance, in order to boost their their revenues and profits.

This research aims to study current satisfaction levels and the causes of dissatisfaction of Taxi drivers and Users of App based taxi aggregator business across cities of India. This study. Analyses these causes, of issues and problems to drivers and customers and come up with

possible solution to improve the satisfaction levels of the drivers and customers in the App based taxi aggregator business.
The study also studies the root causes of why the App based taxi aggregators not performing well financially, in spite of the use of advanced technology and not able to maintain the satisfaction levels of the customers and taxi drivers. This study evaluates different business models of the App based taxi aggregators. Also, find issues and glitches with current predominant business model of App based taxi aggregators, "commission based" model. Come up and propose an optimal business model which can improve the satisfaction levels of the Taxi drivers and customers and improve the financial and overall performance of the App based taxi aggregators in India without flouting any laws of the land and adhering to the all compliances and regulatory norms.

Keywords: *App based taxi aggregator, Taxi drivers, Taxi users, issues of taxi services, performance of App based taxi services, issue of city commute, Ola, Uber*

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Chapter 1: Introduction

India is hugely populated country with lot of young people looking for employment and livelihood. There's huge demand for employment both in skilled and unskilled professions. Since most of the young people, are moving out of rural to urban areas, there's increasing demand for the unskilled jobs, especially for the jobs where there's not much demand for the qualifications. One of the easily available and quick to start working on is taxi driver job. This does not need any educational qualification but just a driver's license. So, most of the young people moving to cities are opting for the Taxi driving as job or livelihood.

Traditional taxi services which were run by predominantly travels or taxi services vendors are still existing though demand is low. In the traditional model the driver usually gets a smaller number of trips and earnings are limited. Most of the trips booked in the traditional model are one-way trips thus causing the dead milage in the return trips most of the times. There is also lot of waiting period for the trips as they have wait for the bookings from travels or taxi services vendors. With advent technology and App based taxi services model, there was lot of demand for drivers as there were many bookings through the App and trips for the drivers increased in multitude. Thus, causing the spike of the drivers opting for the App based taxi services model. For the customers in the traditional model had to wait till the cab is available with travels or the taxi services vendor or they need pre book the trip at a higher cost. Another issue for the customer was the availability of taxi services in their return journey at any point of time. When the customers travel to other cities they could not book the taxis if their travels or taxi services vendor did not have the services in the city. So customers also quickly adopted to the App based taxi services. This enabled the customer to book the taxi whenever they wished to and wherever they wished from. Also, availability of App based taxi services in most of the cities enable the customer to enjoy the seamless services wherever the App based taxi services existed. Thus,

the App based taxi services was popular both for the customer and drivers.

In the current App based taxi services business there are many players across the world and in specific India. There are many business models existing in the market currently. Despite so many players and so many business models available in the market, the key stakeholders are not happy with the situation yet. For taxi drivers the key issues are undue stress due to the

overload of the trips and dwindling earnings. For the taxi users the key issues are the lack of availability of taxis on time, quality of services and the erratic pricing for the trips.

Many researches and surveys are conducted on this topic, however, there is no good solution yet for the problems of both Taxi drivers and Taxi users. So here is the attempt to address the issues of App based Taxi Aggregator model come up with an optimal business model which can satisfy the customer with availability of taxis in time, with qualitative service at considerably reasonable prices, and increase the earnings to the drivers at reduced stress levels. Also, with the changing lifestyle of the young people and increased employment and business transactions, there was a lot of demand for transportation, in specific city commute.

Though the public transport is improving with the times, still there's a lot of demand for the taxi services due to the non-availability of the public transport from any point of the city and ay time of the day. So, the demand for taxi services increased phenomenally both from the demand and supply perspective. Also, App taxi services provides a very good solution as huge employment option for the lower end and unskilled population and very good solution as ease of commute with in the city.

1.1 Background of the study

In the second half of the year 2016 and beginning of 2017. I was travelling extensively, to US or Europe on business and sometimes with in India domestically for business study or personal. Every time I hire a taxi to reach the Airport from home and taxi from the Airport to residence upon return, found the drivers usually bit unclean and sleepless, also the taxi untidy and smelling sometimes. When enquired about the same with the drivers almost everyone were of the opinion that they were on the steering wheel for long hours and hardly any time for sleep and rest. In spite, their earnings were meager and not sufficient to run their lives steadily. They did not trust any App based aggregator and felt they were cheated by the companies in the name of commission.

Out of curiosity started interviewing some of the customers (mostly regular taxi users), most of them had issues with App based taxi aggregators. They were pained by the undue pricing during peak hours or surge. There was no consistency is the taxi fares for a given distance as it changed quite frequently. They were also not aware of the fare share between the driver and the aggregator company. No transparency in the fare share. Other key issues for them were taxi

availability and cancellation of trips after the driver was allocated to the trips. Whenever a customer tries to book a taxi and it takes a lot of time for the trip/driver to be confirmed, and once the trip/ driver is assigned it takes more time for the driver to pick the customer than the first shown Estimated Time of Arrival (ETA). This caused a problem for the customers to book the taxi much in advance of their trip or wait for long till the taxi arrived. Another key issue for the customers was the cancellation of taxis once the booking is confirmed. Once the booking was confirmed, the driver would call the customer to check the destination of the trip. If the drivers found it unviable, they requested the customers to cancel or they were cancelling by themselves. So, these issues and the pain points of drivers and customers, interested me to the research on the same.

Though Ola was founded in India by Bhavish and Ankit in 2010, it started its App based taxi services only in 2013, when it was funded $5 million USD by Tiger Global Management in the year 2012 and subsequently in 2013 another round of funding of $20 million USD by Matrix Partners and Tiger Global Management. The same year Uber the international App based taxi services key player entered Indian market. Though Indian market had the huge potential, App based taxi services was new to the market.

So, to habituate the Indian market to the App based taxi services, both Ola and Uber have spent lot efforts and funds on marketing, to lure the Indian taxi drivers and users to the App based model and lot of incentives were given to drivers and free trips and other discounts were announce for the taxi users. Driver earnings were very lucrative and attracted many people into Taxi driver as employment. There were many cases where some of the white collared employees also opted for taxi driving as core employment for the earnings potential it had. Once the marketing spend was exhausted companies were looking for the recovery of revenue. Drivers were charged 25-30% as commission for the trips and customers were also charged heavily during the “peak hours” and surge pricing was applied to customers for their trips. This caused decreased earnings for the drivers and increased cost of the trips for the customers.

To increase the revenues in the commission-based model the companies followed two methods, first by increasing the number of trips per driver in effect multiplying the revenues per driver and secondly by increasing the price per trip in effect increasing revenues per trip. This caused undue stress on the drivers and coupled with dwindling earnings drivers were unhappy with the situation. This led to bad services of trips, unclean taxis & shabby drivers. Customers were

unhappy with the situation as the quality of service degraded and the cost of the trips increased during peak hours and surged pricing.

In 2017 there were major strikes called for by the drivers of the major cities like Bengaluru, Delhi, Mumbai. Customers took to social media and other modes of communication to express their issues and grievances against the App based taxi service aggregator companies.

Also, the major App based taxi aggregators like Ola and Uber are not making enough revenues to break even the situation and show the ROI. They are having lot of operational issues and they have not shown profits yet. There were also many players who entered the App based taxi services market and could not sustain for long as the operation costs were so high.

Another major blow to all the stake holders, specially the App based taxi aggregators and drivers was the pandemic. Corona pandemic caused a big blow to the hospitality and transportation business areas. So overall taxi services business and in specific the App based taxi services was hugely devastated. App based taxi aggregators had to maintain large number of technology staff, operational and other support teams. During the Pandemic with no business there were many layoffs and small players had to shut down the operations completely.

1.2 Research Objectives, questions and hypothesis.

In India, App based Taxi Aggregator services started their business with an objective to solve the key issues of city commute using the technology. They were able to reach customers anywhere and anytime using app at their fingertips. This helped customers by making available taxis as per their use at any point of time and place. However, they were exploited in the name of Peak hour/Surge, where the fares were obnoxiously high, there were a lot of cancellations by drivers. Initially the drivers were happy with increased business and earnings. However, their earnings were dwindling day by day due to price competition between the aggregators, commissions by the aggregators etc.

During the pandemic one of the most impacted business area was taxi services. The taxi drivers underwent lot of hardships, for their living and survival. They had no income for their day-to-day living, some of the taxis were not in running as the drivers had not paid insurance, missed their EMI’s, sold their taxis for survival, some drivers had moved to other source of living.

Post pandemic, as the business got back to the normal and demand for the taxis increased, there was pressure on the taxi aggregators to meet the demands with short supply of taxis. This led to entry of many new players also into the business. However, off late, there seem to be lot of

issues and problems in this area. There were a lot of protests and agitations from the driver community and many issues were raised and complaints registered from the rider community.

Taxi Drivers felt they were at the receiving end of the system as their earnings dwindled due to low fares and raised input costs of cars, fuel etc. They complained of heavy losses and inability to meet their ends in day-to-day living. Customers on the other hand complained of non-availability of taxi, longer booking times, frequent and increased cancellations, lack of appropriate customer support system.

The aim of this research study Driver and Rider satisfaction in App based Taxi Aggregator models in select cities of India. The following are the proposed Research Questions

RQ 1: What are the key issues of city commute in App based taxi aggregator model?

RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?

RQ 3: What are the existing pricing models existing in the current App based taxi aggregator model and how they impact the overall customer and driver satisfaction?

RQ 4: What is the existing safety & security measures existing in the current App based taxi aggregator model and how they impact the overall customer and driver satisfaction?

RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?

Chapter 2. Literature review

As per the news article of Times of India, 8th April 2022, Driver cancelling the ride" is the top issue consumers face with app based taxi aggregator, followed by Surge pricing, long waiting period for booking and cancellation charges, revealed a survey by Local Circles. As described in the same article, 71% of the customers feel that cancellation by drivers persists and 45% of the respondents said they were charged 1.5 times more during the surge pricing.

Contextual Relevance to my thesis and the key Gaps that my research is going to address.

Most of the articles, surveys and researches have clearly highlighted the key issues existing with the current App based taxi aggregator business. They were able to reach out the customers

and able to gather the information what are the key issues, and gravity of each of the issue on the customer satisfactions and plight of the drivers with App based aggregator business.

Though most of the articles, surveys and researches have identified the key issues faced by the customers, the root cause of these problems was not clearly outlined and explained. Therefore, this study aims to explore more into the root cause of these issue or problems to customers and analyze the issues for a probable solution if any.

The driver cancellations were predominantly because of the earnings of the drivers for most of trips were not viable with increased input costs like fuel costs, inflation etc. Surge pricing is irrationally high and customers are penalized heavily though the drivers do not receive the proportionate share. Most of the times even of the driver requests for the cancellation or drivers cancels the trip, the cancellation penalty is levied to the customer. This penalty has to be paid in order to continue the services of the App based aggregator and to book the next trip. Even the booking experience has deteriorated so much, it takes longer durations to book a cab and when there are not many drivers and too many customers are booking, leading to surge pricing.

Most of the cancellations from the drivers are predominantly for the reasons as following. One, the fare of the trips is so low that it does not even meet the fuel costs and maintenance of the taxi or cab. Other costs like the EMI for the vehicle loan against the taxi, Vehicle Insurance, periodical Vehicle tax all add up to huge loss. Another reason for the cancellations is extra mileage, typically for short trip, distance travelled to pick the customer is more than the distance of the trip which accounts for additional costs. Another reason is dead mileage, where driver has to travel longer distance in order to get the next trip after drop and completion of trip being cancelled, for example, if the trip is to a remote location where the getting a booking for the return trip is rare or may not be possible, causing long empty return trips.

Longer waiting period of the customers for booking a trip is because, post pandemic there are less number drivers on App based aggregator business as most of the drivers during and post pandemic have looked for alternate livelihood or changed their profession. This is because during the pandemic, the drivers could not afford to pay EMIs, Insurance, no livelihood too from the taxi business. So they sold their taxis and shifted to other professions. Also the advent of Auto onto App based aggregator platform has demotivated the taxi drivers to opt out of the business causing the shortage of taxis.

Surge pricing is the total exploitation of the customers by the aggregators. Post-pandemic, the app-based taxi aggregator business recovery is approximately 70% both in value and volume.

But the availability of drivers is only around 50%, causing a surge in demand against the supply. So the aggregators are taking full advantage of the situation and charging the customer obnoxious fares. The benefit of the surge is not passed on to the drivers fully though.

With increased input costs like fuel, vehicle costs, living costs due to inflation, etc., drivers are resorting to arm-twisting methods to make their earnings. Drivers contact the customers directly and request them to cancel the trips and book the trips directly with drivers. Because of this, customers are sometimes charged cancellation fees.

Some demand the payment of trips to be made only in cash. In some cases, customers end up paying the drivers in cash fully for the trips and still have to pay the aggregator too as the payment to drivers sometimes is not reflected in the app or same information is not updated to the App based taxi aggregators.

In some cases, driver extortions are happening depending on the helpless situation of the customer. Drivers take bookings during the wee hours in public places like railway stations, bus stops, etc., and switch off the app once the customer arrives and demand 1.5x to 2x the price for the same journey.

Looking at the problem from a different angle, according to the Fairwork India Report 2021, Ola and Uber scored a 0/10 in an annual study of work conditions of gig workers on digital platforms in India. Drivers are at the receiving end, with no social benefits like health and family insurance, good work-life balance, or help in case of an eventuality. They are incurring huge losses, not just decreased earnings in their livelihood.

Contextual Relevance to my thesis and the key Gaps that my research is going to address.

There is notable research made on the issues faced by the drivers in the App based taxi aggregator business. How they are facing problems with the decrease in their earnings and how they are overs stressed and so on. Similarly, how the customers are facing the problems with delay in the booking confirmation and cancellation of trips once the booking is confirmed. Lack of clean vehicles and stressed and untidy drivers and so on.

There is notable research on the issues faced by drivers in the app-based taxi aggregator business, such as the decrease in their earnings, over-stress, and related problems. Similarly, customers are facing issues with surge pricing, delays in booking confirmation and trip cancellations once the booking is confirmed, along with a lack of clean vehicles and stressed, untidy drivers.

No research or study has deeply addressed or pinpointed why exactly this is happening and what is the root cause these problems. My research and study is to try and find what is root cause of these problems and is there a possible optimal solution if not accurate and exact. As per my initial research and analysis after interviewing the taxi drivers and customers and going through the available literature on this study, strongly feel that there is not enough research or literature on the optimal business model for the App based taxi aggregator business and its impact on the stake holders in the system. My research emphasis is to find if it is possible to come up with the right or optimal business model which can probably keep most of stake holders of the system happy.

Most of the research or studies have not deeply addressed or pinpointed why exactly these problems are happening and what the root causes for these problems are. My research and study aims to identify the root causes of these problems and whether there is a possible optimal solution.

Based on my initial research and analysis after interviewing taxi drivers and customers and reviewing the available literature on this topic, I strongly feel that there is not enough research or literature on the optimal business model for the app-based taxi aggregator business and its impact on the stakeholders in the system. My research emphasizes finding whether it is possible to develop the right or optimal business model that can probably keep most stakeholders in the system happy.

2.1 Evolution and future of the Cab Aggregator Industry in India

According to Utkarsh, in his article "Evolution of the Indian Taxi Market – Comparing the Biggies" published in Inc42 on November 25, 2014, Mega Cabs and Fast Track Taxi started in 2001 with small fleets. The market, however, started seeing traction only from 2006 onwards when the likes of Meru Cabs, Easy Cabs, and Savaari came up. Now there are several players eyeing for a piece of the pie in the App based taxi aggregator business.

Phase 1 – Fully Owned Fleets

In the initial phase of the market companies like travels or corporate transport companies owned the complete fleet of taxis and hired the drivers as salaried employees. This demanded high capital and operational expenses costs from the companies – initial down payments for the taxis or cars, car loan EMI's, high maintenance costs and monthly salaries for the drivers. While this model facilitated rapid expansion, it also came at a huge cost. This caused high

stress levels in drivers, as they were compelled to work long hours, untimely payment of salaries and there were driver strikes that affected the service. Bookings were mainly done via telephone calls and cash was the dominant model.

Phase 2 – Fleet Aggregation Model

Companies like TaxiForSure and Uber started this model where small fleet owners or single car/taxi owners could brand the car in the name of the Fleet aggregator companies, and get registered with them. Taxi drivers were allowed to take their own trips or rides outside these company booked trips or rides, but for every company booked trip or ride, the drivers paid the company a fixed percentage as commission. This model had low capital expenditure for the fleet aggregator companies and very less or no maintenance costs, only nominal operational costs. Booking was done by calling over the telephone as well as online through the company websites. Though paying by cash was still the dominant payment form, in-cab POS gadgets for credit/debit cards were being used as well by some of the companies.

Phase 3 – The Hybrid Model (Current Phase)

In the hybrid model some of the cabs/taxis are owned by the company and others being registered as part of the aggregation model, hence providing the best of the Fully owned and Aggregation Model – better control on cab availability and service quality while keeping costs low. Booking are done via telephone, website as well as mobile apps and the payments via cash, card and wallets and post pandemic payment by UPI is prevalent.

The Road Ahead

The App based taxi services business in India has a huge scope for growth and is far from saturation. Though there is good future for expansion in B grade or tier 2 cities, the metros will still be the key players of market of all. Therefore, there might be a price war and lot other options in features, introduction of cutting edge technologies like AI/ML and electric vehicles and so on.

More and more hatchbacks and low-cost options will be introduced to cater to the price-conscious Indian market and to compete against other forms of public transportation. Service assurance, quality, and convenience will emerge as the long-term differentiators.

2.2 Driver Satisfaction

As per the “Business Standard” Sunday, May 05, 2024 edition, around 47% of App based taxi/cab drivers face some form of violence when on duty as per their survey report. And as per the same news survey, most of drivers work long hours 83% of cab drivers work over 10 hours a day and as much as 31% exceed 14 hours every day. Still, most of them around 72% of taxi/cab drivers find it difficult to manage expenses and a substantial percentage earns below INR 15,000 per month.

The long working hours adversely impact the health of these workers with about 93.3% of the cab drivers complaining that they face physical pain, including joint pain and backache.

In another instance, Akriti Bhatia, a research director and Assistant director at Miranda house, University of Delhi, said, "Gig and app-based workers should be treated as employees and the companies should ensure that drivers get a minimum wage." This is very critical as the cab/taxi drivers are invariably in trouble or not having decent earnings and livelihood in spite of all their hard work and stress they Undergo.

Contextual Relevance to my thesis and the key Gaps that my research is going to address.

The research of Akriti Bhatia, clearly states that there are issues for the Gig workers and App based taxi drivers. It highlights issues and also proposes an action item of providing minimum wages to the drivers and treating them as employs. Ensuring the drivers are having steady and assured income for their living. The research is very relevant as it clearly mentions the factors affecting the satisfaction of taxi/cab drivers. However, it does not get into deep analysis of the root cause of the issue. Hence my research will analyze the factors which could influence satisfactory levels of the taxi/cab drivers and root cause of these problems and possible solutions to improve the situation, analyzing different factors and their impact on the overall App based taxi services business.

As per the Yelowsoft journal blog dated June 09,2022,

1) Most of the drivers who registered with App based taxi aggregators, made lot of earnings during the initial periods of the launch of these aggregator apps. For example, in the year 2016, Uber gave lot of incentives and offers to drivers. On averaged an Uber drive in Delhi who worked for 10 hours used to make INR 50,000/- after paying his car loan EMI, fuel expenditure, and other maintenance costs. However, later by the end of 2016 all the incentives and offers were discontinued. Uber reduced its per KM charge

from INR 11 to INR 6 to attract more customers to the App based taxi aggregator services.

2) Drivers, in the earlier stages of launch of the App based taxi aggregator business used to get an incentive of INR 2000 up on completion of 10 to 12 rides each day, now given weekly incentives only on completion of 40-50 rides. On top of that to add to the low earnings issues of drivers Uber hiked its commission from 10% to more than 30%.
3) The drivers complained that their earnings had stooped down to INR 800 per day. Such meagre amount is not enough for their survival especially when they have to pay EMIs
4) of their car loan. The miserable condition of drivers forced all the driver associations to come together and raise their voice.

As per the article by Anurag Mazumdar in The Wire journal dated March 05, 2017, the taxi/cab drivers of App based taxi aggregator business have argued that their incomes were steadily falling over the past six months as App based taxi aggregators Ola and Uber added more cars as part of their own fleet to their network from. Moreover, the amount offered as part of incentives for completing the stipulated number of rides started decreasing significantly. Critically, most of the rivers felt that they were often not informed and kept in the dark about dynamically changing incentive offers. As incomes started to decline quickly, most of the drivers found it very challenging to pay out a major portion of their monthly earnings as equated monthly installments (EMIs) for loans from banks, relatives, or loan syndicates that they have taken for purchasing their cars. All these cribs and grievances, coupled with the no or lack of proper or conventional redressal system in place, proved to be a perfect feed for massive strikes and protests against cab aggregators by taxi/cab drivers.

As per the above literature, it's very clear and evident that drivers were very unhappy with the situation in the App-based taxi aggregator business as early as 2016-17 and even till date. The main concerns of the drivers are stress due to the long hours at the wheel and decreased earnings. Most of the drivers are forced to work for more than 10-12 hours a day at least to earn enough to meet their daily needs, in spite of which their earnings are still not enough to meet their ends. Most of the drivers are also facing a lot of health issues like sleeplessness, severe physical pains like joint pain and backache. They are afraid that their post-mid-age life is going to be sick and with health issues, which might demand more financial support for health even after their professional life

Drivers also feel apathy towards them not only from App-based aggregator companies but also from the government as they need social support from the government for their health and other basic needs. They are also very concerned about their everyday risky life, prone to accidents in the Indian scenario which is relatively high. They are seeking support for accidental support for themselves and their families in case of eventualities.

As per the Matters India Reporter, excerpts from the workshop conducted on platform-based taxi drivers' problems.

1) Drivers have encountered instances some times where they experienced long waiting periods of up to 5-6 hours without any trip. Rubina, a participant of the workshop from an NGO in Hyderabad told that system was designed in a way to fail, deceive, and exploit hardworking drivers.

2) The same workshop also revealed the stories of experienced and senior drivers who have worked in the industry for very long since the year 1999. These senior drivers explained how they were forced to search for alternative options of livelihood because of the current situation due to the App based taxi aggregators. The mounting issues and difficulties faced by the drivers calls urgently for addressing the issues and problems faced by taxi/cab drivers of App based taxi aggregator business.

In the current situation, drivers feel that they are at the receiving end and are being exploited by the App-based taxi aggregator companies. Some feel that whatever may be the situation, the driver would not benefit in the end. It's either customers who enjoy the trips at discounted prices during the lean hours of business or the aggregator companies who take more than the normal fare during the peak hours or surge pricing. It is observed that during the surge pricing peak hour pricing, where the customers are charged obnoxiously high like 1.5x or 2x or sometimes even 2.5x to 3x, drivers are not getting the prorate benefit. In such cases, a major portion of the benefit is taken by the aggregator companies and only a small portion is shared with the drivers.

In some cases, drivers are made to wait at the airports for 5-6 hours or even more duration sometimes depending on the flight arrivals traffic. However, sometimes it's a deliberate act of the aggregators to prevent the drivers from reaching the incentive target. For example, some aggregators give incentives if a driver completes more than 50-60 trips a week. When a particular driver reaches around 80% of the target, they are deliberately made to wait too long

to confirm the next booking or given long-distance and duration trips with a possibility of no return trip or booking. This way the aggregator companies would be able to save a lot by avoiding the incentive payment to most of the drivers. It's felt by the driver community that the aggregator companies have a special technology or program to ensure that only a meagre percentage of drivers can achieve the target. In some cases, there are some preferred drivers (those drivers who have leased the vehicle from the Aggregator companies directly) whom the aggregator companies want to achieve the same.

As per Harini Nagendra, in her article in Scroll.in dated September 05, 2018, “Have Ola and Uber eased India’s traffic or made them much, much worse?” her catching statement is “Our cities are filling with tens of thousands of new taxis. The downsides may far outweigh the advantages.” Indian cities have an infamous reputation for their traffic jams and smog-filled air. In a city like Bengaluru, which is bursting at the seams with 5,207,693 two-wheelers and 1,449,334 private cars, it has become routine to spend between two and three hours in daily transit.

As per R. Sukumar, in his article in Mint, dated May 21, 2017, “Are Ola and Uber causing traffic congestion in Indian cities,” cabs may provide more efficient use of cars, but the issue is the dearth of road space in our cities, not cars for purchase. Our cities are filled with tens of thousands of taxis, which move around from drop-off point to pick-up point looking for customers, a phenomenon known as deadheading. Despite efforts to build efficient algorithms that minimize such movement, deadheading clogs road space and burns additional fuel. This increases existing high carbon emissions and releases more pollutants into the already choked air. The NCR has around 2.5 to 3 million cars. Not all of these are on the road every day (indeed, a small proportion may never be driven), but there is no data on the number of cars on the roads of the NCR on a typical day. Still, 125,000 is a lot and based purely on the anecdotal evidence of how easy it was to negotiate the commute to the office in mid-February when app-based taxis went off the roads, they do seem to have contributed to the NCR’s traffic woes.

Pune and Bengaluru were among the top 10 most congested cities in the world in 2023, according to a report by TomTom Index, a Dutch multinational developer of location technology. Bengaluru ranked sixth globally, Pune seventh, New Delhi 44th, and Mumbai 54th.

So in Indian cities, where traffic congestion is very common and average time to cover 10 KM is more than 36 minutes, drivers end up stating on the roads and on wheels for long for less trips, which means less earnings. Also the traffic congestion on a daily bases takes a toll on the

drivers and social life. Most of the drivers claim that, in order to earn enough and meet their basic needs they end up long hours in the driving and not having much time for the social event or spend with families.

Contextual Relevance to my thesis and the key Gaps that my research is going to address.

Excerpts from the articles of Harini Nagendra, R. Sukumar and traffic congestion report by TomTom Index, it is evident that there are issues for the drivers, customers and society at large due to traffic congestions caused by the App based taxi aggregator business which is relevant to our research and study. However, these survey report and excerpts state the issues and cause of the problems at a macro level, i.e. number of vehicles and taxis/cabs on the road and there's gap of not looking at micro level, like the features and modus operandi of the App based taxi aggregator business from booking of the trip by the customer, pick up, drop and completion of the trip by the drivers.

Another issue which may not have caught the attention of most of the researches or surveys is the safety of the drivers. In some cases, customers misbehave with driver by behaving rudely or abusing them. In the case of a rude woman/lady customer, it's very tough for the drivers to handle as they may be at the receiving end in case of any argument or dispute. In some cases, some customers may not even pay the driver for the trip or ride but the driver will have to pay the aggregator companies.

2.3 Customer Satisfaction

As per Sunaina Chada in her article in Times of India, dated April 8, 2022, "Drivers cancelling the ride, surge pricing are the top issues for the consumers who book app-based taxis".

As per Sharath Kashyap from Bengaluru, the problems with App based taxis Services are as below:

1. **Denial of service or cancellation by taxi/cab drivers:** When customers book their trip or ride thru the app, the taxi/cab driver asks the customer about their destination after the booking is confirmed. If he feels that destination is not of his intended choice then he requests the customer to cancel the booking claiming some issue with taxi/cab or less fuel and so on (which probably could be a lie) and customers though hesitate to tell the destination but to no avail ultimately reveal the same to the drivers.

2. Non availability of cabs during rain: It's very difficult or tough to get a cab when it's raining as the drivers intentionally switch off their app thereby creating fake demand and subsequently causing surge pricing.

3. Difficulty to guide the drivers to the pickup point: It's a Herculean task to guide the taxi/cab drivers to the pickup point as most of drivers are not conversant with the navigation system effectively and in case there's an error with accuracy of pick up point as per the Maps.

4. Quality of taxis/cabs: Usually the taxis/cabs are not maintained well. According to the author Ola mini cabs are the worst maintained taxis/cabs and there is very little or no improvement in spite of repeated feedback. Sometimes the drivers hesitate to switch on the AC even after requesting them.

5. Non availability of On-call support: As the author uses Uber very frequently, the feedback by the author is pertaining to Uber. It's not possible to get a quick resolution as they have only mail support. In an instance the author's wife had a very bad experience with the cab driver and they had to wait for 1 whole day to talk to a customer support executive from Uber.

6. Surge pricing: There is no transparency in surge pricing. Surge pricing should be applied when there is high demand and less cabs available. But as per author even though there are many cabs on road (visible through app) still it will be showing surge charge which is quite unreasonable and the drivers take undue advantage of this facility.

A larger number of users of cab-hailing platforms are now facing instances of drivers cancelling trips after finding the destination, the mode of payment for the fare, or a combination of both, according to the findings of a survey.

According to the article by My India in Maps of India, dated August 26, 2019, "Taking customers for a ride: Problems faced by Ola and Uber users", highlights the key problems faced by the users regularly. These problems are as below:

Women Safety:

Author being woman, the first thing which comes to her mind while booking a cab is regarding her safety. Many issues and complaints have been reported by female taxi/cab users who have faced severe and many problems for their safety while travelling by taxi/cab. In fact, there are cases of some women who have booked cabs at night or travelling to a remote locations have been raped by the taxi/cab drivers, in some instances the drivers have misled women customers

to wrong destinations. Women's safety has been a pertinent issue for which no concrete solutions have been given. So, riding cabs at night specifically for women passengers is still fraught with risk.

Dropping at wrong locations:

This is the most common issue the customers come across. Despite using the GPS navigation, drivers often ask where the customer wants or has to go or what route is to be taken. It is not like we refrain from telling routes, but many a time a passengers are themselves not aware of the route. Though it is the responsibility of the driver to drop the passenger at the right location, most of the times (specifically in pool rides), drivers drop at wrong locations causing inconvenience to the customers or passengers.

Longer ETA:

Another major issue concerning the customers regarding the trips or rides is the 'wait' involved for the taxi/cab to arrive for the pickup. Especially, when the customer is booking the ride through the app, the ETA (Estimated Time of Arrival) shown for pickup for a given trip or ride might be just 3 to 4 minutes. Once the booking is confirmed, the actual ETA or the time to arrive at the pickup point might increase to 10 to12 minutes. Sometimes, the taxi/cab drivers take even longer to arrive. Moreover, whichever pickup location customers enter, taxi/cab drivers will request the customer to arrive from where the drivers can comfortably pickup the customers. Sometimes the drivers take so long to arrive that customers are compelled or forced to cancel the ride and look for an alternative option to travel. In fact, interaction with daily users or customers reveals that a common tactic by the taxi/cab drivers is to deliberately come and park the taxi/cab very near to the pickup spot, usually a colony gate, rather than actually reaching the exact pickup point. The customers or users gets a false impression that the cab is about to reach the them and is ultimately forced to cancel the ride and pay the cancellation charges too for no fault of theirs.

Cancelling ride without notice:

As per a survey mentioned in the Financial Express, this issue is one of the most frustrating! Most of the users or customers face this issue regularly on a daily basis. Taxi/cab drivers take too long a time to arrive and at the end, the ride is called off or cancelled by the driver without giving any valid reason. In cases of an emergency, the customers are users are left bewildered as it becomes difficult to procure another ride immediately. Again, a common practice adopted

by the taxi/cab drivers is to wait for the user or customer to call up the driver before arrival. The drivers then force the users or customers to reveal the destination, and promptly cancel the ride or trip if the destination doesn't 'suit' them! This would have wasted very precious time and the passenger is then forced to book another cab.

Behavioral issues of the drivers:

Most of the taxi/cab drivers come drunk and/or sleepy for the picking up the customer quite normally. Many times, drivers are not even in a position to drop the customer at the right destination point. The bigger issue or worry is that there is no permanent solution to this problem. Though the drivers stop drinking while on duty, for few days after the complaint is raised with the customer support team, they will start the same after few days as they are habituated to drinking. Customer can only contact the customer support and file a complaint, as this process is very time-consuming to follow up with customer care to check on what action is been taken and what is outcome of the same. Customers as they would be busy with their own work, refrain from complaining and don't pay attention to the issue.

Another issue normally is during rides, drivers sometimes become too friendly and start conversing with customers very pally and customers feel like something amiss could take place because the driver is being too frank and friendly. Though App based taxi aggregators like Ola provide a post-paid or wallet facility, sometimes the taxi/cab drivers check upon with the customers in advance if the payment will be by cash!

Drivers asking the customers for directions:

As described above, the third issue of Sharath Kashyap. This problem is quite persistent. However, this problem exists because most of drivers are not well educated to understand the maps, some of te drivers are not conversant with technology or smart phones, another key reason for the issue to be persistent is the training not provided to the drivers before they are engaged on to the App based taxi aggregator business. The problem aggravates when even the customer is not very conversant with technology, smart phones or maps. ware of most of the locations, contribute by looking at the GPS navigation system. In some there exists technical glitch with the Maps software which is used for the route monitoring or directions.

Receiving the lost articles from the drivers:

Sometimes customers or users carrying multiple articles/items during the trip tend to forget some of the articles or items in a hurry to while getting off from the taxi at their destinations,

especially the airport or the railway station. The taxi/cab drivers also may not notice the item lying on the backseat till the time he picks up the next passenger, no way driver can handover the article or item customer immediately. Currently there is no central customer care number or centralized lost & found things support with App based taxi aggregators.

Surge Pricing:

Surge pricing, is one of the critical issues for the customers which has no solution as of now, as all the App based taxi aggregators apply Sure pricing in order to make more revenues, so they are more keen on exercising the same than avoid it. It takes any lame reason like little rain to hike the price of trips or rides to double or more. If it is office timings or peak traffic hours customers will surely regret to book a taxi/cab wit App based taxi aggregator like Ola or Uber in sharing or otherwise.

Although App based taxi aggregators have brought a lot of convenience of travel of the commuters in the major cities or metropolitan areas, it is also a fact that these aggregators cause much of trouble and issues to customers. The due quality of services is bad and deserved by the customers is not being delivered, hence most of the taxi users ort customers are unhappy with the App based taxi aggregators. It is clear and evident that App based taxi aggregators like Ola and Uber are more keen and focused on making money, and not interested in addressing and providing solutions to these burning issues and problems.

As per the article in Mint dated April 6, 2022, “79% app taxi users find 'Driver Cancelling Ride' as the top issue, survey finds.” and a survey carried out by LocalCircles shows that 79% of app taxi users say “Driver Cancelling Ride" after finding a destination or non-cash mode of payment as the top pain point.

Contextual Relevance to my thesis and the key Gaps that my research is going to address.

The issues of driver cancellations cause lot dissatisfaction to the customer which is very relevant to our thesis. As the drivel cancellations are key factor influencing the customer satisfaction. However, the analysis of why these cancellations are happening and what are key factor influencing these cancellations and how this can be brought down avoided is being researched and analyzed as part of this thesis.

In 2017, the Supreme Court gave a directive or stated that App-based aggregators or transport service providers need to be regulated and ensure the safety of women commuters. Both Ola and Uber introduced a 24x7 safety helpline, however, consumers continue to have negative

sentiments for taxi aggregator apps with ride cancellation, surge pricing, customer service, and safety among key concerns.

From the excerpts of different literatures discussed above it is evident that customers of App based taxi aggregator business are having and facing many problems and issues. One of the key issues is the cancellation of the rides by the drivers. In the case of cancellation of ride or trip, driver calls the customer to check the destination. If the destination is in a place where demand for taxis is very low, causing empty return trip then the driver would also cancel the trip. In some cases when the fair price of the trip is very low, then the driver would cancel the trip or ride without even calling the customer. Next major is issue is the Surge pricing. This is also against the law of the land in most cases, where the fair price per KM is more than the stipulated fair price by the authorities. Another issue is booking the trip or ride takes too long, due to lack availability of the taxis in the vicinity or deliberate act of the drivers to not accept the ride thus creating injected surge pricing situation. Next major issues for the women. Or ladies is the Safety of the trips. In spite of numerous cases of untoward incidents and obscene acts by the drivers, there's not much action by the aggregator companies to resolve the problem wholistically. Other major issues are cleanliness of the taxis, quality of service and behavior of the drivers. Most of the times taxis are not clean. It s because some of the drivers use the cabs even for sleeping and claim that due to long hours at drive they don't find time to clean. In some cases, drivers themselves are untidy. In some cases, drivers don't switch on AC even though the customer has booked an AC taxi for their trip. They don't help with luggage in case of elderly customers too. Some drivers speak loudly over the phone while driving or pay the music loud. Some drivers behave rudely while communicating or transacting with the customer. The aggregator companies when the don't follow the regulated law sometimes, like screening of the drivers, training the drivers, considering the drivers who are conversant with regional language etc.

From the excerpts from different literature as discussed above, it is evident that customers of the app-based taxi business are facing many problems and issues. One of the key issues is the cancellation of rides by the drivers. In the case of cancellation of a ride or trip, the driver calls the customer to check the destination. If the destination is in a place where demand for taxis is very low, causing an empty return trip, the driver would also cancel the trip. In some cases, when the fare price of the trip is very low, the driver would cancel the trip or ride without even calling the customer. Another major issue is surge pricing. This is also against the law of the land in most cases, where the fare price per KM is more than the stipulated fare price by the

authorities. Another issue is that booking the trip or ride takes too long, due to a lack of availability of taxis in the vicinity or the deliberate act of drivers not accepting the ride, thus creating an injected surge pricing situation.

Another major issue for women customers is the safety of the trips. Despite numerous cases of untoward incidents and obscene acts by the drivers, there's not much action by the aggregator companies to resolve the problem holistically. Safety of the customers or commuters is not the only issue of only women, in some case even the men customers or commuter have been harassed, abused or robbed by some of the taxi/cab drivers. Other major issues are the cleanliness of the taxis, the quality of service, and the behaviour of the drivers. Most of the time taxis are not clean. Some drivers use the cabs for sleeping and claim that due to long hours of driving, they don't find time to clean. In some cases, drivers themselves are untidy. Some drivers don't switch on the AC even though the customer has booked an AC taxi for their trip. They don't help with luggage in the case of elderly customers either. Some drivers speak loudly over the phone while driving or play the music loudly. Some drivers behave rudely while communicating or transacting with the customer. Aggregator companies sometimes don't follow regulated laws, such as screening the drivers, training the drivers, and considering drivers who are conversant with the regional language.

2.4 App based aggregator companies' Situation

It's not just taxi drivers and users who are having or facing the issues in the app-based aggregator business; the App based taxi aggregator companies themselves also having and encountering significant challenges.

According to Ankitha Prasannan, in her article in Mindster "What challenges are faced by the On-demand taxi booking App business?" dated June 15, 2023.

1) Intense competition
2) Lack of connection between drivers and users
3) Government regulations
4) Server maintenance & up time
5) Qualitative and efficient technology
6) Customer loyalty & dependability

According the Jugnoo the App based taxi aggregator technology company, in the journal published on June 17, 2022, following are the key challenges for them:

1) Having good drivers
2) Taxi allocation and other key algorithms!
3) Providing the safety of the customers or commuters
4) Competition (Too many players in the market)
5) Profits (most of the App based taxi aggregator companies are not making enough revenues, in fact they are bleeding)

According to Vinay Jain, from Grepix Infotech Pvt. Ltd. Some of the key challenges faced by the App based taxi aggregators are as below:

1) Keeping abreast with the market.
2) Having Good Drivers
3) Competition
4) Technology Maintenance and Uptime

According to Vishal Grover, Online Market place planning and sales at Business-to-Business portal, challenges are multifold as below:

1) Compliance issues - making sure service is legally compliant
2) Finding cabs & drivers.
3) Drivers background checks, car verification,
4) Marketing - luring people to use their cabs over others
5) Offering seamless booking platform
6) Creating tools to give confidence to trust cab service
7) Reputation generation and management
8) Affiliate network promotion to bring customers
9) Advertising to make people know about cab services
10) Availability of cabs at all times
11) Grievances redressal system
12) Fund intensive at the start of the business

According to Misbaah Mansuri in her article "Ola Cabs Cuts Back on Advertising & Promotional Expenses by 60%" in e4m dated December 9, 2022, "Online transportation network company Ola cabs have reduced their promotional expenses from INR 380 Crore in FY 2017-18 to INR 150 Crore in FY 2018-19." Their promotional spend in earlier years in 2016 and 2017 was much more as they were the early entrants

According to Abhishek Patil, Founder, GrowthX, mentioned that both Ola & Uber invested $5 Billion in India. Both the companies launched around 10 years ago in India still struggle to make a profit in Indian Market.

All these issues faced by the App based aggregator companies have led to them breaking laws of the land and putting undue stress on other stake holders of the system drivers and customers to make more revenues and make RoI (Returns on Investment) and profits. Currently the App based taxi aggregator companies all bleeding and have not made a profit yet in spite of being in the market for more than a decade and half.

According to Arnav Kumar in his article "Ola's Bumpy Ride" dated June 13, 2023, the challenges of Ola as an App based taxi aggregator are decoded as follows:

Unraveling Ola's Rocky Road

Ola, one of the most revolutionary startups in the Indian startup enterprise eco system, has undeniably made its strong presence felt in the ride-hailing industry. However, during and post the pandemic, Ola's taxi/cab business has been in a deep trouble. The repercussions and impacts have been severe, more than 30,000-35,000 taxis or cabs going out of business and assets being idle during complete pandemic period, customers feeling the pinch of surcharges post the pandemic, and a significant exodus of drivers from the App based taxi aggregator industry. To aggravate the complexity of the situation, even employees of Ola are leaving or asked to leave, raising concerns about the company's stability and leadership. Despite being and operating in the industry for more than a decade, Ola Cabs remains still making losses and quite distance away from achieving profitability.

Decoding Ola's journey: How did they get here?

Ola has been a revolutionary addition to the Indian markets. Like most other startups that have emerged in recent years in the Indian market, Ola has followed a 4-phase framework:

Phase 1: Cash Drain

During early years of its business, Ola, like most of the other startups, experienced substantial cash drain as it invested heavily in marketing for customer acquisition and setting up the infrastructure for the business development. The focus was to gain initial foothold in the market, even if it meant incurring losses and no RoI (Return On Investment).

Phase 2: Trust Building

To strengthen its position in the market and to be a prospective and flourishing App Based taxi aggregator, Ola focused on building and winning trust and loyalty of its stake holders both drivers and customers. Very attractive incentives, above-average per KM fare for the trips to drivers and free and discounted trips to customers and reliable services became the pillars of Ola's success during this phase. However, profitability remained elusive as there was more of spend and less of revenue.

Phase 3: Dependency

By creating vast network of drivers and amassing huge customer base, Ola was successful in creating a dependency for the customers and drivers on its App based ride-sharing platform. Indian commuters who were earlier predominantly depended on public transport, began preferring the convenience, comfort and affordability of ride-sharing over other modes of transportation. Ola's attractive incentives, lured more drivers to join, as an alternative or key livelihood positioning the company as a leading player in the App based taxi aggregator market.

Phase 4: Control

As the dependency was created for the stake holders over the App based taxi aggregator business, Ola transitioned into the control phase, and problems started to emerge. The lucrative and tempting generous incentives that lured drivers into the business were gradually reduced to minimal or nothing, also all the discounts and offers provided to the drivers were from the earnings of the drivers, causing their earnings to plummet to dismal numbers. Driver dissatisfaction grew, forcing driver unions to strike and an increasing number of drivers were leaving the Ola network. Most of offers or free rides or trips to drivers were also cut down to minimal to none and customers were charged surge pricing during the peak hours or bad weather situation, rush hours etc. The company's control-focused approach began to derail the organization, leaving both drivers and customers disgruntled.

The Ripple Effect

The complications or after effects of Ola's troubles extended beyond the driver community. Customers experienced the worst situation for themselves. Surge pricing became a norm or more prevalent as soon as the demand was high, making rides costlier during peak hours. Booking experience deteriorated, booking a cab became an cumbersome task, with huge number of failed attempts and longer waiting times to book a ride or a trip. Booking experience

quality deteriorated completely, particularly for distant locations and off-peak hours. Even after a booking was confirmed to a distant locations driver cancellations were more or less a confirmed act. As a result, Customer satisfaction was eroded and comfort, convenience and benefits of using the App based taxi aggregator platform of Ola. To add to this situation, Ola faced increasing competition from new players in the market like Rapido, who were still in the early phases of the framework and existing strong player Uber who was more or less well established in the market. The new entrant competitors could afford to provide attractive offers and incentives to the customers and drivers, eating into Ola's market share and intensifying the challenges the company faced.

A Leadership Conundrum

Recent years, Ola has seen many of its seniors and leadership team leaving or asked to leave the organization. According to Business Insider's calculations, approximately 16 key leaders have resigned across various divisions, including Ola Cabs, Ola Cars, Ola Electric, and Ola Financial Services. This exodus of leadership and key staff caused a leadership vacuum, making it even more worse and difficult for Ola to strategize and address the existing conundrum.

Sketching the Course to Recovery

The path of recovery for Ola is not very easy its laid with obstacles and difficulties, it's a Herculean task though achievable with difficulty. Given its current tough and quandary situation, Ola has to mend its approach quickly, if it has to stay and succeed in App based tai aggregator business. While the problems are strikingly clear and seemingly evident, solutions for these issues and problems are not straightforward.

In current situation Ola to recover and succeed in App based taxi aggregator business, author's recommendations for Improvement:

Reinforce the Leadership Team: Hiring the right top management team who understand the App based taxi aggregator business deeply, and go understand the company's situation, customer and driver issues and problems and coming up with right optimal solutions for these issues and problems.

Revive Ola Share/Pool Services: Reviving the right features and options which are good for all the stake holders like, the App based taxi aggregator company, customers, drivers and society at large.

Focus on Core Business: Earlier in some instances Ola has divested the funds in other businesses like Foodpanda, Mswipe and so on. In order to do justice to the App based taxi business it would be good if they are focused on the same.

Driver Incentives and Flexibility: Currently drivers are totally disappointed as the earnings is not meeting the ends. If the App based taxi aggregators attend to issues and problems of the drivers and solve the situation would improve their satisfactory levels.

The App based taxi aggregators have spent huge amounts in their business, with no profits in sight. To reach breakeven to have a Return on Investment, they are coming with all the good and bad ideas in the market. They are either oblivious or not worried in flouting laws of the land and causing dissatisfaction to the stake holders the drivers and customers.

Contextual Relevance to my thesis and the key Gaps that my research is going to address.

From the review of literature above its evident that even the App based taxi aggregator has serious issues and problems, recursively causing issues and problems to derivers and customers and ultimately causing dissatisfied customers and drivers. This is very relevant to our research and thesis. And there's not much of attention to these issues and problems and focus on solving these issues and problems of the customer and drivers. This gap in research will be attempted by my research and thesis in analyzing root cause of the issues and problems and finding solutions to these and comping up right and optimal business model which can do justice all involved stake holders, App based taxi aggregator, customers, drivers and society at large.

Chapter 3. Research Design

The research approach is mixed, involving both qualitative and quantitative methods. Quantitative analysis aims to understand the current issues and problems in the app-based taxi aggregator business domain. Qualitative analysis is to study the trends, models, processes, procedures, etc., currently applied and practiced in the domain. The research will draw from available materials like research papers, and case studies, and conduct a correlational, causal, or experimental study to arrive at an optimal business model that can solve most of the existing issues and problems for the customers and drivers.

To understand the issues faced by customers and drivers, specific surveys will be conducted for both communities separately. These surveys will be analyzed quantitatively to infer the detailed issues and problems faced by customers and drivers.

A correlational study will be conducted to understand why certain issues and problems persist for customers and drivers, despite technological advancements intended to solve city commuting by increasing cab availability for customers and increasing business for drivers. This study will identify the key elements contributing to the existing issues and problems, how they are interrelated, and their relative weight against one another.

A causal analysis will be conducted to understand in detail the root causes of these issues or problems. Once the root cause analysis (RCA) is done, a study will be conducted to find possible solutions or fixes for these problems, and the viability of these solutions.

An experimental study will be conducted to identify an appropriate optimal solution that can solve most of the critical issues and problems without hampering or preferably improving, the service quality of app-based taxi aggregator services. The aim is to find a solution or create an optimal model that can increase both customer and driver satisfaction, creating a win-win situation.

App-based aggregators use high-end technology to connect customers and drivers, enabling customers to access taxis anytime and anywhere, while helping drivers connect with customers easily and quickly. Ideally, this should result in seamless services provided by motivated and happy drivers, leading to enhanced customer experience and satisfaction. However, the current situation shows that drivers are highly demotivated and customers are utterly dissatisfied.

The data collected will be as follows: one set of data will be from surveys conducted with customers and drivers. This will be used to conduct a quantitative study to understand the issues and problems faced by customers and drivers, identifying which problems are critical to each group. Another set of data will be to study and understand current models, processes, and procedures followed. Additional data will be collected to study the current situation of the driver community as gig workers, and to understand key motivational factors for drivers providing good service to customers, as well as factors contributing to customer satisfaction.

Chapter 3.1 Description of Participants of the study

A total of 514 respondents were surveyed, combining 210 riders and 304 drivers. The participants of the survey, or the research population, predominantly consisted of two segments:

1. The regular taxi users who predominantly use the App based taxi services

2. The Taxi or cab drivers who are run their taxi business using the platform provided by App based taxi aggregators

Background of Taxi User survey population.

The Taxi user population was spread over the cities India like Bengaluru, Mysore, Hyderabad, Chennai, Mumbai, Delhi and so on. They were given an online questionnaire via the Google forms, with questions to respond with appropriate answers from their experience and perspective of App based taxi aggregator business.

Table 1: Gender representation of the respondents

Gender	Percent
Male	31.9
Female	62.4
Not interested in disclosing	5.7
Total	100.0

Table 2: Age group of the respondents

Age	Percent
18 -30 Yrs	57.1
31 – 45 yrs	24.3
46 – 60 Yrs	15.2
60 – 80 Yrs	2.9
> 80 Yrs	0.5
Total	100.0

Table 3: Occupational Status of the respondents

Occupation	Percent
Self Employed	13.3
Private Job	42.4
Student	36.5
Unemployed/Retired	2.4
Government Job	2.4
Total	100.0

Table 4: Monthly Income of the respondents

Income	Percent
Student (Not applicable)	0.5
Do not want to disclose	50.0
< 50,000	21.4
>50,000 & <100,000	9.5
>100,000 & <400,000	11.4
>400,000	3.8
Total	100.0

Table 5: Respondents owning car

No. of cars	Percent
Student (Not applicable)	0.5
Yes,1 car	34.3
No	56.7
Yes, More than 1 car	8.6
Total	100.0

Background of Drivers' survey population.

The taxi drivers' population considered is mainly from Bengaluru and Hyderabad, and Chennai. Most of the drivers considered were local to the state or familiar with the regional language. Most of them were drivers using the Ola and Uber apps, and some were using the Meru and Zuri, RED taxi, Fast Track apps, the App based taxi aggregators who were prevalent in their respective regions. The drivers were given questionnaire printouts meeting them in person and explaining the same in their local language and getting appropriate responses for each question form their experience and perception of the App based taxi aggregator business.

Table 31: Average Number of Days taxi is run by sample drivers

No. of hours	Percent
20	5.9
25 days	53.6
> 25 days	40.5

Total	100.0

N=302

Table 32: Approximate Income earned by sample taxi drivers per day

Income	Percent
Rs 1500 to Rs 2000	84.5
> Rs 2000	15.5
Total	100.0

Table 33: Per day approximate distance covered by sample Taxi Drivers

	Percent
5 to 10 Kms	11.8
10 to 15 Kms	23.7
> 15 Kms	64.5
Total	100.0

Table 34: Per day average "dead mileage" for the pickups & after the drops usually is

	Percent
< 2 Kms	5.3
2 to 4 Kms	51.6
> 4 Kms	43.1
Total	100.0

Table 35: Duration of run for a stretch without breaks by sample drivers

	Percent
4 to 5 hrs	19.4
6 to 7 hrs	46.4
> 7 hrs	34.2

Total	100.0

Table 36: Driving taxi during nights

	Percent
Sometimes	42.4
Not at all	57.6
Total	100.0

Chapter 3.2 Data collection tools/materials

Sampling Technique and Data collection method

The research survey questionnaire for the present research was designed based on literature reviews. In the present study, a total of 43 Likert based questions were designed asking the respondents to rank their importance of agreement on a scale of 1 to 5 with '1 Strongly Disagree' and '5 as Strongly Agree'. As far as data collection is concerned, respondents were interviewed through a structured online questionnaire from randomly selected respondents working in various companies in Bengaluru city.

Sample Size[1]:

McQuitty (2004) suggested that when SEM is used, it is important to determine the minimum sample size required in order to achieve a desired level of statistical power with a given model prior to data collection. Schreiber et al., (2006) mentioned that although sample size needed is affected by the normality of the data and estimation method that researchers use, the generally agreed-on value is 10 participants for every free parameter estimated. Although there is little consensus on the recommended sample size for SEM Sivo et al., (2006), and Hoelter (1983) proposed a 'critical sample size' of 200. [Prema, 2010].

Adopting the thumb rule of 10:1 – that is 10 respondents for every question, a total of 43 Likert based questions were asked to the respondents. Thus, by this logic, a sample of size of 430 is adequate for the research analysis. A total of 514 respondents combining Taxi users (Riders)

[1] Explanation note on the sample size provided under the sample size sub heading is hugely drawn from the Phd work carried out by Ms. C. Prema under the title "An extended technology acceptance model for predicting consumer adoption of internet banking "Chapter 12, Pp 124-125. I would likely to take this opportunity to thank and duly acknowledge Ms. Prema.

with a sample size of 210 & Drivers with a sample size of 304. As far as data analysis tool, data analysis is carried out by using **Structural Equation Modelling (SEM)** which was run by AMOS 20.0 Program. SEM model is 'a priori hypothesis about a pattern of linear relationships amongst a set of observed and unobserved variables. SEM describes the relationships between the multiple variables. The structure of interrelationships is expressed in a series of equations which is similar to a series of multiple regression equations. These equations depict the relationships among the dependent and the independent constructs.

Conceptual Framework of the Research Study Taxi user (Rider Satisfaction)

Based on the review of literature, a hypothesized model is conceptualized to achieve the objectives of the present research study and the same is depicted in Figure 1.

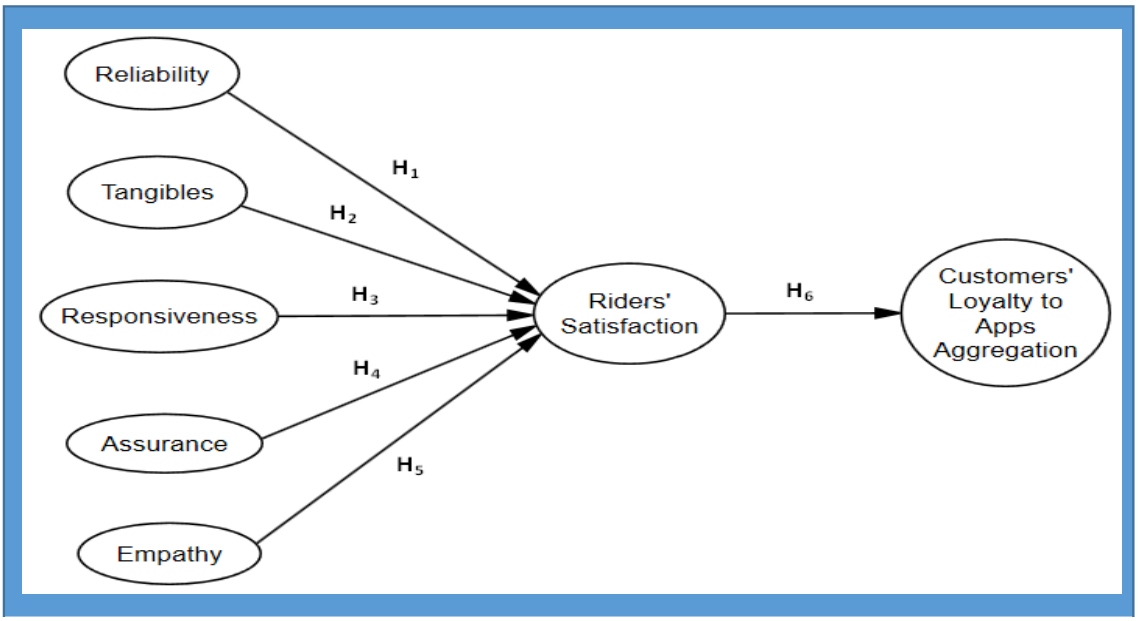


Figure 1: Conceptual Framework of Taxi Users' Satisfaction with App based Aggregation

Based on the conceptual framework, the following hypotheses are defined:

H_1: There is a significant influence of *Reliability factor* of Service Quality on *riders' satisfaction.*

H_2: There is a significant influence of *Tangibles factor* of Service Quality on *riders' satisfaction*.

H_3: There is a significant influence of *Responsiveness factor* of Service Quality on *riders' satisfaction*.

H_4: There is a significant influence of *Assurance factor* of Service Quality on *riders' satisfaction*.

H_5: There is a significant influence of *Empathy factor* of Service Quality on *riders' satisfaction*.

H_6: There is a significant influence of *riders' satisfaction* on customer loyalty to aggregation business (commission) model.

Chart I – Questions under each dimensions influencing Riders' Satisfaction and loyalty to App based Taxi Aggregator

Variable (question) Description	**Dimension**
I feel safe and secure to travel by Taxi during odd hours (RELIAB_1)	**Reliability (RELIAB)**
I get the cab in optimal time whenever the cab is booked (RELIAB_2)	
Driver arrives in time as per the ETA specified in the App (RELIAB_3)	
I feel the drivers are friendly and Courteous (RELIAB_4)	
I feel the rides are comfortable and safe (RELIAB_5)	
I feel the drivers are honest enough to give back the forgotten valuables in the taxi (RELIAB_6)	
I feel drivers behave tensed or inappropriate due to the workload (R) (RELIAB_7)	
I feel drivers are neat & well groomed (TANGIL_1)	**Tangibles (TANGIL)**
I feel the drivers' language is inappropriate(R) (TANGIL_2)	
I feel driver is on the phone during the trip(R) (TANGIL_3)	
I feel some drivers don't switch on A/C unless requested again (TANGIL_4)	
I am happy with cleanliness of the cab when picked up (TANGIL_5)	
I feel the cleanliness of cabs gets deteriorated as take trips continuously (R) (TANGIL_6)	
I feel driver is talking unwantedly or getting into undue discussions (R) (TANGIL_7)	
Customer support Hotline (phone number) is not available (R) (RESPON_1)	**Responsiveness (RESPON)**
Customer support is available thru app or mail (RESPON_2)	
Customer support is not user/customer friendly (R) (RESPON_3)	
Customer support is automated with standard issues/complaint and not customised or flexible to handle issues which are not standard (RESPON_4)	

I wish I had an option to choose my co-passengers for share trips (RESPON_5)	
Resolution usually is not in time (RESPON_6)	
I feel paying the trip fare directly to the driver would motivates the driver (ASSUR_1)	**Assurance (ASSUR)**
I feel, I am paying the more than "maximum fare per KM" as stipulated by the law (ASSUR_2)	
Is the payment mechanism provided by the aggregator accurate, in case of payment is by cash (ASSUR_3)	
Is the payment mechanism provided by the aggregator accurate, in case there is "part" payment from wallet and remainder as cash to the driver (ASSUR_4)	
Drivers assist me with my luggage always (EMPHY_1)	**Empathy (EMPHY)**
Sometimes I am requested by the drivers to cancel the trips and book directly with them (R) (EMPHY_2)	
I am requested by drivers to pay in cash/UPI to driver directly instead of paying by wallet (EMPHY_3)	
I feel the drivers are honest enough to give back the forgotten valuables in the taxi (EMPHY_4)	
I feel drivers are unhappy & not motivated enough as they are not earning sufficient despite long hours (EMPHY_5)	
I am aware that drivers are not getting proportionately in case of surge (EMPHY_6)	
I feel happy if the complete fare goes to driver for the trips (EMPHY_7)	

Variable (question) Description	**Dimension**
I feel there is no transparency with billing details in cases of toll (R) (SATISF_1)	**Riders' Satisfaction (SATISF)**
I have a problem with payment when the network issues is there while closing the trip(R) (SATISF_1)	
I am happy with availability of cabs currently (SATISF_1)	
I am happy with share journey (SATISF_1)	
I feel the current booking experience is good (SATISF_1)	

I would be happy if there's no peak hour or surge at any point of time (SATISF_1)	
Non availability of cabs also causes surge pricing (R) (SATISF_1)	
I am usually satisfied with resolution (CUST_LOY_1)	**Customers' Loyalty to Apps aggregation (CUST_LOY)**
Sometimes when booking takes long time and when the trip is cancelled prior to confirmation of ride, cancellation charges are levied unduly (CUST_LOY_2)	
I feel the surge charges by the aggregators are not justifiable (CUST_LOY_3)	
Sometimes cancellation charges are levied to me even when the driver cancels the booking (CUST_LOY_4)	
I feel subscription model is probably a better option, where driver pays only a nominal feel as monthly subscription and full fare amount goes to the drivers & earn more and customers pay lesser as compared to commission based model (CUST_LOY_5)	

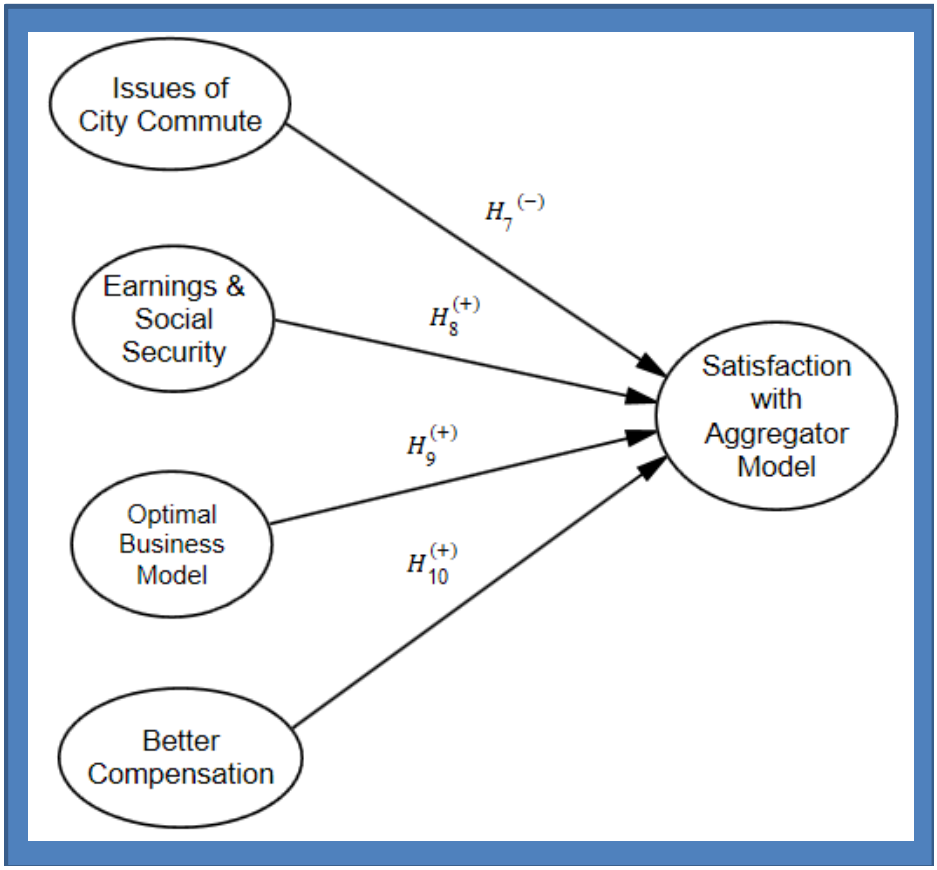


Figure 2: Conceptual Framework of Taxi Drivers' Satisfaction with App based Aggregation

Based on the review of literature, a hypothesized model is conceptualized to achieve the objectives of the present research study and the same is depicted in Figure 2.

The following theoretical hypotheses would be tested:

H_7: *Increased issues of commuting* with app based aggregator model result in *lesser* satisfaction of taxi drivers.

H_8: Increased *Earnings and social security* of taxi drivers with app based aggregator model result in *higher* satisfaction.

H_9: *A successful optimal business model* with app based aggregator model result in *higher* satisfaction of taxi drivers.

H_{10}: *A better compensation model* with app based aggregation result in *higher* satisfaction of taxi drivers.

Chart II – Questions under each dimensions influencing Drivers' Satisfaction to apps aggregation

Variable (question) Description	**Dimension**
I am having some pressing issues/pain points currently in the app based taxi business (ISSU_CT_CC_1)	**Issues of commuting (ISSU_CT_CC)**
Need to drive for long hours in order to increase earnings (ISSU_CT_CC_2)	
I cancel the trips allocated by aggregators at times to receive payment immediately and directly for immediate needs (ISSU_CT_CC_3)	
I have health issues due to long hours of driving like back pain, knee pain, insomnia etc. (ISSU_CT_CC_4)	
I feel having less "dead mileage" would bring down cancellations (ISSU_CT_CC_5)	
I feel, it would be good if I am compensated for my empty return trips in case of drops to a no business zone (ISSU_CT_CC_6)	
I am not having any breaks for bio requirements every 3-4 hours (ISSU_CT_CC_7)	
I am paid the "minimum fare per KM" as stipulated by the state law (EARN_SOS_1)	**Earnings and social security (EARN_SOS)**
I am shared the same % age of earnings during "Peak or Surge" as other normal trips (EARN_SOS_2)	
I am satisfied with my earnings (EARN_SOS_3)	
I am motivated and happy with earnings and treatment of aggregators with courtesy (EARN_SOS_4)	
My family is having the health insurance provided by Aggregator (EARN_SOS_5)	

I feel safe & secure in my current job/profession (EARN_SOS_6)	
I am having social security in case of any eventuality (EARN_SOS_7)	
I feel having a fixed monthly payment instead of commission would be good (EARN_SOS_8)	
I am happy with current situation of Taxi business (OPT_BS_MD_1)	**Optimal business model (OPT_BS_MD)**
When I accept the trips of my preference, would reduce the chances of cancellation (OPT_BS_MD_2)	
I would earn more if not app based model (OPT_BS_MD_3)	
I Would prefer a "monthly subscription or monthly maintenance charges" over the commission model (OPT_BS_MD_4)	
I wish to have a change in Business model where there is no commission for the trip fares (OPT_BS_MD_5)	
I prefer getting paid directly by the customer as and when the trips are completed (OPT_BS_MD_6)	
I earn more in share trips rather than single trip (OPT_BS_MD_7)	
I would like to have breaks regularily after every 2 trips or 3 hours of duty (OPT_BS_MD_8)	
I request the customers to cancel the trips and book/pay directly to ease financial issues or problems (OPT_BS_MD_9)	
I feel the Cab cancellations would come down by increasing the earnings of trips & getting paid directly by the customers (BETT_COM_1)	**Better compensation (BETT_COM)**
If compensated for empty return trips, cancellations would come down (BETT_COM_2)	
I will be motivated if an apt business model is available (BETT_COM_3)	
I prefer accepting the trips I take, rather than being assigned or thrust (BETT_COM_4)	
I feel by improving the earnings and work-life balance of drivers from current situation, will be motivated to provide better service to customers (BETT_COM_5)	
I am motivated to provide apt service to the customer (SAT_AG_MD_1)	**Satisfaction with aggregator model (SAT_AG_MD)**
I am happy with the services, benefits & amenities provided by the aggregator (SAT_AG_MD_2)	
I enjoy my profession (SAT_AG_MD_3)	
I am able to take care of my health and I am able to take care of my personal well being (SAT_AG_MD_4)	
I am not stressed with current work load or number trips per day (SAT_AG_MD_5)	

I have support from aggregators for social & financial counseling's or planning (SAT_AG_MD_6)	
I am able to balance "Work & Life" for example able to attend family and community gatherings and celebrations (SAT_AG_MD_7)	
I am happy with current aggregator and feel emotionally connected/integrated (SAT_AG_MD_8)	

Chapter 3.3 Data collection procedure

The data collection procedure was 2-way process for the survey. For the Taxi user the survey was conducted by sharing the questionnaire mentioned above in the section Data collection Tools/Materials. This questionnaire was sent as Google form the different taxi users to fill the survey. The Taxi users could enter their responses in the Goggle form.

The taxi drivers' data was collected by reaching out all the drivers in person with the questionnaire. The questionnaire was given to the drivers in person and asked to read and understand the same. In case of any confusion or case where the driver does not know to read English, the questions were translated and explained to them in their regional language and requested for the response. The drivers were reached out in person, for example, Bengaluru International Airport, Whitefield, ITPL, Majestic Railway station, Electronic city, Manyatha tech park, Main education institutes like MS Ramaiah Medical College, Bengaluru Medical College, BMS, RVIT, PES IT engineering colleges and key entertainment zones and malls in Bengaluru city. In Hyderabad, International Airport, Kachiguda & Secunderabad Railway stations, High tech city, MG Bus Stand. Some major taxi junctions in Chennai and Mysore cities.

Chapter 4. Data Analysis & Presentation of Results & Findings

This chapter deals with the descriptive and statistical analysis of primary data collected with regard to the ***"An analytical study of Driver and Rider satisfaction in App Based Taxi Aggregator models".*** This chapter is organized as follows:

In Chapter 4.1, the conceptual framework of the research is presented along the theoretical hypotheses that would be tested. The scale of measurement used for capturing the data from the structured questionnaire is presented. As part of the research methodology such as sampling technique, sample size, methods and tools used for collecting the data is presented in this section. Furthermore, the definition of validation techniques and good of fit measures as part of statistical analysis is briefly presented.

Section 4.2 begins with the descriptive statistics results summarized in Part I. Part II describes about the pilot study that was conducted to check the suitability and consistency of the questionnaire and also the reliability and validation process of the questionnaires. In Part III, assumptions test results such as normality, Collinearity & Autocorrelation Statistics for full-fledged is provided. The **Structural Equation Model (SEM)** results of full-fledged data are presented in Part III. In Chapter 4.3, the SEM analysis result of drivers' satisfaction regarding aggregator models is presented.

Chapter 4.1 Conceptual framework, Scale of Measurement

Sampling Technique and Data collection method

The research survey questionnaire for the present research was designed based on literature reviews. In the present study, a total of 36 Likert based questions were designed asking the respondents to rank their importance of agreement on a scale of 1 to 5 with '1 Strongly Disagree' and '5 as Strongly Agree'. As far as data collection is concerned, respondents were interviewed through a structured online questionnaire from randomly selected respondents working in various companies in Bengaluru city.

Sample Size[2]:

McQuitty (2004) suggested that when SEM is used, it is important to determine the minimum sample size required in order to achieve a desired level of statistical power with a given model prior to data collection. Schreiber et al., (2006) mentioned that although sample size needed is affected by the normality of the data and estimation method that researchers use, the generally agreed-on value is 10 participants for every free parameter estimated. Although there is little

[2] Explanation note on the sample size provided under the sample size sub heading is hugely drawn from the Phd work carried out by Ms. C. Prema under the title "An extended technology acceptance model for predicting consumer adoption of internet banking "Chapter 12, Pp 124-125. I would likely to take this opportunity to thank and duly acknowledge Ms. Prema.

consensus on the recommended sample size for SEM Sivo et al., (2006), and Hoelter (1983) proposed a 'critical sample size' of 200. [Prema, 2010].

Adopting the thumb rule of 10:1 – that is 10 respondents for every question, a total of 43 Likert based questions were asked to the respondents. Thus, by this logic, a sample of size of 430 is adequate for the research analysis. A total of 514 respondents combining Riders with a sample size of 210 & Drivers with a sample size of 304. As far as data analysis tool, data analysis is carried out by using **Structural Equation Modelling (SEM)** which was run by AMOS 20.0 Program. SEM model is 'a priori hypothesis about a pattern of linear relationships amongst a set of observed and unobserved variables. SEM describes the relationships between the multiple variables. The structure of interrelationships is expressed in a series of equations which is similar to a series of multiple regression equations. These equations depict the relationships among the dependent and the independent constructs.

Conceptual Framework of the Research Study & Pilot Data Results

Based on the review of literature, a hypothesized model is conceptualized to achieve the objectives of the present research study and the same is depicted in Figure 3.

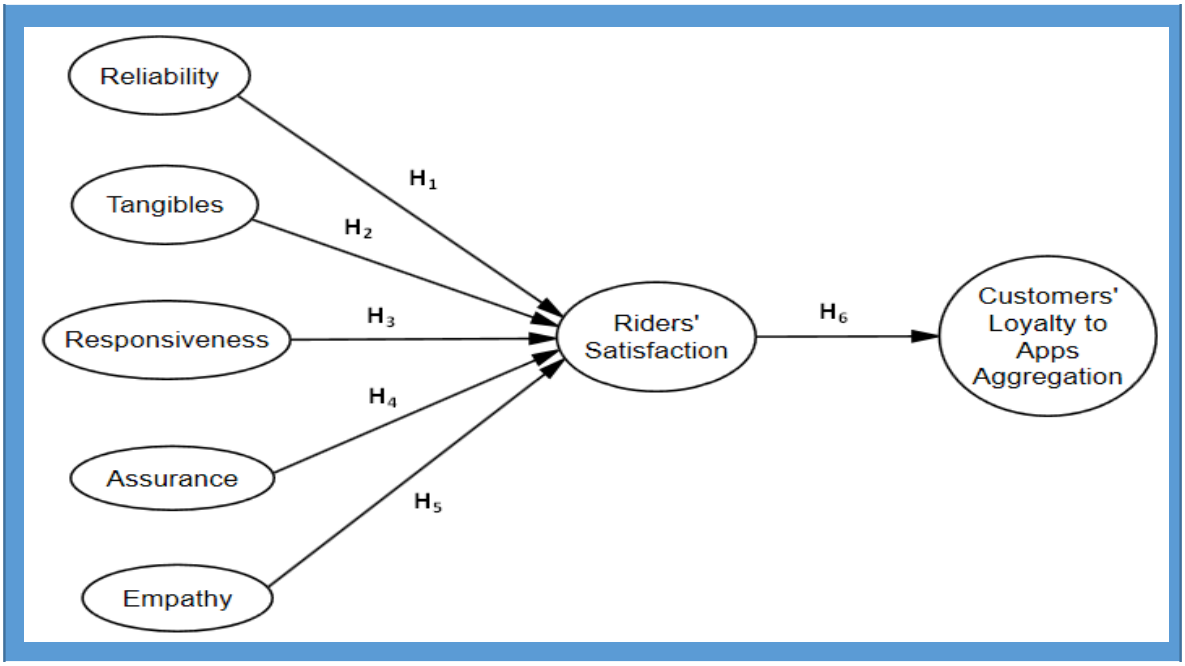


Figure 3: Conceptual Framework of the Research Study

Based on the conceptual framework, the following hypotheses are defined:

H_1: There is a significant influence of *Reliability factor* of Service Quality on *riders' satisfaction.*

H_2: There is a significant influence of *Tangibles factor* of Service Quality on *riders' satisfaction*.

H_3: There is a significant influence of *Responsiveness factor* of Service Quality on *riders' satisfaction*.

H_4: There is a significant influence of *Assurance factor* of Service Quality on *riders' satisfaction*.

H_5: There is a significant influence of *Empathy factor* of Service Quality on *riders' satisfaction*.

H_6: There is a significant influence of *riders' satisfaction* on customer loyalty to aggregation business (commission) model.

Chart I – Questions under each dimensions influencing Riders' Satisfaction and loyalty to apps aggregation

Variable (question) Description	Dimension
I feel safe and secure to travel by Taxi during odd hours (RELIAB_1)	**Reliability (RELIAB)**
I get the cab in optimal time whenever the cab is booked (RELIAB_2)	
Driver arrives in time as per the ETA specified in the App (RELIAB_3)	
I feel the drivers are friendly and Courteous (RELIAB_4)	
I feel the rides are comfortable and safe (RELIAB_5)	
I feel the drivers are honest enough to give back the forgotten valuables in the taxi (RELIAB_6)	
I feel drivers behave tensed or inappropriate due to the workload (R) (RELIAB_7)	
I feel drivers are neat & well groomed (TANGIL_1)	**Tangibles (TANGIL)**
I feel the drivers' language is inappropriate(R) (TANGIL_2)	
I feel driver is on the phone during the trip(R) (TANGIL_3)	
I feel some drivers don't switch on A/C unless requested again (TANGIL_4)	
I am happy with cleanliness of the cab when picked up (TANGIL_5)	
I feel the cleanliness of cabs gets deteriorated as take trips continuously (R) (TANGIL_6)	
I feel driver is talking unwantedly or getting into undue discussions (R) (TANGIL_7)	
Customer support Hotline (phone number) is not available (R) (RESPON_1)	**Responsiveness (RESPON)**
Customer support is available thru app or mail (RESPON_2)	
Customer support is not user/customer friendly (R) (RESPON_3)	
Customer support is automated with standard issues/complaint and not customised or flexible to handle issues which are not standard (RESPON_4)	
I wish I had an option to choose my co-passengers for share trips (RESPON_5)	
Resolution usually is not in time (RESPON_6)	
I feel paying the trip fare directly to the driver would motivates the driver (ASSUR_1)	**Assurance (ASSUR)**
I feel, I am paying the more than "maximum fare per KM" as stipulated by the law (ASSUR_2)	
Is the payment mechanism provided by the aggregator accurate, in case of payment is by cash (ASSUR_3)	
Is the payment mechanism provided by the aggregator accurate, in case there is "part" payment from wallet and remainder as cash to the driver (ASSUR_4)	
Drivers assist me with my luggage always (EMPHY_1)	**Empathy (EMPHY)**
Sometimes I am requested by the drivers to cancel the trips and book directly with them (R) (EMPHY_2)	

I am requested by drivers to pay in cash/UPI to driver directly instead of paying by wallet (EMPHY_3)	
I feel the drivers are honest enough to give back the forgotten valuables in the taxi (EMPHY_4)	
I feel drivers are unhappy & not motivated enough as they are not earning sufficient despite long hours (EMPHY_5)	
I am aware that drivers are not getting proportionately in case of surge (EMPHY_6)	
I feel happy if the complete fare goes to driver for the trips (EMPHY_7)	

Variable (question) Description	**Dimension**
I feel there is no transparency with billing details in cases of toll (R) (SATISF_1)	**Riders' Satisfaction (SATISF)**
I have a problem with payment when the network issues is there while closing the trip(R) (SATISF_2)	
I am happy with availability of cabs currently (SATISF_3)	
I am happy with share journey (SATISF_4)	
I feel the current booking experience is good (SATISF_5)	
I would be happy if there's no peak hour or surge at any point of time (SATISF_6)	
Non availability of cabs also causes surge pricing (R) (SATISF_7)	
I am usually satisfied with resolution (CUST_LOY_1)	**LOY)**
Sometimes when booking takes long time and when the trip is cancelled prior to confirmation of ride, cancellation charges are levied unduly (CUST_LOY_2)	
I feel the surge charges by the aggregators are not justifiable (CUST_LOY_3)	
Sometimes cancellation charges are levied to me even when the driver cancels the booking (CUST_LOY_4)	
I feel subscription model is probably a better option, where driver pays only a nominal feel as monthly subscription and full fare amount goes to the drivers & earn more and customers pay lesser as compared to commission based model (CUST_LOY_5)	

Chapter 4.2 Taxi Users' Satisfaction Analysis

PART-I

Before going into SEM analysis, the *descriptive statistics* of the variables for full fledged data (210 samples) is provided in Table 6 of the following section.

Descriptive statistics

Table 6: Percentage and Mean scores by item-wise of *Riders' Satisfaction* (Fledged data)

		Percentage (in %) of Respondents						Mean	Overall mean
Reliability	Variable	SD	D	N	A	SA	Total		
Feel safe & secure	RELIAB_1	2.4	5.7	43.1	32.7	16.1	100.0	3.54	3.54
Cab arrives in time after booking	RELIAB_2	1.9	7.6	33.2	45.0	12.3	100.0	3.58	
Cab arrives as per ETA in the App	RELIAB_3	1.4	8.1	43.6	34.1	12.8	100.0	3.48	
Drivers are friendly & courteous	RELIAB_4	1.4	9.5	53.6	25.6	10.0	100.0	3.33	
rides are comfortable and safe	RELIAB_5	1.4	10.4	29.4	33.2	25.6	100.0	3.71	
Drivers are honest	RELIAB_6	1.4	11.4	31.3	36.5	19.4	100.0	3.61	
Drivers behave tensed	RELIAB_7	1.4	11.4	37.9	32.7	16.6	100.0	3.52	

SD – Strongly Disagree, D-Disagree, N- Neutral, A – Agree, SA – Strongly Agree

Table 6.1: Percentage and Mean scores by item-wise of *Riders' Satisfaction* (Fledged data)

		Percentage (in %) of Respondents						Mean	Overall mean
Tangibles	Variable	SD	D	N	A	SA	Total		
Drivers' neatness	TANGIL_1	2.8	13.3	37.9	34.1	11.8	100.0	3.38	3.46
Drivers' language	TANGIL_2	2.8	10.9	19.0	46.4	20.9	100.0	3.71	
Driver attends to calls while driving	TANGIL_3	2.4	11.4	19.0	44.5	22.7	100.0	3.74	

A/C is switched off	TANGIL_4	2.4	19.4	44.5	22.3	11.4	100.0	3.21	
Cab cleanliness	TANGIL_5	1.9	22.3	45.0	22.3	8.5	100.0	3.13	
Cab Cleanliness after few trips	TANGIL_6	3.3	11.4	36.5	39.8	9.0	100.0	3.39	
Driver Behavior	TANGIL_7	1.4	7.6	29.9	45.0	16.1	100.0	3.66	

SD – Strongly Disagree, D-Disagree, N- Neutral, A – Agree, SA – Strongly Agree

Table 6.2: Percentage and Mean scores by item-wise of *Riders' Satisfaction* (Fledged data)

		Percentage (in %) of Respondents						Mean	Overall mean
Responsiveness	Variable	SD	D	N	A	SA	Total		
Customer Support hotline	RESPON_1	2.4	7.6	32.7	37.9	19.4	100.0	3.64	3.60
Customer Support on the App	RESPON_2	0.9	9.0	32.2	36.5	21.3	100.0	3.68	
Customer Support is User friendly	RESPON_3	0.9	8.1	31.8	44.1	15.2	100.0	3.64	
Customer support not customized	RESPON_4	3.3	9.0	36.0	34.1	17.5	100.0	3.53	
Option to chose	RESPON_5	2.8	6.2	32.7	38.9	19.4	100.0	3.66	
Resolution Not in time	RESPON_6	1.9	6.6	45.5	33.2	12.8	100.0	3.48	

SD – Strongly Disagree, D-Disagree, N- Neutral, A – Agree, SA – Strongly Agree

Table 6.3: Percentage and Mean scores by item-wise of *Riders' Satisfaction* (Fledged data)

		Percentage (in %) of Respondents						Mean	Overall mean
Assurance	Variable	SD	D	N	A	SA	Total		
Paying directly motivates drivers	ASSUR_1	4.3	9.5	18.0	33.6	34.6	100.0	3.84	3.55
Pay more for per KM	ASSUR_2	3.3	11.4	43.1	30.3	11.8	100.0	3.36	

Accurate Payment system in case of cash payment	ASSUR_3	4.3	19.0	37.9	31.3	7.6	100.0	3.19	
Accurate Payment system in case of part in cash and rest by wallet payment	ASSUR_4	2.8	9.5	19.4	39.8	28.4	100.0	3.81	

SD – Strongly Disagree, D-Disagree, N- Neutral, A – Agree, SA – Strongly Agree

Table 6.4: Percentage and Mean scores by item-wise of *Riders' Satisfaction* (Fledged data)

		Percentage (in %) of Respondents						Mean	Overall mean
Empathy	Variable	SD	D	N	A	SA	Total		
Driver helping	EMPHY_1	4.3	15.6	38.4	31.3	10.4	100.0	3.27	3.58
Drivers request for Cancellation and booking directly	EMPHY_2	2.8	15.2	19.9	38.4	23.7	100.0	3.65	
Pay directly to drivers	EMPHY_3	2.4	13.7	19.4	42.2	22.3	100.0	3.68	
Drivers are honest	EMPHY_4	0.5	9.0	54.5	26.1	10.0	100.0	3.36	
Drivers are unhappy & not motivated	EMPHY_5	1.9	8.5	29.9	43.6	16.1	100.0	3.63	
Drivers' share in Surge pricing	EMPHY_6	.9	7.1	28.4	40.3	23.2	100.0	3.77	
Fare to drivers directly	EMPHY_7	1.9	9.5	27.5	39.3	21.8	100.0	3.69	

SD – Strongly Disagree, D-Disagree, N- Neutral, A – Agree, SA – Strongly Agree

Table 6.5: Percentage and Mean scores by item-wise of *Riders' Satisfaction* (Fledged data)

		Percentage (in %) of Respondents						Mean	Overall mean
Riders' Satisfaction	Variable	SD	D	N	A	SA	Total		
Transparency with billing	SATISF_1	2.8	5.7	23.2	36.5	31.8	100.0	3.88	3.61
Payment issues due to Network	SATISF_2	1.9	7.1	42.7	39.8	8.5	100.0	3.45	
Availability	SATISF_3	1.4	8.1	19.4	42.7	28.4	100.0	3.88	

Share trip	SATISF_4	1.4	10.9	20.9	50.7	16.1	100.0	3.69	
Booking Experience	SATISF_5	3.3	12.3	33.6	39.8	10.9	100.0	3.42	
No Peak hour / Surge	SATISF_6	1.9	12.8	27.0	48.3	10.0	100.0	3.52	
Availability to Surge	SATISF_7	3.8	12.3	34.6	35.5	13.7	100.0	3.43	

SD – Strongly Disagree, D-Disagree, N- Neutral, A – Agree, SA – Strongly Agree

Table 6.6: Percentage and Mean scores by item-wise of *Riders' Satisfaction* (Fledged data)

		Percentage (in %) of Respondents						Mean	Overall mean
Customer Loyalty	Variable	SD	D	N	A	SA	Total		
Customer Support	CUST_LOY_1	1.4	9.5	36.0	44.1	9.0	100.0	3.49	3.70
Cancellation Charges	CUST_LOY_2	3.8	9.0	27.5	39.3	20.4	100.0	3.63	
Surge Charges	CUST_LOY_3	1.9	9.5	26.1	34.6	28.0	100.0	3.77	
Cancellation Charges	CUST_LOY_4	0.9	9.5	23.7	42.2	23.7	100.0	3.78	
Subscription Model	CUST_LOY_5	1.9	5.7	25.1	38.9	28.4	100.0	3.86	

SD – Strongly Disagree, D-Disagree, N- Neutral, A – Agree, SA – Strongly Agree

Table 7: Mean scores of constructs

Dimension	Mean
Reliability	3.54
Tangibles	3.46
Responsiveness	3.60
Assurance	3.55
Empathy	3.58
Overall	**3.54**
Riders' Satisfaction	3.61
Customer Loyalty	3.70
Overall	**3.65**

Mean Score of the above dimensions was measured on a five point Likert scale where 1= strongly disagree and 5= strongly agree and the mean score of all dimensions influencing riders' satisfaction as well as customers' loyalty as perceived by the sample respondents under the study is closer to 4.0 (Table 7) indicating an overall agreement towards all the statements under

each dimension influencing satisfaction. Nonetheless, it should be noted that a substantial proportion of riders *remain non-committal (remaining neutral)* in their perception on four independent dimensions influencing satisfaction, as shown by the percentage figures provided as against each item under each dimension in Table 7.

As explained in earlier part, the following are the validity and reliability checks that were carried out to identify design issues and to establish the reliability and validity of the survey instrument before the main research (full-fledged study) was carried out. They are ***Content Validity, Convergent Validity, Composite Reliability and Discriminant Validity.*** A sample of 88 respondents (referred as pilot data) is considered for the above validity test.

PART-II

PILOT DATA ANALYSIS RESULTS (100 samples)

Testing the Measurement model for dimensions influencing riders' satisfaction - pilot data:

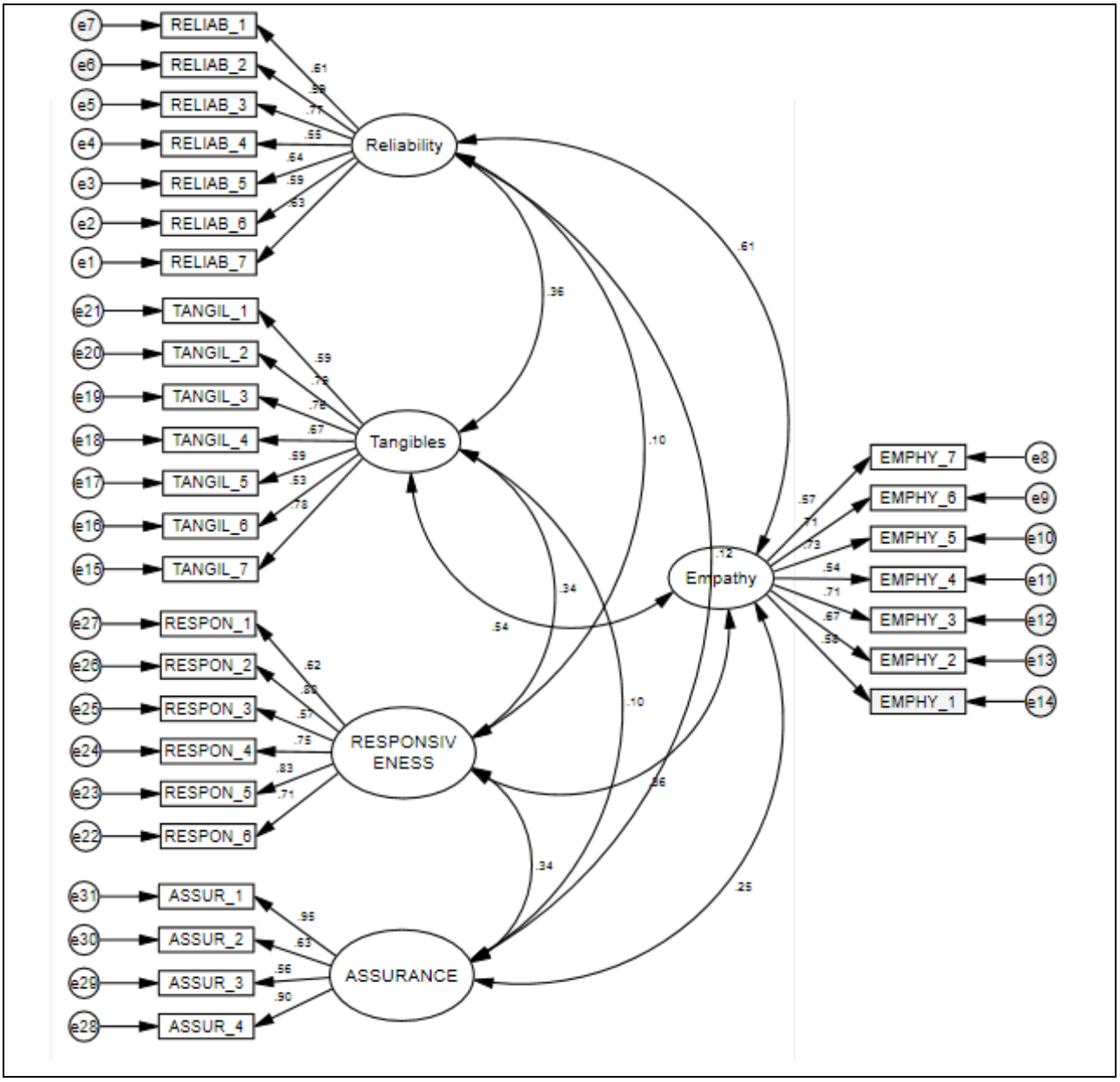


Figure 4: Measurement Model influencing riders' satisfaction - pilot data

Table 13 provides the standardized factor loadings (Figure 4) of all the items under *each of the independent dimensions influencing customer satisfaction*. Accordingly, it is observed the correlation loadings or the regression coefficients are ranging between 0.53 and 0.95, which is above the accepted range. It was suggested by Byrne (2001); Biswas and Varma (2007) that in SEM the significance level is based on the critical ratio (CR) of the regression

Table 8: Item wise Unstandardized and Standardized Regression coefficients influencing riders' satisfaction dimensions- pilot data

Latent Variable	Indicators	Standardized loadings (β)	Un standardized loadings (B)	C.R	P-value

Reliability	RELIAB_1	0.611	0.889	5.013	***
	RELIAB_2	0.590	0.806	4.875	***
	RELIAB_3	0.766	1.115	5.909	***
	RELIAB_4	0.547	0.766	4.582	***
	RELIAB_5	0.638	1.091	5.184	***
	RELIAB_6	0.587	1.003	4.855	***
	RELIAB_7	0.634	1.000		
Tangibles	TANGIL_1	0.592	0.857	5.813	***
	TANGIL_2	0.790	1.133	8.022	***
	TANGIL_3	0.764	1.099	7.729	***
	TANGIL_4	0.675	0.889	6.72	***
	TANGIL_5	0.595	0.784	5.843	***
	TANGIL_6	0.528	0.704	5.124	***
	TANGIL_7	0.782	1.000		
Responsiveness	RESPON_1	0.616	1.040	5.700	***
	RESPON_2	0.805	1.275	7.346	***
	RESPON_3	0.575	0.761	5.332	***
	RESPON_4	0.754	1.323	6.918	***
	RESPON_5	0.829	1.323	7.537	***
	RESPON_6	0.709	1.000		
Assurance	ASSUR_1	0.953	1.148	12.841	***
	ASSUR_2	0.626	0.603	7.135	***
	ASSUR_3	0.564	0.577	6.199	***
	ASSUR_4	0.899	1.000		
Empathy	EMPHY_1	0.579	1.046	4.529	***
	EMPHY_2	0.668	1.463	4.994	***
	EMPHY_3	0.715	1.409	5.208	***
	EMPHY_4	0.541	0.736	4.314	***
	EMPHY_5	0.731	1.303	5.277	***
	EMPHY_6	0.710	1.189	5.184	***
	EMPHY_7	0.570	1.000		

estimate. If the CR values is greater than or equal to 2.58 then the significance level is 99% (0.01) and if the CR value is greater than or equal to 1.96 but less than 2.58, then the significance level is 95% (0.05). Thus, from Table 8, it is observed that the critical ratios of most all the items were above 2.58 and thus significant at 0.01. Items such as RELIAB_7, TANGIL_7, RESPON_6, ASSUR_4 and EMPHY_7 have regression weight were fixed at 1.000 and hence not estimated.

Table 9 shows the inter item Correlation result of dimensions influencing riders' satisfaction for pilot data has weak (r=0.246) to good (r=0.611) correlation.

Table 9: Correlation (Covariance) result of dimensions of influencing riders' satisfaction – Pilot data

	RELIAB	TANGIL	RESPON	ASSUR	EMPHY
RELIAB	-	0.362	0.105	0.116	0.611
TANGIL	-	-	0.339	0.097	0.536
RESPON	-	-	-	0.339	0.357
ASSUR	-	-	-	-	0.246

Table 10: Table 15: Reliability and Item Loadings influencing riders' satisfaction dimensions- pilot data

Latent Variable	Indicators	Standardized loadings (β)	Composite Reliability	Cronbach Alpha	Average Variance Explained (AVE)
Reliability	RELIAB_1	0.611	0.819	0.820	0.394
	RELIAB_2	0.590			
	RELIAB_3	0.766			
	RELIAB_4	0.547			
	RELIAB_5	0.638			
	RELIAB_6	0.587			
	RELIAB_7	0.634			
Tangibles	TANGIL_1	0.592	0.857	0.859	0.465
	TANGIL_2	0.790			
	TANGIL_3	0.764			

	TANGIL_4	0.675			
	TANGIL_5	0.595			
	TANGIL_6	0.528			
	TANGIL_7	0.782			
Responsiveness	RESPON_1	0.616	0.864	0.866	0.519
	RESPON_2	0.805			
	RESPON_3	0.575			
	RESPON_4	0.754			
	RESPON_5	0.829			
	RESPON_6	0.709			
Assurance	ASSUR_1	0.953	0.855	0.861	0.607
	ASSUR_2	0.626			
	ASSUR_3	0.564			
	ASSUR_4	0.899			
Empathy	EMPHY_1	0.579	0.834	0.836	0.421
	EMPHY_2	0.668			
	EMPHY_3	0.715			
	EMPHY_4	0.541			
	EMPHY_5	0.731			
	EMPHY_6	0.710			
	EMPHY_7	0.570			

Speaking about the Reliability factor for dimensions of influencing riders' satisfaction (pilot data), it is observed from Table 10 that **RELIABILITY** construct has a composite reliability value of 0.819 and a cronbach alpha of 0.820; **TANGIBLES** construct with a composite reliability of 0.857 and a cronbach alpha of 0.859; **RESPONSIVENESS** construct has a composite reliability value of 0.864 and a cronbach alpha of 0.866; **ASSURANCE** construct has a composite reliability value of 0.855 and a cronbach alpha of 0.861 and EMPATHY construct with a composite reliability of 0.834 and a cronbach alpha of 0.836. The findings reveal that most of the constructs are higher than the required reliability. Hence it could be concluded that all the items grouped completely converge to its respective sub dimensions and consider all items for the full-fledged study. Furthermore, the cronbach alpha values across each of the dimension depicted in the above table have more than 0.70 which is again higher

than the required threshold value indicating the data consistency and addressed to relevant respondents.

Table 11: Discriminant Validity result influencing riders' satisfaction dimensions – Pilot data

	RELIAB	TANGIL	RESPON	ASSUR	EMPHY
RELIAB	**0.628***				
TANGIL	*0.362*	**0.682***			
RESPON	*0.105*	*0.339*	**0.720***		
ASSUR	*0.116*	*0.097*	*0.339*	**0.779***	
EMPHY	*0.611*	*0.536*	*0.357*	*0.246*	**0.649***

* Square root of original AVE values shown in Table 3.

From Table 11, the findings show that the square root of AVE's of all the constructs are greater than the inter item correlations between any two latent variables together which shows that all the constructs are having discriminant validity (Fornell-Larcker,1981). For example, the AVE of TANGIL dimension is 0.682 and the inter correlation between TANGIL & RELIAB dimension is 0.362, the inter correlation between TANGIL & RESPON dimension is 0.339 which is less than the AVE of TANGIL which is 0.682. These values establish the discriminant validity among the latent variables in that they do not statistically overlap each other and are free from the problem of multicollinearity.

Table 12 depicts the Goodness-of-fit & Incremental Indices of Measurement model for dimensions influencing riders' satisfaction for pilot data. From the result, it is clearly observed that Chi-square/df ($\chi 2$/df) is 1.891 (which is less than 5) and Goodness of Fit index (GFI) obtained is 0.875 as against the recommended value of above 0.90; The Adjusted Goodness of Fit Index (AGFI) is 0.818 as against the recommended value of above 0.80 as well. The Normed fit Index (NFI), Relative Fit index (RFI), Comparative Fit index (CFI) are 0.858, 0.868, 0.868 respectively as against the recommended level of above 0.90. RMSEA is 0.095 and is well below the recommended limit of 0.10. **Hence the model shows an overall acceptable fit and is an over identified model.**

Table 12: Goodness-of-fit & Incremental Indices of Measurement model influencing riders' satisfaction - pilot data

Fit Indices	Accepted Value	Model Value
Absolute Fit Measures		
$\chi 2$ (Chi-square)		798.162
df (Degrees of Freedom)		422
Chi-square/df ($\chi 2$/df)	< 5	1.891
GFI (Goodness of Fit Index)	> 0.90	0.875
RMSEA (Root Mean Square Error of Approximation)	< 0.10	0.095
Incremental Fit Measures		
AGFI (Adjusted Goodness of Fit Index)	> 0.80	0.818
NFI (Normed Fit Index)	> 0.90	0.858
CFI (Comparative Fit Index)	> 0.90	0.861
IFI (Incremental Fit Index)	> 0.90	0.867
RFI (Relative Fit Index)	> 0.90	0.868
Parsimony Fit Measures		
PCFI (Parsimony Comparative of Fit Index)	> 0.50	0.690
PNFI (Parsimony Normed Fit Index)	> 0.50	0.552

II. Riders' Satisfaction & Customer Loyalty to apps aggregation:

Testing the Measurement model for dimensions of Riders' Satisfaction & Customer Loyalty to apps aggregation - pilot data:

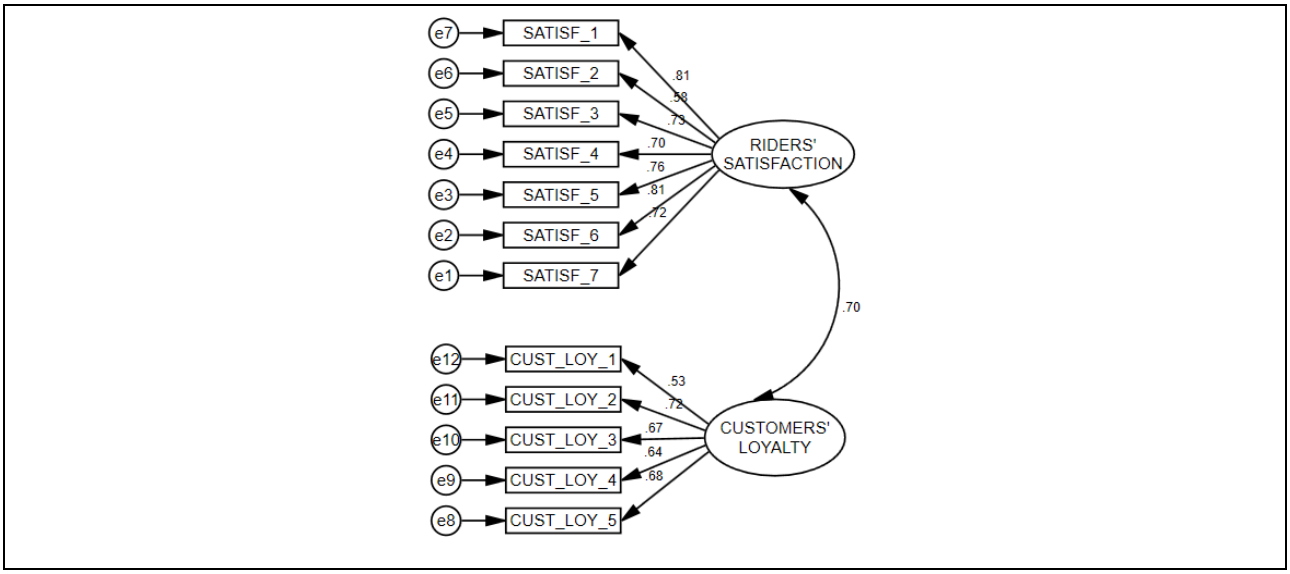


Figure 5: Measurement Model of Desire to Riders' Satisfaction & Customer Loyalty to apps aggregation - pilot data

Table 13: Item wise Unstandardized and Standardized Regression coefficients of *Riders' Satisfaction & Customer Loyalty to apps aggregation* dimensions- pilot data

Latent Variable	Indicators	Standardized loadings (β)	Un standardized loadings (B)	C.R	P-value
Riders' Satisfaction (SATISF)	SATISF_1	0.814	1.189	7.808	***
	SATISF_2	0.583	0.650	5.566	***
	SATISF_3	0.730	1.011	7.000	***
	SATISF_4	0.705	0.905	6.755	***
	SATISF_5	0.762	0.970	7.314	***
	SATISF_6	0.812	1.105	7.796	***
	SATISF_7	0.725	1.000		
Customer Loyalty (CUST_LOY)	CUST_LOY_1	0.530	0.681	4.538	***
	CUST_LOY_2	0.716	1.041	5.822	***
	CUST_LOY_3	0.665	1.087	5.506	***
	CUST_LOY_4	0.645	0.995	5.370	***
	CUST_LOY_5	0.678	1.000		

Table 13 provides the standardized factor loadings (Figure 5) of all the items under *Riders' Satisfaction & Customer Loyalty to apps aggregation dimensions*. Accordingly, it is observed the correlation loadings or the regression coefficients are ranging between 0.530 and 0.814, which is above the accepted range. Thus, from Table 18, it is observed that the critical ratios

of most all the items were above 2.58 and thus significant at 0.01. Items such as SATISF_7 and CUST_LOY_5 have regression weight were fixed at 1.000 and hence not estimated.

Table 14: Reliability and Item Loadings of *Riders' Satisfaction & Customer Loyalty to apps aggregation* dimensions- pilot data

Latent Variable	Indicators	Standardized loadings (β)	Composite Reliability	Cronbach Alpha	Average Variance Explained (AVE)
Riders' Satisfaction (SATISF)	SATISF_1	0.814	0.892	0.893	0.543
	SATISF_2	0.583			
	SATISF_3	0.730			
	SATISF_4	0.705			
	SATISF_5	0.762			
	SATISF_6	0.812			
	SATISF_7	0.725			
Customer Loyalty (CUST_LOY)	CUST_LOY_1	0.530	0.784	0.785	0.522
	CUST_LOY_2	0.716			
	CUST_LOY_3	0.665			
	CUST_LOY_4	0.645			
	CUST_LOY_5	0.678			

Table 15: Correlation (Covariance) result of dimensions of *Riders' Satisfaction & Customer Loyalty to apps aggregation* dimensions

	SATISF
CUST_LOY	0.696

Table 15 shows a good correlation (r=0.696) between *Riders' Satisfaction & Customer Loyalty to apps aggregation* for pilot data. Speaking about the Reliability factor for *Riders' Satisfaction & Customer Loyalty to apps aggregation* (pilot data), it is observed from Table 14 that RIDERS' SATISFACTION construct has a composite reliability value of 0.892 and a cronbach alpha of 0.893 and CUSTOMER LOYALTY TO APPS AGGREGATION construct with a composite reliability of 0.784 and a cronbach alpha of 0.785.

Table 16: Discriminant Validity result of *Riders' Satisfaction & Customer Loyalty to apps aggregation* dimensions

	SATISF	CUST_LOY
SATISF	**0.737***	
CUST_LOY	*0.696*	**0.722***

* Square root of original AVE values shown in Table 3.

From Table 16, the findings show that the square root of AVE's of all the constructs are greater than the inter item correlations between any two latent variables together which shows that all the constructs are having discriminant validity (Fornell-Larcker,1981). The values establish the discriminant validity and are free from the problem of multicollinearity.

Table 17: Goodness-of-fit & Incremental Indices of Measurement model of *Riders' Satisfaction & Customer Loyalty to apps aggregation* dimensions - pilot data

	(χ2/df)	GFI	RMSEA	AGFI	NFI	CFI	IFI	RFI	PCFI	PNFI
Accepted Value	< 5	> 0.90	< 0.10	> 0.80	> 0.90				> 0.50	
Model Value	2.312	0.866	0.087	0.815	0.871	0.873	0.876	0.852	0.701	0.643

Table 17 depicts the Goodness-of-fit & Incremental Indices of Measurement model for *Riders' Satisfaction & Customer Loyalty to apps aggregation* dimensions for pilot data. From the result, it is clearly observed that Chi-square/df (χ2/df) is 2.312 (which is less than 5) and Goodness of Fit index (GFI) obtained is 0.886 as against the recommended value of above 0.90; The Adjusted Goodness of Fit Index (AGFI) is 0.815 as against the recommended value of above 0.80 as well. The Normed fit Index (NFI), Relative Fit index (RFI), Comparative Fit index (CFI) are 0.871, 0.852, 0.873 respectively as against the recommended level of above 0.90. RMSEA is 0.087 and is well below the recommended limit of 0.10.

FULL FLEDGED DATA ANALYSIS RESULTS (210 samples)

Testing the Measurement model for dimensions influencing riders' satisfaction - full-fledged data:

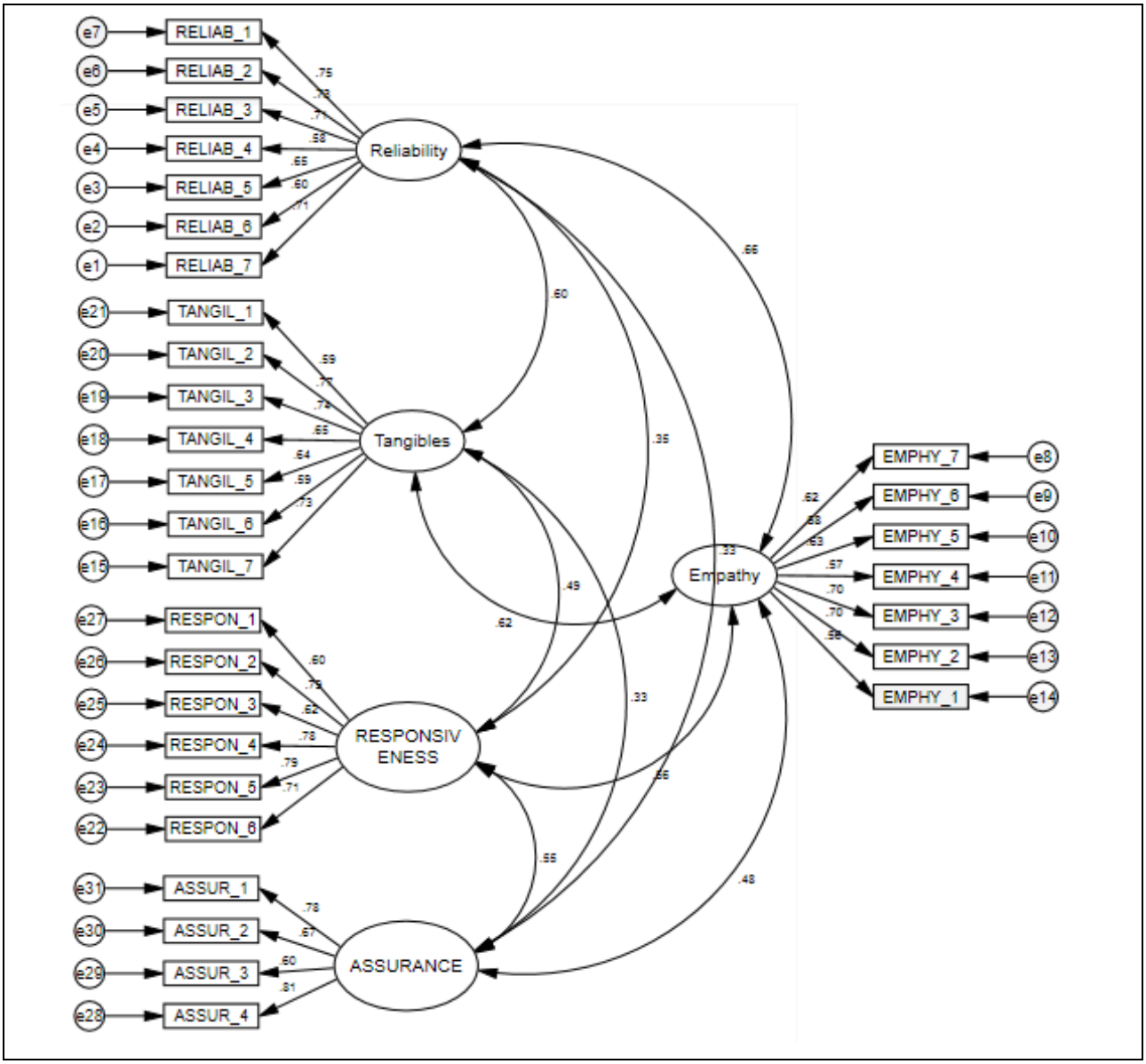


Figure 6: Measurement Model influencing riders' satisfaction - full-fledged data

Table 18: Correlation (Covariance) result of dimensions of influencing riders' satisfaction – Full-fledged data

	RELIAB	TANGIL	RESPON	ASSUR	EMPHY
RELIAB	-	0.598	0.353	0.331	0.663
TANGIL	-	-	0.492	0.333	0.620
RESPON	-	-	-	0.555	0.560
ASSUR	-	-	-	-	0.478

Table 18 shows the inter item Correlation result of dimensions influencing riders' satisfaction for full-fledged data has weak (r=0.331) to good (r=0.663) correlation.

Table 19: Table 15: Reliability and Item Loadings influencing riders' satisfaction dimensions- full-fledged data

Latent Variable	Indicators	Standardized loadings (β)	Composite Reliability	Cronbach Alpha	Average Variance Explained (AVE)
Reliability	RELIAB_1	0.751	0.856	0.857	0.462
	RELIAB_2	0.730			
	RELIAB_3	0.709			
	RELIAB_4	0.584			
	RELIAB_5	0.648			
	RELIAB_6	0.602			
	RELIAB_7	0.715			
Tangibles	TANGIL_1	0.589	0.853	0.854	0.455
	TANGIL_2	0.770			
	TANGIL_3	0.736			
	TANGIL_4	0.653			
	TANGIL_5	0.637			
	TANGIL_6	0.585			
	TANGIL_7	0.727			
Responsiveness	RESPON_1	0.605	0.852	0.854	0.494
	RESPON_2	0.787			
	RESPON_3	0.616			
	RESPON_4	0.780			
	RESPON_5	0.790			
	RESPON_6	0.605			
Assurance	ASSUR_1	0.781	0.810	0.812	0.519
	ASSUR_2	0.670			
	ASSUR_3	0.601			
	ASSUR_4	0.810			
Empathy	EMPHY_1	0.558	0.826	0.827	0.406

	EMPHY_2	0.699			
	EMPHY_3	0.697			
	EMPHY_4	0.571			
	EMPHY_5	0.629			
	EMPHY_6	0.677			
	EMPHY_7	0.615			

Speaking about the Reliability factor for dimensions of influencing riders' satisfaction (full-fledged data), it is observed from Table 19 that **RELIABILITY** construct has a composite reliability value of 0.856 and a cronbach alpha of 0.857; **TANGIBLES** construct with a composite reliability of 0.853 and a cronbach alpha of 0.854; **RESPONSIVENESS** construct has a composite reliability value of 0.852 and a cronbach alpha of 0.854; **ASSURANCE** construct has a composite reliability value of 0.810 and a cronbach alpha of 0.812 and EMPATHY construct with a composite reliability of 0.826 and a cronbach alpha of 0.827. The findings reveal that most of the constructs are higher than the required reliability. Hence it could be concluded that all the items grouped completely converge to its respective sub dimensions and consider all items for the full-fledged study.

Table 20: Goodness-of-fit & Incremental Indices of Measurement model of riders' satisfaction dimensions - full-fledged data

	(χ2/df)	GFI	RMSEA	AGFI	NFI	CFI	IFI	RFI	PCFI	PNFI
Accepted Value	< 5	> 0.90	< 0.10	> 0.80	> 0.90				> 0.50	
Model Value	2.152	0.875	0.074	0.832	0.872	0.862	0.864	0.846	0.773	0.692

The Goodness-of-fit and Incremental Indices for dimensions influencing *Riders' Satisfaction* dimension (full-fledged data) depicted in Table 20 indicates an overall acceptable fit and is an over identified model.

Testing the Measurement model for dimensions of Riders' Satisfaction & Customer Loyalty to apps aggregation - full-fledged data:

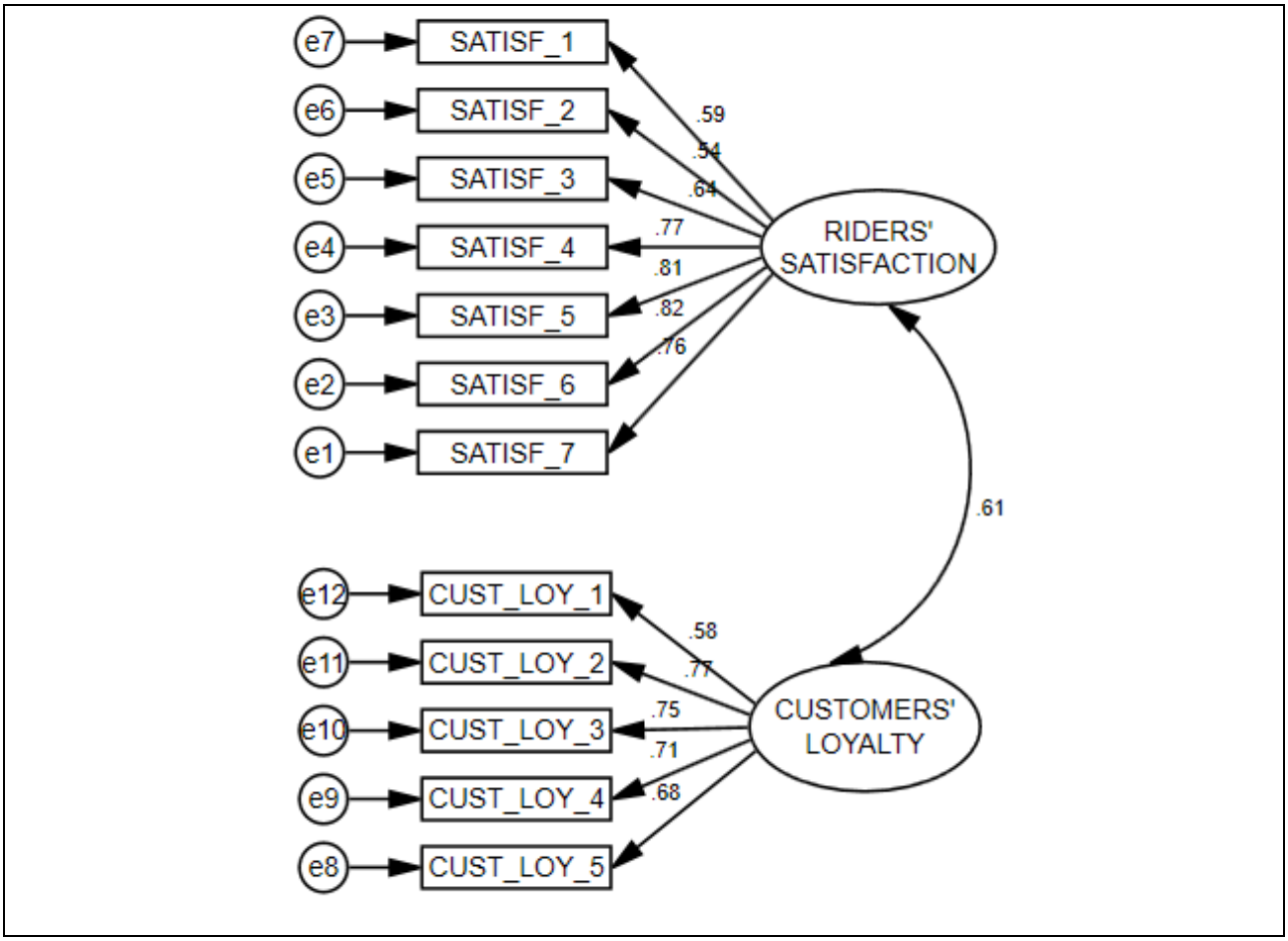


Figure 7: Measurement Model of Desire to Riders' Satisfaction & Customer Loyalty to apps aggregation - full-fledged data

Table 21: Correlation (Covariance) result of dimensions of *Riders' Satisfaction & Customer Loyalty to apps aggregation* dimensions

	SATISF
CUST_LOY	0.613

Table 21 shows a good correlation (r=0.613) between *Riders' Satisfaction & Customer Loyalty to apps aggregation* for full-fledged data. Speaking about the Reliability factor for *Riders' Satisfaction & Customer Loyalty to apps aggregation* (full-fledged data), it is

Table 22: Reliability and Item Loadings of *Riders' Satisfaction & Customer Loyalty to apps aggregation* dimensions- full-fledged data

Latent Variable	Indicators	Standardized loadings (β)	Composite Reliability	Cronbach Alpha	Average Variance Explained (AVE)

Riders' Satisfaction (SATISF)	SATISF_1	0.592	0.877	0.879	0.510
	SATISF_2	0.536			
	SATISF_3	0.644			
	SATISF_4	0.774			
	SATISF_5	0.810			
	SATISF_6	0.825			
	SATISF_7	0.763			
Customer Loyalty (CUST_LOY)	CUST_LOY_1	0.582	0.828	0.829	0.493
	CUST_LOY_2	0.773			
	CUST_LOY_3	0.749			
	CUST_LOY_4	0.711			
	CUST_LOY_5	0.680			

observed from Table 22 that RIDERS' SATISFACTION construct has a composite reliability value of 0.877 and a cronbach alpha of 0.879 and CUSTOMER LOYALTY TO APPS AGGREGATION construct with a composite reliability of 0.828 and a cronbach alpha of 0.829.

Table 23: Goodness-of-fit & Incremental Indices of Measurement model of *Riders' Satisfaction & Customer Loyalty to apps aggregation* dimensions - full-fledged data

	(χ2/df)	GFI	RMSEA	AGFI	NFI	CFI	IFI	RFI	PCFI	PNFI
Accepted Value	< 5	> 0.90	< 0.10	> 0.80	> 0.90				> 0.50	
Model Value	3.718	0.863	0.089	0.794	0.849	0.884	0.885	0.858	0.696	0.669

The Goodness-of-fit and Incremental Indices for *Riders' Satisfaction & Customer Loyalty to apps aggregation* dimensions (full-fledged data) depicted in Table 23 indicates an overall acceptable fit and is an over identified model.

PART III

2.5 SEM ANALYSIS RESULTS:

Before SEM (mediation) analysis, the full data are subjected to Normality, collinearity and autocorrelation tests that are necessary assumptions of SEM model (Table 24).

Table 24: Normality and Collinearity test results by item wise for full fledged data

Item Label	Normality test		Collinearity & Autocorrelation Statistics			
	Skewness	Kurtosis	Tolerance	VIF	Condition Indices	Durbin-Watson Statistic
RELIABILITY						
RELIAB_1	-0.191	0.066	0.407	2.458	11.374	1.860
RELIAB_2	-0.472	0.279	0.422	2.368	13.551	
RELIAB_3	-0.073	-0.072	0.560	1.786	15.188	
RELIAB_4	0.198	0.197	0.681	1.467	15.921	
RELIAB_5	-0.349	-0.609	0.584	1.712	16.903	
RELIAB_6	-0.284	-0.502	0.666	1.503	17.196	
RELIAB_7	-0.115	-0.474	0.506	1.976	19.887	
TANGIBLES						
TANGIL_1	-0.220	-0.257	0.615	1.626	10.434	1.895
TANGIL_2	-0.727	0.055	0.466	2.148	11.602	
TANGIL_3	-0.681	-0.093	0.483	2.071	14.687	
TANGIL_4	0.183	-0.375	0.509	1.965	15.422	
TANGIL_5	0.247	-0.308	0.522	1.915	16.686	
TANGIL_6	-0.430	0.053	0.578	1.729	18.230	
TANGIL_7	-0.455	0.082	0.503	1.986	19.926	
RESPONSIVENESS						
RESPON_1	-0.416	-0.073	0.636	1.573	12.041	1.888
RESPON_2	-0.260	-0.511	0.446	2.244	13.59	
RESPON_3	-0.340	-0.111	0.651	1.536	14.221	
RESPON_4	-0.348	-0.156	0.451	2.219	16.183	
RESPON_5	-0.492	0.138	0.445	2.246	17.664	
RESPON_6	-0.102	0.125	0.585	1.710	18.727	
ASSURANCE						
ASSUR_1	-0.817	-0.120	0.489	2.044	9.634	1.986

ASSUR_2	-0.166	-0.080	0.669	1.494	10.656	
ASSUR_3	-0.168	-0.388	0.681	1.468	11.394	
ASSUR_4	-0.741	-0.030	0.451	2.218	15.032	

Item Label	Normality test		Collinearity & Autocorrelation Statistics			
	Skewness	Kurtosis	Tolerance	VIF	Condition Indices	Durbin-Watson Statistic
EMPATHY						
EMPHY_1	-0.200	-0.316	0.634	1.576	10.794	2.093
EMPHY_2	-0.520	-0.574	0.493	2.028	11.121	
EMPHY_3	-0.580	-0.385	0.491	2.038	14.483	
EMPHY_4	0.378	0.016	0.621	1.610	15.033	
EMPHY_5	-0.476	0.044	0.643	1.554	16.491	
EMPHY_6	-0.401	-0.290	0.573	1.745	18.055	
EMPHY_7	-0.468	-0.250	0.637	1.570	19.675	
RIDERS' SATISFACTION						
SATISF_1	-0.765	0.195	0.584	1.712	10.630	1.895
SATISF_2	-0.307	0.402	0.687	1.455	14.461	
SATISF_3	-0.712	0.056	0.528	1.893	16.325	
SATISF_4	-0.650	0.076	0.444	2.251	17.064	
SATISF_5	-0.414	-0.111	0.386	2.590	17.753	
SATISF_6	-0.549	-0.067	0.361	2.769	19.457	
SATISF_7	-0.341	-0.244	0.449	2.227	22.026	
CUSTOMER LOYALTY						
CUST_LOY_1	-0.377	0.097	0.685	1.460	11.062	1.996
CUST_LOY_2	-0.579	-0.052	0.481	2.079	12.268	
CUST_LOY_3	-0.502	-0.417	0.510	1.959	13.905	
CUST_LOY_4	-0.501	-0.310	0.561	1.782	16.184	
CUST_LOY_5	-0.633	0.074	0.576	1.737	16.736	

The values for asymmetry and kurtosis between -2 and +2 are considered acceptable in order to prove normal univariate distribution (George & Mallery, 2010). George, D., & Mallery, M. (2010). Thus, ***Normality holds as the values are within the specified range of skewness and Kurtosis for all the items (Table 24).*** Hence the assumption of normality holds for item under

each dimension. Furthermore, the Variance Inflation 'Factor (VIF) of all the items is below the recommend value of 5 and also tolerance value less than 1. This indicates that there is very less collinearity and there is no possibility of inflated variance of the items. Furthermore, with regard to *autocorrelation*, Durbin Watson statistics is calculated. A **rule of thumb** is that test statistic values in the range of 1.5 to 2.5 are relatively normal & outside of this range could be cause for concern. Field (2009). In the table above, the Durbin Watson statistics for all dimensions is within the acceptable value. Hence, we now proceed to do SEM analysis for full fledged data.

H_1: There is a significant influence of *Reliability factor* of Service Quality on *riders' satisfaction*.

The above hypothesis is addressed using zero order correlation SEM technique. The direct relationship between *Reliability factor* and *riders' Satisfaction* is depicted in Figure 8.

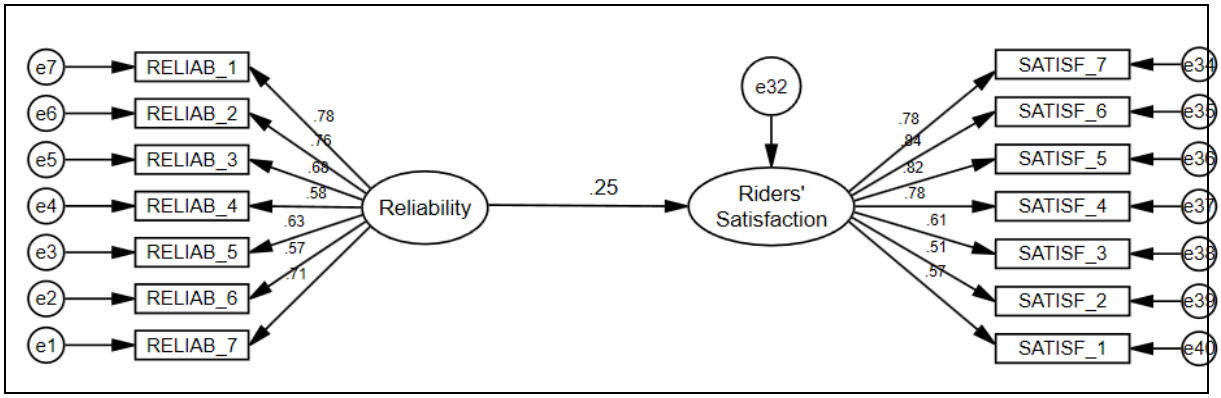


Figure 8: Direct relationship between *Reliability factor* and *riders' Satisfaction*

Table 25: Standardized Regression weights for direct relationship between *Reliability factor* and *riders' Satisfaction*

			Standard Estimate	S.E.	C.R.	P
Riders' Satisfaction	<---	*Reliability factor*	0.248	0.091	3.118	0.002*

* Significant at 5% level.

The regression results are provided in Table 25. Accordingly, it is observed that *Reliability* has a significant (ß = 0.248; CR = 3.118, $p<0.05$) influence/impact on *Riders' Satisfaction*, thus, H_1 could be fully asserted. The interpretation is that, for one unit increase in the rating scale of agreement on *Reliability* construct, one could expect about 0.248 times (25%) increase in

Riders' Satisfaction given other factors remain fixed or same. In other words, for every new 10 respondents rating as agree or strongly agree for *Reliability* dimension, one would expect about **two** respondents (ß = 0.248) likely to give a rating of agree or strongly agree on *Riders' Satisfaction* factor.

H_2: There is a significant influence of *Tangibles factor* of Service Quality on *riders' satisfaction*.

The above hypothesis is addressed using zero order correlation SEM technique. The direct relationship between *Tangibles factor* and *riders' Satisfaction* is depicted in Figure 9.

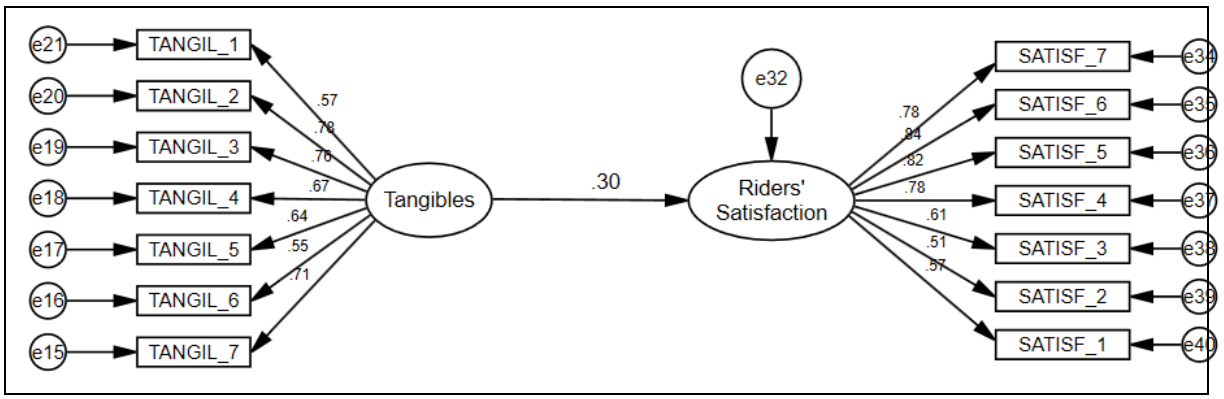


Figure 9: Direct relationship between *Tangibles factor* and *riders' Satisfaction*

Table 26: Standardized Regression weights for direct relationship between *Tangibles factor* and *riders' Satisfaction*

			Standard Estimate	S.E.	C.R.	P
Riders' Satisfaction	<---	*Tangibles factor*	0.298	0.100	3.709	0.000*

* Significant at 5% level.

The regression results are provided in Table 26. Accordingly, it is observed that *Tangibles* has a significant (ß = 0.298; CR = 3.709, $p<0.05$) influence/impact on *Riders' Satisfaction*, thus, H_2 could be fully asserted. The interpretation is that, for one unit increase in the rating scale of agreement on *Tangibles* construct, one could expect about 0.298 times (30%) increase in *Riders' Satisfaction* given other factors remain fixed or same. In other words, for every new 10 respondents rating as agree or strongly agree for *Tangibles* dimension, one would expect about **three** respondents (ß = 0.298) likely to give a rating of agree or strongly agree on *Riders' Satisfaction* factor.

H_3: There is a significant influence of *Responsiveness factor* of Service Quality on *riders' satisfaction*.

The above hypothesis is addressed using zero order correlation SEM technique. The direct relationship between *Responsiveness factor* and *riders' Satisfaction* is depicted in Figure 10.

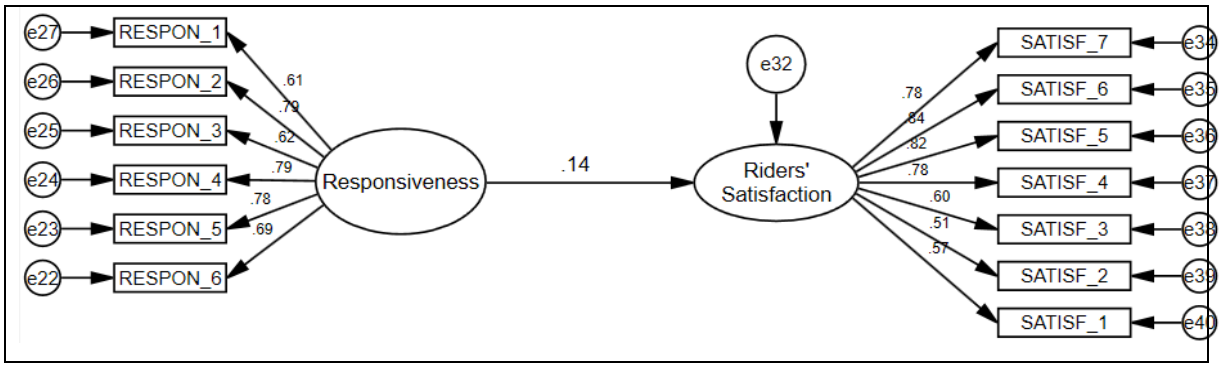


Figure 10: Direct relationship between *Responsiveness factor* and *riders' Satisfaction*

Table 27: Standardized Regression weights for direct relationship between *Responsiveness factor* and *riders' Satisfaction*

			Standard Estimate	S.E.	C.R.	P
Riders' Satisfaction	<---	*Responsiveness*	0.135	0.102	1.727	0.084

The regression results are provided in Table 27. Accordingly, it is observed that *Responsiveness has no significant* (ß = 0.135; CR = 1.727, p>0.05) influence/impact on *Riders' Satisfaction*, thus, H_3 could not be asserted. Essentially, there is no evidence to suggest that timely or courteous responses from cab drivers have increased riders' happiness on app-related aggregation. This clearly indicates that delayed responses or not taking the request might have led having no greater satisfaction of the potential cab riders.

H_4: There is a significant influence of *Assurance factor* of Service Quality on *riders' satisfaction*.

The above hypothesis is addressed using zero order correlation SEM technique. The direct relationship between *Assurance factor* and *riders' Satisfaction* is depicted in Figure 11.

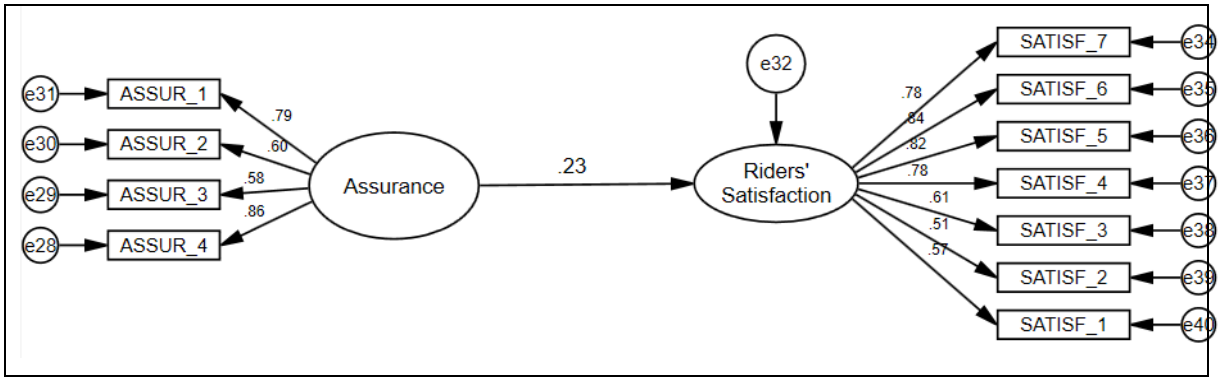


Figure 11: Direct relationship between *Assurance factor* and *riders' Satisfaction*

Table 28: Standardized Regression weights for direct relationship between *Assurance factor* and *riders' Satisfaction*

			Standard Estimate	S.E.	C.R.	P
Riders' Satisfaction	<---	*Assurance factor*	0.230	0.069	2.895	0.004*

* Significant at 5% level.

The regression results are provided in Table 28. Accordingly, it is observed that *Assurance* has a significant (ß = 0.230; CR = 2.895, p<0.05) influence/impact on *Riders' Satisfaction*, thus, H_4 could be fully asserted. The interpretation is that, for one unit increase in the rating scale of agreement on *Assurance* construct, one could expect about 0.230 times (23%) increase in *Riders' Satisfaction* given other factors remain fixed or same. In other words, for every new 10 respondents rating as agree or strongly agree for *Assurance* dimension, one would expect about **two** respondents (ß = 0.230) likely to give a rating of agree or strongly agree on *Riders' Satisfaction* factor.

H_5: There is a significant influence of *Empathy factor* of Service Quality on *riders' satisfaction*.

The above hypothesis is addressed using zero order correlation SEM technique. The direct relationship between *Empathy factor* and *riders' Satisfaction* is depicted in Figure 12.

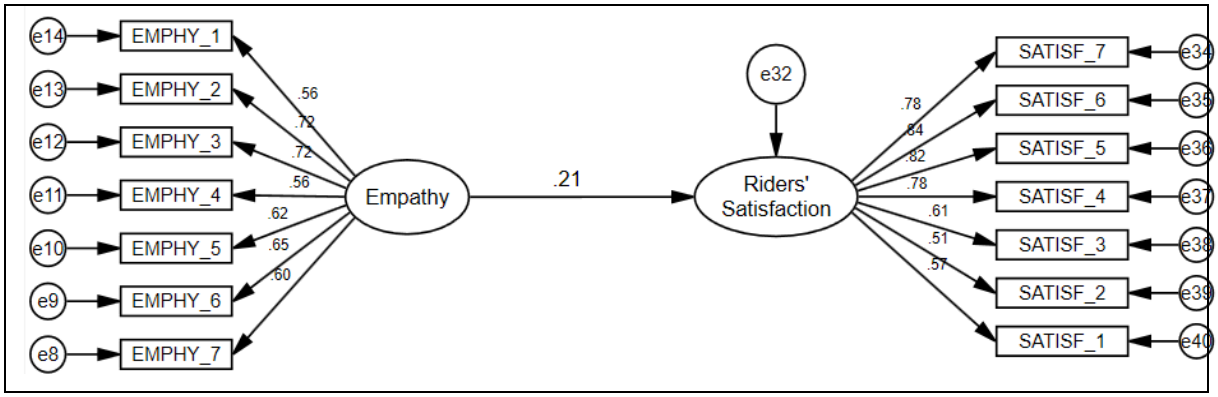


Figure 12: Direct relationship between *Empathy factor* and *riders' Satisfaction*

Table 29: Standardized Regression weights for direct relationship between *Empathy factor* and *riders' Satisfaction*

			Standard Estimate	S.E.	C.R.	P
Riders' Satisfaction	<---	*Empathy factor*	0.210	0.109	2.563	0.010*

* Significant at 5% level.

The regression results are provided in Table 29. Accordingly, it is observed that *Empathy* has a significant (ß = 0.210; CR = 2.563, p<0.05) influence/impact on *Riders' Satisfaction*, thus, H_5 could be fully asserted. The interpretation is that, for one unit increase in the rating scale of agreement on *Empathy* construct, one could expect about 0.210 times (21%) increase in *Riders' Satisfaction* given other factors remain fixed or same. In other words, for every new 10 respondents rating as agree or strongly agree for *Empathy* dimension, one would expect about **two** respondents (ß = 0.210) likely to give a rating of agree or strongly agree on *Riders' Satisfaction* factor.

H_6: There is a significant influence of *riders' satisfaction* on customer loyalty to aggregation business (commission) model.

The above hypothesis is addressed using zero order correlation SEM technique. The direct relationship between *Riders' Satisfaction* and *Customers' Loyalty to apps aggregation* is depicted in Figure 13.

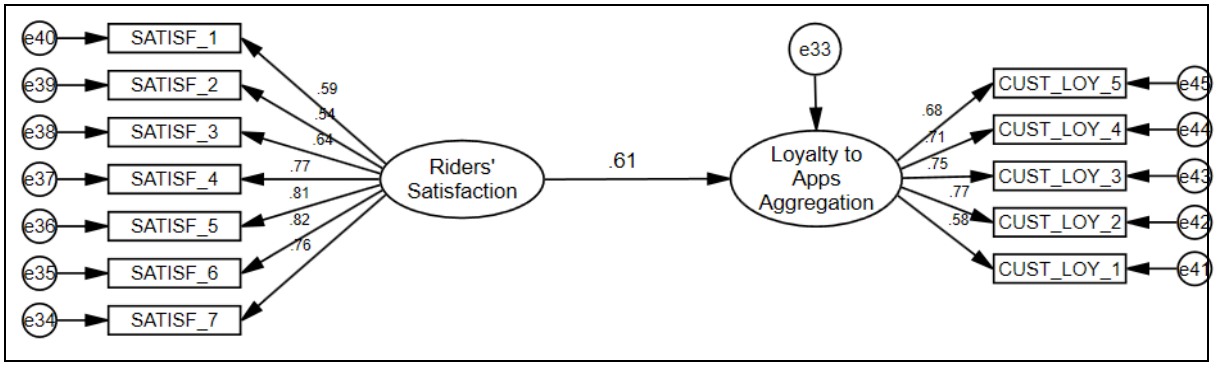


Figure 13: Direct relationship between *Riders' Satisfaction* and *Customers' Loyalty to apps aggregation*

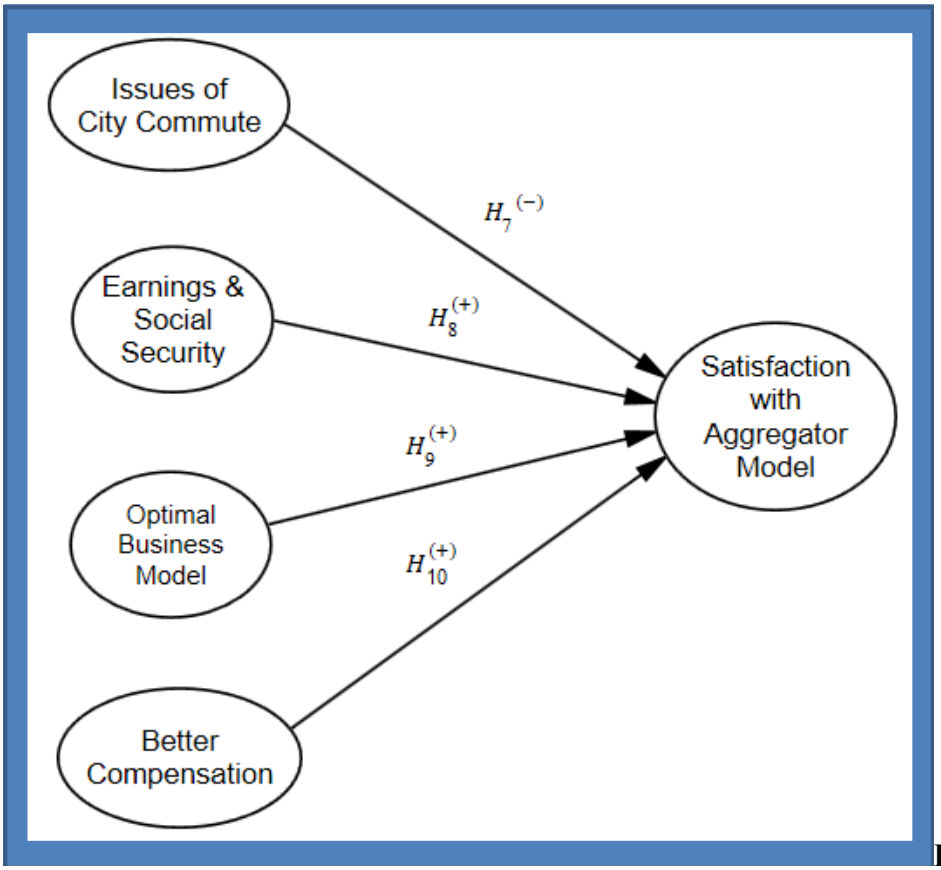
Table 30: Standardized Regression weights for direct relationship between *Riders' Satisfaction* and *Customers' Loyalty to apps aggregation*

			Standard Estimate	S.E.	C.R.	P
Customers' Loyalty to apps aggregation	<---	*Riders' Satisfaction*	0.613	0.077	6.825	0.000*

* Significant at 5% level.

The regression results are provided in Table 30. Accordingly, it is observed that *Riders' Satisfaction* has a significant (ß = 0.613; CR = 6.825, $p<0.05$) influence/impact on *Customers' Loyalty to apps aggregation*, thus, H_6 could be fully asserted. The interpretation is that, for one unit increase in the rating scale of agreement on *Riders' Satisfaction* construct, one could expect about 0.613 times (61%) increase in *Riders' Satisfaction* given other factors remain fixed or same. In other words, for every new 10 respondents rating as agree or strongly agree for *Riders' Satisfaction* dimension, one would expect about **six** respondents (ß = 0.613) likely to give a rating of agree or strongly agree on *Customers' Loyalty to apps aggregation*.

Chapter 4.3 Taxi Drivers' satisfaction analysis



PART I

Figure 14: Conceptual Framework of Taxi Drivers' Satisfaction with App based Aggregation

The following theoretical hypotheses would be tested:

H_7: *Increased issues of commuting* with app based aggregator model result in *lesser* satisfaction of taxi drivers.

H_8: Increased *Earnings and social security* of taxi drivers with app based aggregator model result in *higher* satisfaction.

H_9: *A successful optimal business model* with app based aggregator model result in *higher* satisfaction of taxi drivers.

H_{10}: *A better compensation model* with app based aggregation result in *higher* satisfaction of taxi drivers.

Table 31: Average Number of Days taxi is run by sample drivers

	Percent
20 days	5.9
25 days	53.6
> 25 days	40.5
Total	100.0

N=302

Table 32: Approximate Income earned by sample taxi drivers per day

	Percent
Rs 1500 to Rs 2000	84.5
> Rs 2000	15.5
Total	100.0

Table 33: Per day approximate distance covered by sample Taxi Drivers

	Percent
5 to 10 Kms	11.8
10 to 15 Kms	23.7
> 15 Kms	64.5
Total	100.0

Table 34: Per day average "dead mileage" for the pick ups & after the drops usually is

	Percent
< 2 Kms	5.3
2 to 4 Kms	51.6
> 4 Kms	43.1
Total	100.0

Table 35: Duration of run for a stretch without breaks by sample drivers

	Percent
4 to 5 hrs	19.4
6 to 7 hrs	46.4
> 7 hrs	34.2
Total	100.0

Table 36: Driving taxi during nights

	Percent
Sometimes	42.4
Not at all	57.6
Total	100.0

Chart II – Questions under each dimensions influencing Drivers' Satisfaction to apps aggregation

Variable (question) Description	**Dimension**
I am having some pressing issues/pain points currently in the app based taxi business (ISSU_CT_CC_1)	Issues of commuting (ISSU_CT_CC)
Need to drive for long hours in order to increase earnings (ISSU_CT_CC_2)	
I cancel the trips allocated by aggregators at times to receive payment immediately and directly for immediate needs (ISSU_CT_CC_3)	
I have health issues due to long hours of driving like back pain, knee pain, insomnia etc. (ISSU_CT_CC_4)	
I feel having less "dead mileage" would bring down cancellations (ISSU_CT_CC_5)	
I feel, it would be good if I am compensated for my empty return trips in case of drops to a no business zone (ISSU_CT_CC_6)	
I am not having any breaks for bio requirements every 3-4 hours (ISSU_CT_CC_7)	
I am paid the "minimum fare per KM" as stipulated by the state law (EARN_SOS_1)	Earnings and social security
I am shared the same % age of earnings during "Peak or Surge" as other normal trips (EARN_SOS_2)	

I am satisfied with my earnings (EARN_SOS_3)	(EARN_SOS)
I am motivated and happy with earnings and treatment of aggregators with courtesy (EARN_SOS_4)	
My family is having the health insurance provided by Aggregator (EARN_SOS_5)	
I feel safe & secure in my current job/profession (EARN_SOS_6)	
I am having social security in case of any eventuality (EARN_SOS_7)	
I feel having a fixed monthly payment instead of commission would be good (EARN_SOS_8)	
I am happy with current situation of Taxi business (OPT_BS_MD_1) (R)	Optimal business model (OPT_BS_MD)
When I accept the trips of my preference, would reduce the chances of cancellation (OPT_BS_MD_2)	
I would earn more if not app based model (OPT_BS_MD_3)	
I Would prefer a "monthly subscription or monthly maintenance charges" over the commission model (OPT_BS_MD_4)	
I wish to have a change in Business model where there is no commission for the trip fares (OPT_BS_MD_5)	
I prefer getting paid directly by the customer as and when the trips are completed (OPT_BS_MD_6)	
I earn more in share trips for better earnings optimization rather than single trip (OPT_BS_MD_7)	
I would like to have breaks regularly after every 2 trips or 3 hours of duty (OPT_BS_MD_8)	
I request the customers to cancel the trips and book/pay directly to ease financial issues or problems (OPT_BS_MD_9)	
I feel the Cab cancellations would come down by increasing the earnings of trips & getting paid directly by the customers (BETT_COM_1)	Better compensation (BETT_COM)
If compensated for empty return trips, cancellations would come down (BETT_COM_2)	
I will be motivated if an apt business model is available (BETT_COM_3)	
I prefer accepting the trips I take, rather than being assigned or thrust (BETT_COM_4)	
I feel by improving the earnings and work-life balance of drivers from current situation, will be motivated to provide better service to customers (BETT_COM_5)	
I am motivated to provide apt service to the customer (SAT_AG_MD_1)	Satisfaction with aggregator
I am happy with the services, benefits & amenities provided by the aggregator (SAT_AG_MD_2)	

I enjoy my profession (SAT_AG_MD_3)	model (SAT_AG_ MD)
I am able to take care of my health and I am able to take care of my personal wellbeing (SAT_AG_MD_4)	
I am not stressed with current work load or number trips per day (SAT_AG_MD_5)	
I have support from aggregators for social & financial counselling's or planning (SAT_AG_MD_6)	
I am able to balance "Work & Life" for example able to attend family and community gatherings and celebrations (SAT_AG_MD_7)	
I am happy with current aggregator and feel emotionally connected/integrated (SAT_AG_MD_8)	

Before going into SEM analysis, the *descriptive statistics* of the variables for full fledged data (302 samples) is provided in Table 6 of the following section.

PART - II

Descriptive statistics

Table 37: Percentage and Mean scores by item-wise of *Issues of commuting* (Fledged data)

		Percentage (in %) of Respondents						Mean	Overall mean
Issues of commuting	Variable	SD	D	N	A	SA	Total		
Issues & Problems currently	ISSU_CT_CC_1	12.2	11.2	7.2	39.1	30.3	100.0	3.64	3.55
Long hours	ISSU_CT_CC_2	6.9	17.1	7.9	35.2	32.9	100.0	3.70	
Cancel trips for cash payment	ISSU_CT_CC_3	8.6	14.8	7.6	39.8	29.3	100.0	3.66	
Health issues	ISSU_CT_CC_4	4.9	30.6	24.3	33.9	6.3	100.0	3.05	
Dead Mileage to cancel	ISSU_CT_CC_5	12.2	11.2	7.2	39.1	30.3	100.0	3.56	
Compensation for dead mileage or empty return rides	ISSU_CT_CC_6	6.9	17.1	7.9	35.2	32.9	100.0	3.60	
No breaks for long duration	ISSU_CT_CC_7	8.6	14.8	7.6	39.8	29.3	100.0	3.67	

SD – Strongly Disagree, D-Disagree, N- Neutral, A – Agree, SA – Strongly Agree

Table 37.1: Percentage and Mean scores by item-wise of *Issues of commuting* (Fledged data)

		Percentage (in %) of Respondents						Mean	Overall mean
Earnings and social security	Variable	SD	D	N	A	SA	Total		
Minimum fare per KM	EARN_SOS_1	16.8	42.1	29.9	9.2	2.0	100.0	3.62	3.66
Proportion fare in Surge	EARN_SOS_2	12.5	47.7	24.7	13.8	1.3	100.0	3.56	
Satisfaction of current earnings	EARN_SOS_3	16.8	44.7	27.6	8.6	2.3	100.0	3.65	
Earnings & treatment	EARN_SOS_4	15.8	54.3	10.2	17.4	2.3	100.0	3.63	
Family health insurance	EARN_SOS_5	16.8	49.0	23.7	9.5	1.0	100.0	3.71	
Safe & secure	EARN_SOS_6	22.4	39.8	19.1	15.8	3.0	100.0	3.62	
Social Security	EARN_SOS_7	19.7	49.7	17.4	9.9	3.3	100.0	3.72	
Monthly Subscription	EARN_SOS_8	1.6	9.5	17.8	49.0	22.0	100.0	3.80	

SD – Strongly Disagree, D-Disagree, N- Neutral, A – Agree, SA – Strongly Agree

Table 37.2: Percentage and Mean scores by item-wise of *Issues of commuting* (Fledged data)

		Percentage (in %) of Respondents						Mean	Overall mean
Optimal business model	Variable	SD	D	N	A	SA	Total		
Happy with current business model	OPT_BS_MD_1	26.0	25.7	26.6	16.8	4.9	100.0	3.51	3.52
Driver accepts is own trips	OPT_BS_MD_2	2.3	15.5	26.3	37.8	18.1	100.0	3.53	
Earn more if not current business model	OPT_BS_MD_3	4.9	22.7	18.1	33.2	21.1	100.0	3.42	
Prefer Monthly subscription model	OPT_BS_MD_4	6.9	19.7	22.0	43.1	8.2	100.0	3.25	
No Commission model	OPT_BS_MD_5	3.0	8.9	31.9	39.8	16.4	100.0	3.57	

Being paid directly by the customer	OPT_BS_MD_6	2.0	15.5	23.7	47.0	11.8	100.0	3.51	
Earn more in share trips	OPT_BS_MD_7	2.6	12.2	27.6	40.5	17.1	100.0	3.57	
Break after 2-3 trips	OPT_BS_MD_8	1.6	22.0	7.2	53.3	15.8	100.0	3.59	
Request to be paid directly	OPT_BS_MD_9	0.3	10.5	22.7	50.0	16.4	100.0	3.71	

SD – Strongly Disagree, D-Disagree, N- Neutral, A – Agree, SA – Strongly Agree

Table 37.3: Percentage and Mean scores by item-wise of *Issues of commuting* (Fledged data)

		Percentage (in %) of Respondents						Mean	Overall mean
Better compensation	Variable	SD	D	N	A	SA	Total		
Earnings vs cancellations	BETT_COM_1	3.0	12.5	13.8	51.0	19.7	100.0	3.72	3.81
Empty rides vs cancellations	BETT_COM_2	3.6	10.9	16.1	46.4	23.0	100.0	3.74	
Apt business model	BETT_COM_3	2.6	6.6	14.8	49.7	26.3	100.0	3.90	
Trips accepted by self	BETT_COM_4	2.0	7.9	15.1	55.9	19.1	100.0	3.82	
Improved earnings with worklife balance	BETT_COM_5	2.0	6.3	13.2	57.9	20.7	100.0	3.89	

SD – Strongly Disagree, D-Disagree, N- Neutral, A – Agree, SA – Strongly Agree

Table 37.4: Percentage and Mean scores by item-wise of *Issues of commuting* (Fledged data)

		Percentage (in %) of Respondents						Mean	Overall mean
Satisfaction with model	Variable	SD	D	N	A	SA	Total		
Motivated for good service to customer	SAT_AG_MD_1	26.0	25.7	26.6	16.8	4.9	100.0	3.51	3.53
Happy with Benefits & services provided	SAT_AG_MD_2	18.1	37.8	26.3	15.5	2.3	100.0	3.53	
Enjoys profession	SAT_AG_MD_3	21.1	33.2	18.1	22.7	4.9	100.0	3.42	

Able to take care of health & wellbeing	SAT_AG_MD_4	8.2	43.1	22.0	19.7	6.9	100.0	3.25	
Stress with work load	SAT_AG_MD_5	3.0	8.9	31.9	39.8	16.4	100.0	3.57	
Support for social & financial counselling	SAT_AG_MD_6	11.8	47.0	23.7	15.5	2.0	100.0	3.51	
Work life balance	SAT_AG_MD_7	17.1	40.5	27.6	12.2	2.6	100.0	3.57	
Integrated with Aggregator	SAT_AG_MD_8	15.8	53.3	7.2	22.0	1.6	100.0	3.59	

SD – Strongly Disagree, D-Disagree, N- Neutral, A – Agree, SA – Strongly Agree

PART III

Testing the Measurement model for dimensions influencing Drivers' satisfaction - full-fledged data (304 samples):

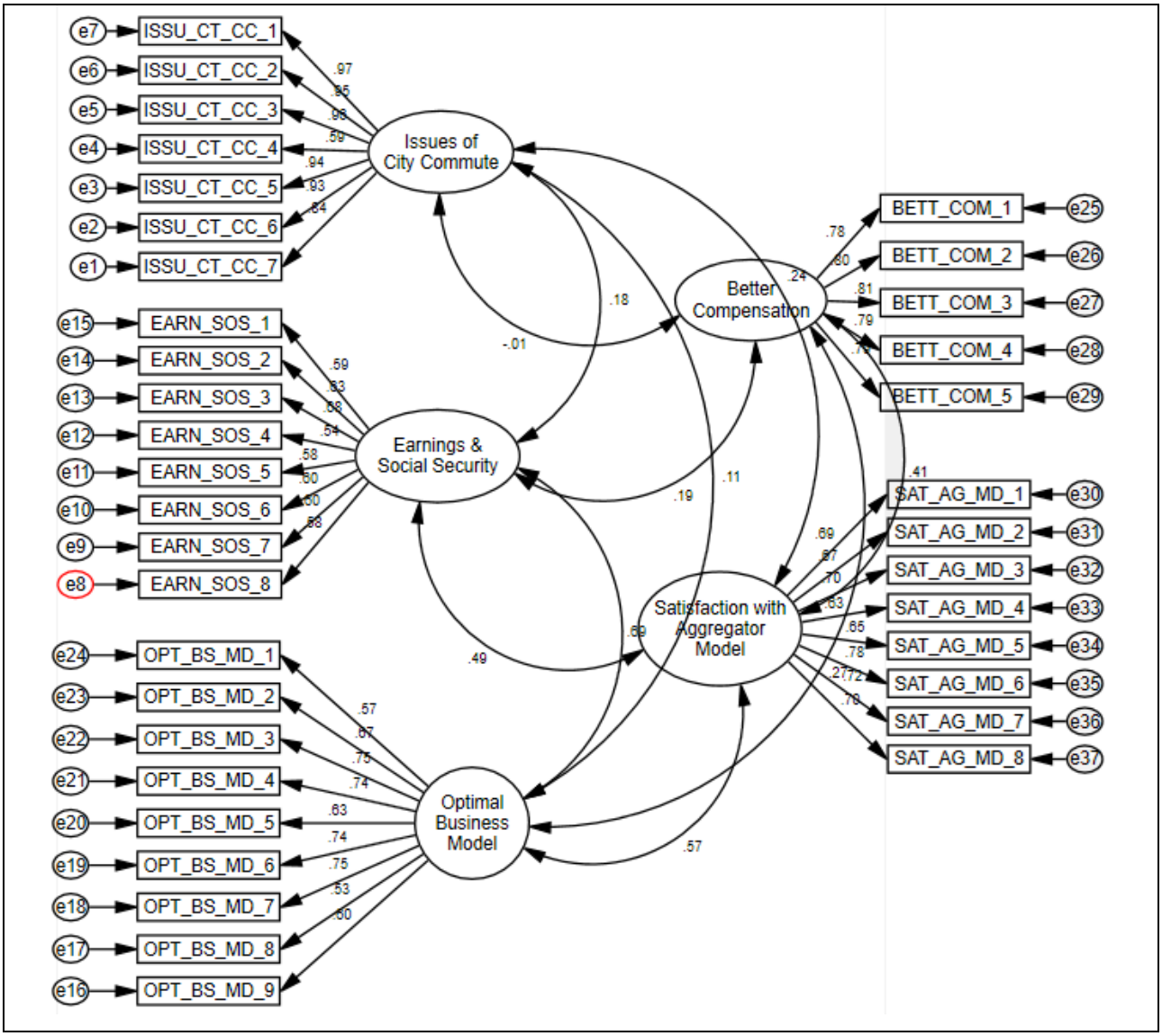


Figure 15: Measurement Model influencing Drivers' satisfaction - full-fledged data

Table 38: Correlation (Covariance) result of dimensions of influencing Drivers' satisfaction – Full-fledged data

	ISSU_CT_CC	EARN_SOS	OPT_BS_MD	BETT_COM	SAT_AG_MD
ISSU_CT_CC	-	0.182	0.112	0.010	- 0.237
EARN_SOS	-	-	0.689	0.187	0.491
OPT_BS_MD	-	-	-	0.270	0.569
BETT_COM	-	-	-	-	0.414

Table 38 shows the inter item Correlation result of dimensions influencing Drivers' satisfaction for full-fledged data has weak (r=0.112) to good (r=0.569) correlation.

Speaking about the Reliability factor for dimensions of influencing Drivers' satisfaction (full-fledged data), it is observed from Table 39 that **ISSUES OF COMMUTING** construct has a composite reliability value of 0.964 and a cronbach alpha of 0.964; **EARNINGS AND SOCIAL SECURITY** construct with a composite reliability of 0.819 and a cronbach alpha of 0.819; **OPTIMAL BUSINESS MODEL** construct has a composite reliability value of 0.877 and a cronbach alpha of 0.879; **BETTER COMPENSATION** construct has a

Table 39: Reliability and Item Loadings influencing Drivers' satisfaction dimensions- full-fledged data

Latent Variable	Indicators	Standardized loadings (β)	Composite Reliability	Cronbach Alpha	Average Variance Explained (AVE)
Issues of commuting	ISSU_CT_CC_1	0.967	0.964	0.964	0.794
	ISSU_CT_CC_2	0.952			
	ISSU_CT_CC_3	0.958			
	ISSU_CT_CC_4	0.591			
	ISSU_CT_CC_5	0.940			
	ISSU_CT_CC_6	0.928			
	ISSU_CT_CC_7	0.840			
Earnings and social security	EARN_SOS_1	0.594	0.819	0.819	0.362
	EARN_SOS_2	0.634			
	EARN_SOS_3	0.682			
	EARN_SOS_4	0.536			
	EARN_SOS_5	0.579			
	EARN_SOS_6	0.599			
	EARN_SOS_7	0.596			
	EARN_SOS_8	0.582			
Optimal business model	OPT_BS_MD_1	0.569	0.877	0.879	0.447
	OPT_BS_MD_2	0.673			
	OPT_BS_MD_3	0.754			
	OPT_BS_MD_4	0.741			
	OPT_BS_MD_5	0.626			
	OPT_BS_MD_6	0.735			
	OPT_BS_MD_7	0.745			
	OPT_BS_MD_8	0.526			

	OPT_BS_MD_9	0.602			
Latent Variable	Indicators	Standardized loadings (β)	Composite Reliability	Cronbach Alpha	Average Variance Explained (AVE)
Better compensation	BETT_COM_1	0.775	0.894	0.894	0.629
	BETT_COM_2	0.801			
	BETT_COM_3	0.813			
	BETT_COM_4	0.790			
	BETT_COM_5	0.785			
Satisfaction with aggregator model	SAT_AG_MD_1	0.686	0.880	0.881	0.480
	SAT_AG_MD_2	0.672			
	SAT_AG_MD_3	0.701			
	SAT_AG_MD_4	0.631			
	SAT_AG_MD_5	0.647			
	SAT_AG_MD_6	0.784			
	SAT_AG_MD_7	0.715			
	SAT_AG_MD_8	0.698			

composite reliability value of 0.894 and a cronbach alpha of 0.894 and **SATISFACTION WITH AGGREGATOR MODE** construct with a composite reliability of 0.880 and a cronbach alpha of 0.881. The findings reveal that most of the constructs are higher than the required reliability. Hence it could be concluded that all the items grouped completely converge to its respective sub dimensions and consider all items for SEM analysis.

Table 40: Goodness-of-fit & Incremental Indices of Measurement model of Drivers' satisfaction dimensions - full-fledged data

	(χ2/df)	GFI	RMSEA	AGFI	NFI	CFI	IFI	RFI	PCFI	PNFI
Accepted Value	< 5	> 0.90	< 0.10	> 0.80	> 0.90				> 0.50	
Model Value	3.376	0.872	0.089	0.818	0.857	0.914	0.915	0.838	0.757	0.703

The Goodness-of-fit and Incremental Indices for dimensions influencing *Drivers' Satisfaction* dimension (full-fledged data) depicted in Table 40 indicates an overall acceptable fit and is an over identified model.

Before SEM (mediation) analysis, the full data are subjected to Normality, collinearity and autocorrelation tests that are necessary assumptions of SEM model (Table 41).
The values for asymmetry and kurtosis between -2 and +2 are considered acceptable in order to prove normal univariate distribution (George & Mallery, 2010). George, D., & Mallery, M. (2010). Thus, ***Normality holds as the values are within the specified range of skewness and Kurtosis for all the items (Table 41).*** Hence the assumption of normality holds for item under

Table 41: Normality and Collinearity test results by item wise for full fledged data

Item Label	Normality test		Collinearity & Autocorrelation Statistics			
	Skewness	Kurtosis	Tolerance	VIF	Condition Indices	Durbin-Watson Statistic
Issues of commuting						
ISSU_CT_CC_1	-0.827	-0.568	0.087	2.489	8.790	1.749
ISSU_CT_CC_2	-0.724	-0.701	0.111	3.040	11.998	
ISSU_CT_CC_3	-0.783	-0.555	0.099	2.055	15.907	
ISSU_CT_CC_4	-0.049	-0.954	0.648	1.544	17.194	
ISSU_CT_CC_5	-0.662	-0.693	0.132	3.559	19.925	
ISSU_CT_CC_6	-0.510	-0.912	0.151	2.621	20.386	
ISSU_CT_CC_7	-0.357	-1.260	0.297	3.366	21.525	
Earnings and social security						
EARN_SOS_1	-0.450	-0.067	0.652	1.533	11.116	2.145
EARN_SOS_2	-0.485	-0.287	0.573	1.745	12.757	
EARN_SOS_3	-0.565	0.138	0.595	1.682	13.594	
EARN_SOS_4	-0.753	-0.248	0.649	1.540	14.982	
EARN_SOS_5	-0.550	-0.002	0.688	1.452	15.907	
EARN_SOS_6	-0.525	-0.569	0.678	1.474	17.477	
EARN_SOS_7	-0.840	0.347	0.609	1.643	19.114	
EARN_SOS_8	-0.753	0.228	0.609	1.641	20.227	
Optimal business model						
OPT_BS_MD_1	-0.303	-0.889	0.707	1.415	11.035	2.078
OPT_BS_MD_2	-0.351	-0.597	0.523	1.911	11.985	
OPT_BS_MD_3	-0.297	-1.012	0.423	2.365	12.652	
OPT_BS_MD_4	-0.467	-0.659	0.498	2.008	14.268	
OPT_BS_MD_5	-0.467	-0.003	0.607	1.648	16.136	
OPT_BS_MD_6	-0.500	-0.345	0.478	2.091	16.408	
OPT_BS_MD_7	-0.452	-0.286	0.510	1.962	17.646	

OPT_BS_MD_8	-0.632	-0.660	0.699	1.430	19.366	
OPT_BS_MD_9	-0.487	-0.240	0.613	1.632	21.855	
Better compensation						
BETT_COM_1	-0.830	0.135	0.420	2.382	11.631	2.031
BETT_COM_2	-0.817	0.121	0.399	2.506	14.399	
BETT_COM_3	-1.007	0.953	0.410	2.438	17.042	
BETT_COM_4	-0.958	0.960	0.427	2.343	18.719	
BETT_COM_5	-1.083	1.522	0.441	2.266	19.303	
Satisfaction with aggregator model						
SAT_AG_MD_1	-0.511	-0.250	0.562	1.780	8.733	2.103
SAT_AG_MD_2	-0.652	0.053	0.501	1.996	12.482	
Item Label	Normality test		Collinearity & Autocorrelation Statistics			
	Skewness	Kurtosis	Tolerance	VIF	Condition Indices	Durbin-Watson Statistic
SAT_AG_MD_3	-0.692	-0.157	0.508	1.968	13.326	
SAT_AG_MD_4	-0.796	0.247	0.550	1.819	14.474	
SAT_AG_MD_5	-0.402	-0.888	0.614	1.628	15.262	
SAT_AG_MD_6	-0.206	-1.008	0.417	2.400	16.643	
SAT_AG_MD_7	-0.079	-1.107	0.482	2.073	18.078	
SAT_AG_MD_8	-0.185	-0.993	0.509	1.965	19.104	

each dimension. Furthermore, the Variance Inflation 'Factor (VIF) of all the items is below the recommend value of 5 and also tolerance value less than 1. This indicates that there is very less collinearity and there is no possibility of inflated variance of the items. Furthermore, with regard to *autocorrelation*, Durbin Watson statistics is calculated. A **rule of thumb** is that test statistic values in the range of 1.5 to 2.5 are relatively normal & outside of this range could be cause for concern. Field (2009). In the table above, the Durbin Watson statistics for all dimensions is within the acceptable value. Hence, we now proceed to do SEM analysis for full-fledged data.

H_7: *Increased issues of commuting* with app based aggregator model result in *lesser* satisfaction of taxi drivers.

The above hypothesis is addressed using zero order correlation SEM technique. The direct relationship between *issues of commuting* and *drivers' Satisfaction* is depicted in Figure 16.

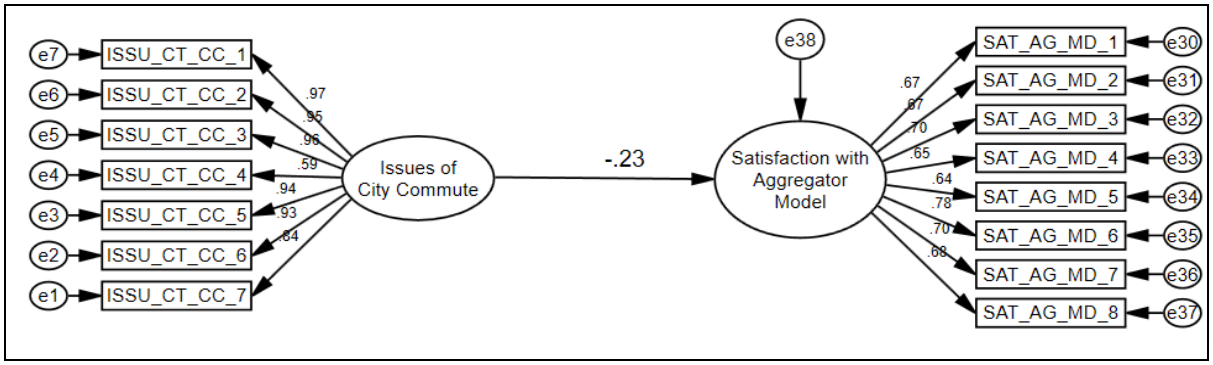


Figure 16: Direct relationship between *issues of commuting* and *drivers' Satisfaction*

Table 42: Standardized Regression weights for direct relationship between *issues of commuting factor* and *drivers' Satisfaction*

			Standard Estimate	S.E.	C.R.	P
Drivers' Satisfaction	<---	*issues of commuting*	- 0.231	0.038	-3.672	0.000*

* Significant at 5% level.

The regression result of direct relationship between issue of commuting and drivers' satisfaction is provided in Table 42. Accordingly, it is observed that *issues of commuting* has a significant (ß = -0.231; CR = -3.672, $p<0.05$) influence/impact on *Drivers' Satisfaction*, thus, H_6 could be fully asserted. The interpretation is that, for one unit increase in the rating scale of agreement on *issues of commuting* construct, one could expect about 0.231 times (23%) decline in *Drivers' Satisfaction* given other factors remain fixed or same. In other words, for every new 10 respondents rating as agree or strongly agree for *issues of commuting* dimension, one would expect about **two** respondents (ß = 0.231) likely to give a rating of disagree or strongly disagree on *Drivers' Satisfaction* factor.

H_8: Increased *Earnings and social security* of taxi drivers with app based aggregator model result in *higher* satisfaction.

The above hypothesis is addressed using zero order correlation SEM technique. The direct relationship between *Earnings and social security* and *drivers' Satisfaction* is depicted in Figure 17.

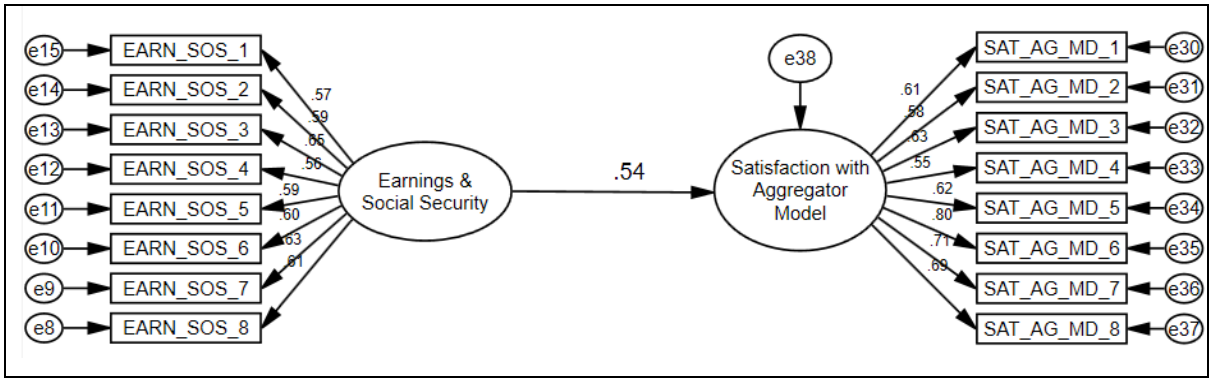


Figure 17: Direct relationship between *Earnings and social security* and *drivers' Satisfaction*

Table 43: Standardized Regression weights for direct relationship between *Earnings and social security factor* and *drivers' Satisfaction*

			Standard Estimate	S.E.	C.R.	P
Drivers' Satisfaction	<---	*Earnings and social security*	0.536	0.097	6.324	0.000*

* Significant at 5% level.

The regression result of direct relationship between Earnings and social security and drivers' satisfaction is provided in Table 43. Accordingly, it is observed that *Earnings and social security* has a significant (ß = 0.536; CR = 6.324, p<0.05) influence/impact on *Drivers' Satisfaction*, thus, H_7 could be fully asserted. The interpretation is that, for one unit increase in the rating scale of agreement on *Earnings and social security* construct, one could expect about 0.536 times (54%) increase in *Drivers' Satisfaction* given other factors remain fixed or same. In other words, for every new 10 respondents rating as agree or strongly agree for *Earnings and social security* dimension, one would expect about **five** respondents (ß = 0.536) likely to give a rating of agree or strongly agree on *Drivers' Satisfaction* factor.

H_9: *A successful optimal business model* with app based aggregator model result in *higher* satisfaction of taxi drivers.

The above hypothesis is addressed using zero order correlation SEM technique. The direct relationship between *optimal business model* and *drivers' Satisfaction* is depicted in Figure 18.

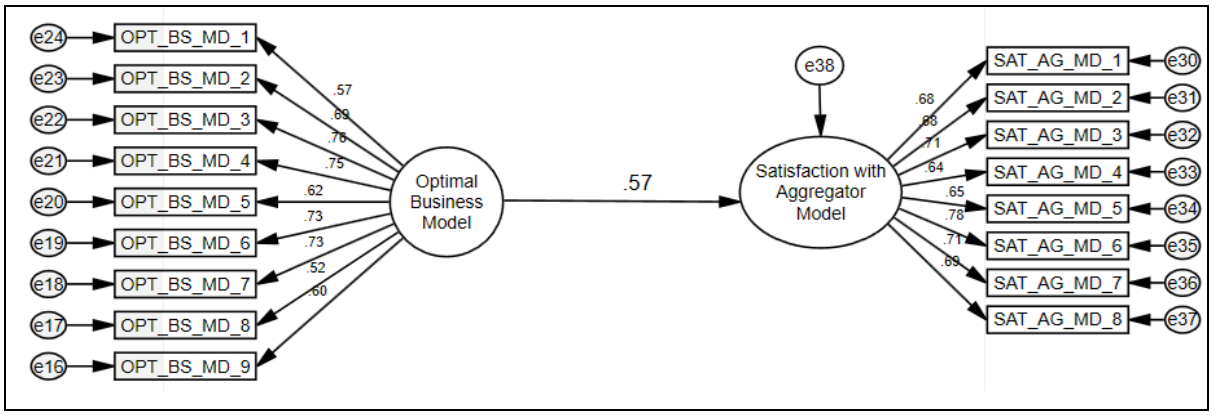


Figure 18: Direct relationship between *Optimal business model* and *drivers' Satisfaction*

Table 44: Standardized Regression weights for direct relationship between *optimal business model factor* and *drivers' Satisfaction*

			Standard Estimate	S.E.	C.R.	P
Drivers' Satisfaction	<---	*Optimal business model*	0.568	0.106	7.112	0.000*

* Significant at 5% level.

The regression result of direct relationship between optimal business model and drivers' satisfaction is provided in Table 44. Accordingly, it is observed that *Optimal business model* has a significant (ß = 0.568; CR = 7.112, $p<0.05$) influence/impact on *Drivers' Satisfaction*, thus, H_8 could be fully asserted. The interpretation is that, for one unit increase in the rating scale of agreement on *Optimal business model* construct, one could expect about 0.568 times (57%) increase in *Drivers' Satisfaction* given other factors remain fixed or same. In other words, for every new 10 respondents rating as agree or strongly agree for *Optimal business model* dimension, one would expect about **six** respondents (ß = 0.568) likely to give a rating of agree or strongly agree on *Drivers' Satisfaction* factor.

H_{10}: *A better compensation* with app based aggregation result in *higher* satisfaction of taxi drivers.

The above hypothesis is addressed using zero order correlation SEM technique. The direct relationship between *better compensation* and *drivers' Satisfaction* is depicted in Figure 19.

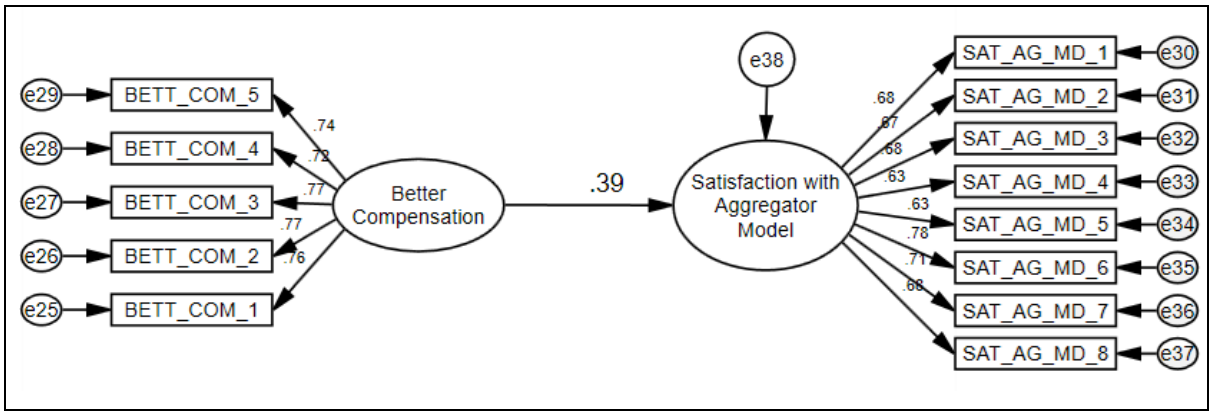


Figure 19: Direct relationship between *Better compensation* and *drivers' Satisfaction*

Table 45: Standardized Regression weights for direct relationship between *better compensation factor* and *drivers' Satisfaction*

			Standard Estimate	S.E.	C.R.	P
Drivers' Satisfaction	<---	*Better compensation*	0.392	0.063	5.627	0.000*

* Significant at 5% level.

The regression result of direct relationship between better compensation and drivers' satisfaction is provided in Table 45. Accordingly, it is observed that *Better compensation* has a significant (ß = 0.392; CR = 5.627, p<0.05) influence/impact on *Drivers' Satisfaction*, thus, H_8 could be fully asserted. The interpretation is that, for one unit increase in the rating scale of agreement on *Better compensation* construct, one could expect about 0.392 times (39%) increase in *Drivers' Satisfaction* given other factors remain fixed or same. In other words, for every new 10 respondents rating as agree or strongly agree for *Better compensation* dimension, one would expect about **four** respondents (ß = 0.392) likely to give a rating of agree or strongly agree on *Drivers' Satisfaction* factor.

Chapter 5. Conclusion, Implications and Recommendations

The results of statistical analysis of the data presented broad findings. The Conclusion chapter will attempt to will interpret the outcome analysis of the research findings and come up with appropriate implications and recommendations. Starting with the key objectives of this research, what is current scenario and implications it has on the App based taxi aggregator business and recommendations to improve the situation of the same.

Revisiting the objectives of this research *"An analytical study of Driver and Rider satisfaction in App based Taxi Aggregator models in select cities of India".*

1. To find the if there any issues.
2. To find the satisfaction levels the taxi users and drivers.
3. To analyze the impact of existing pricing models.
4. To analyze the impact of existing safety & security measures on the satisfaction levels the taxi users and drivers,
5. To analyze the impact of existing pricing business models on the satisfaction levels the taxi users and drivers.

As per the analysis neither the taxi users nor the drivers are satisfied with the current App based aggregator model. There seems to be major issues for both the stakeholders. There are quite a few pricing models in the App based taxi aggregator Indian market, however most of them are directly or indirectly commission-based models and these models invariably cause issues or problems and ultimately dissatisfaction amongst taxi users and drivers. In the current App based taxi aggregator model safety & security measures are not effective and needs improvement. In the current situation not only the Taxi users and drivers even the Aggregator companies are bleeding and not making enough revenue to breakeven and make profits.

In the following section each objective will be interpreted from the dimensions of data analysis.

Chapter 5.1 Customer satisfaction levels and factors impacting

Interpreting the situation from statistical data analysis lets conclude or infer the existing issues if any and their impact on the App based taxi aggregator business. Considering the different dimensions and their overall impact on the system.

Starting with interpretation of impact of different dimensions on the taxi users' satisfaction levels. There are 6 dimensions overall as per our data analysis that are impacting the taxi users' satisfaction levels. They are; 1. H_1 – Reliability, 2. H_2 – Tangibles, 3. H_3 – Responsiveness, 4. H_4 – Assurance, 5. H_5 – Empathy and 6. Taxi user's impacting the Customer Loyalty.

According to the H_1, it is observed that Reliability dimension has a significant influence/impact on taxi users' Satisfaction. The key variables under the Reliability dimension are 1. Safety and security, 2. Cab booking experience in optimal time, 3. After the booking is confirmed drivers arrive as ETA depicted by the App, 4. Drivers are friendly and courteous, 5. Rides are safe and comfortable, 6. Drivers are honest, and valuables forgotten are returned and 7. Drivers' workload is more, and they behave differently due to stress.

Around ¾ of the population surveyed feel that there are existing issues regarding the booking experience, they feel that the booking a trip/ride takes more time and even the arrival of the taxi after the booking is confirmed is mostly not as per ETA mentioned in the App. it usually takes lot of time for the booking to be confirmed specially during the peak hours. In cases when the cabs are in demand, bookings are not confirmed deliberately as to create a demand and apply the surge pricing for the trips. In most cases once booking is confirmed, the ETA is not shown accurately on the app. In case the ETA is longer duration user can book another cab with other App aggregator, to avoid this situation the ETA is sometimes shown wrong on the App. They feel that travelling during odd hours is not safe and secure and its risky. Users have read about many untoward incidents by App aggregator drivers and so they are very apprehensive to travel the App based taxi during the odd hours. Also, they feel that usually if any valuables like mobile, watch etc. are forgotten in the taxi will not be returned. In many incidents where valuables are forgotten in the cab/taxi, they are not returned back to the owner. Specially ifthe valuables are cash or gold. If it mobile it can be tracked but if its cash or gold it cannot be tracked so the drivers usually don't return to the owners. However, there are few cases where some good Samaritan drivers who gave back to the owners. As they work long hours at wheel, they look and behave tensed. Drivers are not courteous enough to help the taxi users with

luggage or any other small gesture of help. If the drivers are given regular training on etiquettes and counselling on good behaviour and their workload is reduced or earnings in increased, most of the issues will be resolved and the Reliability will improve. If the earnings is improved the drivers are not usually stressed and motivated enough to behave well.

According to H_2: There is a significant influence of Tangibles dimension of Service Quality on Taxi users' satisfaction. Key variables of the Tangibles dimension are, 1. Drivers are neat and groomed, 2. Drivers' language is inappropriate, 3. Drivers attending to phone while on the drive, 4. Drivers don't switch in A/C unless told to or requested again, 5. Cleanliness of the cab or taxi, 6. Cab or taxi gets untidy as the trips are taken continuously and 7. Drivers talking unwantedly or talking undue topics.

Around 70% of the survey respondents of taxi users feel that issues exist which is impacting their satisfaction. Tangibles dimension, create an overall experience of the journey with App based taxi services. if these issues are addressed, the users will have good travel experience and will be motivated. Users feel that drivers are not neat and well groomed. Also, they feel that drivers are not using the right language, they sometimes are derogatory or abusive in some cases. Some drivers while in driving attend to phone calls and some of them speak loud over the phone, causing annoyance to users. Some drivers, they don't switch on A/C even though the trip booked is with A/C. Drivers feel that they can save some fuel by getting the better mileage if the trip is without A/C. They switch on only when requested specifically.

Sometimes users face unclean cabs and not conducive for the journey. Drivers when confronted answer saying that they are getting the trips back-to-back and sometimes another booking is confirmed even before the current is trip is still on. They also claim that they are so stressed with load of trips, they are not having time and energy to clean the cabs. In some cases, the drivers talk topics which are not contextual and unwanted. They sometimes talk about sensitive and controversial topics like politics, regionalism and so on.

According to H_3: There is a no significant influence of Responsiveness factor of Service Quality on taxi users' satisfaction. Key variables of Responsiveness dimension are 1. Customer support hotline number available, 2. Customer Support availability on the App on mail, 3. Customer support not friendly enough to use, 4. Customer support is not flexible, its having only standards which are not customisable and 5. Customer grievances not resolved in time.

Though there's no significant influence on the customer satisfaction, customer strongly feel that currently there's no hotline number for the customer support by the major aggregators like

Ola and Uber. Users strongly feel that customer support is so rigid and nonflexible, that at times users can not log their exact complaint but to choose from the standard options available. Also, most of the users feel that their grievances are either not resolved or not resolved in time. Even the lack of good customer support system in place has very little impact on the users' satisfaction. For this reason, most of major taxi aggregator companies do not have an effective customer support in place or not paying much importance to them as of now. However, this could change over time when there many concerns for the user to flag their concerns.

According to H_4: There is a significant influence of Assurance factor of Service Quality on taxi users' satisfaction. Key variables of Assurance dimension are, 1. User feels that paying directly motivates drivers, 2. User feels that he is paying more per KM fare than stipulated by the regulatory authority, 3. Is the accurate payment mechanism in place when full fare payments is by cash or wallet and 4. Is the accurate payment mechanism in place when full fare payments is part by cash and part by wallet.

More than ¾ of the surveyed population feel that their payment has huge potential to influence the satisfaction levels. Usually, it takes around 2 days for the drivers to receive the money for the trips they provide to users using App. so sometimes they are left without money to pay for their essential requirements. So, whenever the user pays directly to the drivers, they very motivated and happy. Als, they feel that for some time they having the full amount paid to them for the trips without the commission being deducted. Drivers also get to know overall fare for the trip and what is the portion of payment that were supposed to get according to App and what is amount of commission being deducted from their trip fare. Taxi users of the App based aggregator model are satisfied that drivers are happy and justified for they deserve. This way drivers get transparency of the total fare and commission.

Most of the times during the peak hour and surge pricing, the customer ends up paying the fare which is 1.5 times or 2 times or sometimes 2.5 to 3 times of the fare during not peak hours. This fare during the peak hours is mostly more than fare stipulated by the regulator authority. There are so many cases and complaints to the regulatory authorities against the Ap based taxi aggregators regarding the extra fare amount being charged to the customers. Many of the App based taxi aggregators, flout the law land are charging heftily during the peak hours and surge pricing. Another issue for the regular taxi users is that they are forced to travel during the non-peak hours or look for alternatives like using their means like driving their own car.

As per the feedback payment mechanism is accurate in cases where the payment is made in full either by cash or wallet. However there issues with payment mechanism when part payment

is by the cash part by the wallet. Sometimes the user charged again the wallet the amount paid by cash to the driver or driver is charged with extra commission for the whole trip fare though some part is paid by wallet. For example, when trip fare is INR 100 and INR 40 is paid by wallet and rest INR 60 is paid by cash. Sometimes the user charged to pay INR 60 again before he could be allowed to book the next trip on the App or driver is deducted with commission on total INR 100 instead of only INR 60 during the next settlement.

According to H_5: There is a significant influence of Empathy factor of Service Quality on taxi users' satisfaction. Key variables of Empathy dimension are, 1. Drivers assist me with luggage, 2. Drivers call up the taxi user requesting to cancel the trips on App based aggregator model and book directly with driver without using the App, 3. Drivers request to pay the trip fare directly to them rather than the App based taxi aggregator, 4. Taxi user feel that drivers are unhappy and not motivated enough to provide the good service as they are not earning enough despite long hours of driving and 5. Taxi user feels happy or satisfied when the complete fair goes to drivers.

Almost 80% of the respondents of the survey population feel that there issues which are impacting the Empathy dimension so their satisfaction for the App based taxi aggregator model. Most of time when the taxi users come with luggage drivers are proactive to help the user with luggage. Drivers usually don't move out of their seat; they only open the boot expecting the customer to load the luggage on his own. This causes dissatisfaction amongst the taxi users, specially when the luggage is more.

Another key issue taxi user faces when the booking is confirmed is, they call the customer and request them to cancel the trips on the App and book directly with drivers without the App. This is because, when they call the customer and find out the destination, the feel cheated that they are paid very less for the distance of the trip so they request the taxi users to cancel the booking on the aggregator platform and book directly with driver instead. This way driver will get the full fare with out the commission being deducted and his earning will be decent for the distance of trip. For example if the taxi user is travelling from source to destination which is around 10 KMs and the driver is getting paid only INR 175, where are overall trip fare charged to the taxi user is INR 250, the drivers request to cancel the trip and book directly with them so that they get INR 250 which INR 75 more than what they would get if the trip was done using the App based aggregator platform.

In another case driver calls the taxi user and check how the payment for the trip is made, its by cash to the driver or sing the App based taxi aggregator wallet or any of their means of payment.

If the payment is not to driver directly, he would request the user to pay directly to driver or cancel the trip. This is because, when the payment is made to App based aggregator it take around 2 days to be paid to the driver that too after deducting the commission. So when the driver is need of cash or money situationally then he would ask the taxi user pay directly else to cancel the trip so that he can take any ride or trip when the payment is direct payment to driver.

Taxi users also feel that drivers of the App based aggregator taxi business are not motivated enough to provide good service to the taxi user and help him with luggage. The drivers are so stressed due to long hours driving the taxi and still not enough earnings to run their daily life. Special when the drivers are married and having kids then it aggravates situation. They are forced to work even long hours in order to meet their family needs too. So most of the drivers seem to be demotivated to their work and dissatisfaction with App based aggregator, which is easily palpable. Experiencing all these issues and understanding the drivers' situation customers feel justified if complete trip fare goes to the drivers directly. They feel happy and satisfied that, they should duly pay taxi/cab fare for the trips to drivers directly and without commission being deducted by the App based taxi aggregators as the drivers earnings are meagre cause of the commission.

According to H_6: There is a significant influence of taxi user satisfaction on the customer loyalty to the App based aggregator. Key variables of taxi user satisfaction dimension are, 1. Taxi user feel that there's no transparency with the billing details, 2. When taxi user faces the problem with payment and if there persist network issues to make the payment, 3. Taxi user feels that there should enough cabs available for the booking to go thru smooth and quick, 4. Taxi user feels that "Share" model needs improvement, 5. Taxi User feels satisfied if the booking experience is good, 6. Taxi user feels that there's Peak hour pricing at any point and 7. Taxi user feels that even when there's high demand for taxi then surge pricing should not be applied. Key variable of the Customer loyalty are, 1. When the resolution to taxi users' issues is satisfactory, 2. Cancellation charges levied on the taxi users when the booking of a trip takes too long and trip is cancelled by the taxi user prior to the booking, 3. When surge charges are not applied to taxi users, 4. Cancellation charges levied to the taxi user even in case the driver is cancelling the trip and 5. An App based taxi business model where there's no commission but only a nominal monthly fee for the platform to be paid by the drives.

Most of the taxi users are not aware of what is paid to the drivers and how much is deducted as commission from the trip fares. Also they are not aware of how the peak hour pricing or

surge pricing works. When there's more transparency with billing and trip fare, taxi user are more satisfied with the information how much drivers are getting from the total tip fare they are paying. Most of taxi users commonly facing problem or issue with App based taxi aggregator model is the booking experience. It takes very long for the booking to be confirmed this could be mostly because of shortage of taxis for the required demand. Also taxi user feels that current "Share" option model needs to be improved. For example, in the current model the taxi user can only book the" Share" trip, oblivion of his co passengers and which route the taxi will take and how much time it will take to reach the destination. Taxi users are seeking a "Share" model where they can choose their co-passenger and go to destination from the source without much deviation from the original route and with not much of deviation from the actual timelines. Taxi users are dissatisfied with peak hour and surge pricing and the feel satisfaction when the peak hour pricing is cancelled at any point of the time. In the current situation if the weather cloudy or it rains then there would be surge pricing. In some cases which cannot even be imagined like if the traffic is high due to some political rally or some event and so the surge pricing will be applied.

In the current situation of the App based taxi aggregator business taxi users are not very happy and are completely dissatisfied. For a customer to be loyal, first he needs to be fully satisfied with the services and overall business experience provided by the App based taxi aggregators. So, with the current App based taxi aggregator model taxi users are not very happy hence they are not very loyal to most of the existing App based taxi aggregators in the Indian market today. So, to improve the customer satisfaction of the taxi user in the first place and to win the customer loyalty in the long run, the current App based taxi business needs to some key areas and change the business model in some areas.

First and foremost, the taxi user booking experience must be improved by making the taxis available in optimal time and give the honest or actuals ETAs on the App. after the booking experience is improved, stress should be on how to address to cancellation of trips by the drivers. To bring down the cancellations and improve the satisfaction of taxi users they need to address the issues of the drivers which will be discussed in detailed in the following sub chapter. Another issue that needs to improved is the cab cleanliness and neatness of the drivers. This can be achieved by improving the earnings of the drivers and reducing their stress by reducing the number hours of drive. As their earnings improve, they are motivated to provide good service to the customers and by reducing stress and providing time for cleaning the cabs or taxis and taking care of themselves. After addressing the cancellation issues by the drivers, next

issue to be addressed will be where there's not peak hour pricing or surge pricing. Pricing model to be more transparent to all the entities, taxi users and drivers, this in fact will bring the cancellations to minimal. Another issue to addressed is Safety and security of the trips even during the odd hours and improve the customer support experience.

Chapter 5.2 Driver satisfaction levels and factors impacting

As it can be sensed from the data analysis that drivers are not satisfied currently with App based taxi aggregator model. Deep diving into the issues causing the dissatisfaction of taxi drivers, finding the root cause of these issues and see if we can any solution fix for these issues.

Interpreting the impact of different dimensions on the taxi drivers' satisfaction levels. There are four dimensions overall as per our statistical data analysis that are impacting the taxi drivers' satisfaction levels. They are; 1. H_7 – Issues of city commute, 2. H_8 – Earnings and social security, 3. H_9 – Optimal business model and 4. H_{10} – Better compensation.

According to the $H_{7,}$ has significant impact on the taxi drivers' satisfaction. As the issues of city commute increase the satisfaction levels decrease. The key variable considered as part of this dimension are, 1. Drivers are having some pressing issues/pain points currently in the App based taxi aggregator business, 2. Need to drive for long hours to earn the required, 3. Drivers cancel the trips allocated by aggregators at times to receive payment immediately and directly for immediate needs, 4. Drivers have health issues due to long hours of driving like back pain, knee pain, insomnia and so on, 5. Drivers feel having less "dead mileage" would bring down cancellations, 6. Drivers feel, it would be good if they are compensated for their empty return trips in case of drops to a no business zone, and 7. Drivers are not having any breaks for bio requirements every 3-4 hours.

More than ¾ of the drivers feel that city commute issues are dissatisfaction for the drivers. Drivers feel that there some burning issues or pain points in the current App based taxi aggregator business and nobody is heeding attention to the same and try to solve these issues are points. They have on "Strike" as unions occasionally in the most of major cities of India. They have raised concerns and voice with government authorities, to the App based taxi aggregator companies and even gone to court of law sometimes but in vain. There was not good justice for their problems. So currently they are literally distressed and looking for a permanent and good solution to their issues.

In the current situation where the drivers is not getting enough per KM and for the overall trip, they are forced or compelled to make more trips for a given day in order to earn what is required for their day-to-day living. Also another reason for the long hours of drive is, in Indian metro cities where infrastructure is not apt, though improving rapidly, and the traffic congestions are common. So it takes lore time for each trip, more than an hour for a distance of around 15 KM. So, if the driver has to make around 10 to 12 trips a day and each trip is taking more than an hour. Drivers end up driving the taxis for more than 12 hours a day and some time it could be around 14 hours. This is if they driver is on duty without any breaks for ablutions or food or refreshments.

At times driver may not have money to fill the fuel or to buy his meals, in such times the drivers seek the trips, where the taxi user pays the trip fare to the driver directly rather than the App based aggregator companies. So that he can buy his meals immediately or fill the fuel for the taxi. In such situations of no other option driver reaches out to the taxi user after the booking confirmation to cancel the booking if the payment cannot be made to driver directly.

As the drivers on the trips for long hours and without break, there will be lot stress on them due to traffic jams, no rest and relaxation. This stress causes fatigue. This continued fatigue will cause health problems. Also due to long hours at drive without flexing and no rest for the back and no relaxation, drivers in the long run are prone to joint pains, knee pains, back pains. In some cases, where drivers are on the drive for long even during the nights will have disturbed sleep, this on regular basis could cause insomnia. Another major issue with drivers taking trips continuously are not having regular bio breaks when required. This also would put pressure on their urinary bladders. They feel that having breaks before the next trip after continuous trips for 3-4 trips would be good. They can have a small break, stretch their muscles, have some refreshment, fresh up. They can be re-energized for their next trips and also safe guard their health. They can also keep themselves and cabs clean and tidy.

One of the reasons drivers cancel a booking after its confirmed and assigned to them is amount distance to travel and post that distance from the pickup to the destination. For example, sometimes drivers get a booking in which distance between the pickup and the destination is around 4-5 KMs and the trip fare would minimal or very less. For the same pickup driver might have to travel at least 2-3 KM for the pickup. This empty drive or “dead milage” for less fare would loss to the drivers and in such situations, drivers cancel the trips.

Drivers in some other cases call the taxi users and find their destination details and ask them to cancel the trips. This mostly happens with destinations which are mostly less traffic zone and with very less chances of getting a return trip. Some times drivers might have travel an empty ride for nearly 10 kilometres. So to avoid loss of the empty rides drivers cancel the trips after checking the destination. If there's provision for the drivers to get an extra amount for their dead milage for the pickups and empty rides in the return trips from no traffic zones, drivers will be motivated not to cancel the trips and taxi user, or customer can have seamless service of trips. Drivers also will be able to compensate for his loss due to dead mileage of empty rides.

According to the $H_{8,}$ has significant impact on the taxi drivers' satisfaction. As the Earnings and social security increase the satisfaction levels increase, from the data analysis will be infer the levels of Earnings and social security in the current App based taxi aggregator model. The key variable considered as part of this dimension are, 1. Drivers are paid less than the minimum fare per KM, as stipulated by the law, 2. Same %age of trip fare or same proportion of the trip fare is paid to the drivers during the peak hours and surge pricing as in case of trips during non-peak hours, 3. Are the drivers satisfied with their current earnings, 4. Are drivers motivated and happy withier earnings and courteous treatment meted to them by the App based taxi aggregators, 5. Driver families are having the medical insurance provided by the App based taxi aggregators, 6. Divers feel safe and secure in their occupation currently, 7. Drivers have social security support or support from the App based taxi aggregators currently 8. Drivers feel having monthly fixed amount as subscription or platform fee for the App or the platform provided by App based taxi aggregators is better than paying commission for every trip they make.

In the current scenario, drivers are mostly paid less than the minimum fare per KM stipulated by the law. In the normal hours (during non peak hours). Specially during the lean hours or days (times or day when there's very less business) the App based taxi aggregators announce some discounts or freebies to the customers or taxi users as to keep the business busy. In this case drivers loose out mostly as the discount is paid from the majority share of theirs though there expenses are not discounted. For the App based taxi aggregator there is nothing to loose as they are getting some revenue instead of nothing during the lean period. In these situations drivers fare for the trips is surely less than the Minimum fare per KM as stipulated by the law. At the same time drivers cannot deny the business as its their livelihood. So some despair drivers have quit the taxi driving as their livelihood and looked for alternatives. Otherwise most of the drivers are helpless and feel looted by the App based taxi aggregators.

Drivers are happy with peak hour pricing trips or surge pricing trips as they are able to earn more during these times. However, they are not completely happy or satisfied with the situation, because they are not same %age or same proportion as in case of non peak hours trips. For example, in the current situation most of the App based taxi aggregators take the commission of 30% and pay the 70% (this could have GST levied on it and so the drivers might get slightly lesser) to the drivers. So if in a case when a trip is booked during the non peak hours and fare for the same is say INR 250. In this case the driver is paid INR 175 and INR 75 is retained by the App based taxi aggregator as his commission. However, in case of peak hours or surge pricing, the fare same can be INR 500 assuming the surge is 2X times. In this case driver should typically be paid INR 350 post the deduction of INR 150 the commission of the App based taxi aggregator. But driver will be paid less than INR 300 in most cases of peak hour and surge pricing. So drivers are not happy or satisfied with the situation. They feel they are cheated, and the App based taxi aggregators are not honest.

As described and detailed in many instances drivers strongly fee that they are not earning enough to the meet their ends and stressed with the situation cause of the situation they are in. They are very disappointed with the overall situation and totally dissatisfied. Some drivers come to the nearest metro cities from the nearby rural areas and live in cabs. They work long hours and sleep in cab itself whenever they find time to sleep. They use common facilities for ablutions and bathing and eat in small or roadside eateries to save money. They go back to their villages or rural areas once a week usually when there's not peak business for the App based taxi services business. Since their earnings is very little, they are taking lot hardships by not renting a place to live in cities and cannot afford exclusive facilities for their ablutions and bating etc. In spite they are not able to make decent earnings. So, the drivers are very unhappy and dissatisfied with current earnings with App based taxi aggregator business. To add to this trouble of drivers, they levied penalties in case of any cancellation, they might not get incentives if the customer feed back is not good enough for the cleanliness of the cab or driver. The App based taxi aggregators do not show any courteousness to drivers and only think of their commission and revenue rather than the well being of the taxi drivers. In reciprocation drivers don't have any respect or affection to their App based taxi aggregators. Drivers feel that App based taxi aggregators are looting and exploiting the drivers' situation and are not honest. So, the drivers are disintegrated with App based taxi aggregators and fell disintegrated.

The families of the drivers are not provided with any help for the medical support, education or other well-being by the App based taxi aggregators. The government of India provides some

help for the poor people with health insurance or medical support in the name of Aayushmaan Bharat Yojana or by the state governments in the name of ArogyaSri (in some states). The App based taxi aggregators should provide some help to the drivers and their families with medical, educational support. At least hey can take initiative to help drivers and their families get ESI Scheme from the government. By doing this they will win the trust of the drivers and their families. Drivers would feel more integrated into the App based aggregator taxi business.

Indian cities are highly accident prone due to lack of good infrastructure, too many vehicles on the road and less road discipline of the own vehicle drivers and taxi drivers. Some of the accidents are fatal in nature. So, drivers feel unsafe and insecure in their occupation as they risk prone through out their duty period. Specially, when they are for long hours, the stress and fatigue due to the stress would creep in. This is very risky as they are more prone to accidents or any untoward incident by the drivers of the other vehicles. As the road rage is also common in most of the metro cities, there is also risk of these drivers getting into arguments and altercations with other drivers, in some cases this could lead to fist fight or even police case is possible. So the drivers feel that their duty is high risk job which is unsafe and insecure. What is apathetic is the treatment meted out to drivers by the App based taxi aggregator companies, customers or taxi users and society. They feel they are not given dure credit or respect for the risk they are taking to provide the services to the society. Another point which is causing the dissatisfaction amongst the taxi drivers is that they don't have any social security in case of any eventuality. They are worried that if something happens to them who would take care of their families and how they will manage in case any adverse situation. In case the drivers are having kids, who will take care of education, health and other needs of the family in case of eventuality is more concerning for the drivers. This was proven during the Covid pandemic, when all hospitality and transport businesses were severely hit. Drivers did not have source earning or livelihood during the lock down. They were also supposed to pay for the EMIs later if not during Covid and Insurance was extended post the Covid period. Tax payments and other compliance codes were not waived off during the period. So drivers feel despair with their job.

Biggest problem for the drivers as they perceive, is the commission on the fare for the trips. The earnings of the drivers is less because they are ending up paying the commission to App based taxi aggregator companies. They lose out almost 30% or more as commission and taxes. So the drivers are looking for a model where there's no commission on the fares for the trips. As per the survey majority of the drivers are happy with the model where there is no commission for the trip fares rather they are happy to pay a monthly subscription for the App

or platform fee and no commission on fare of the trips. This way they will be paid the complete trip fare directly. They don't have to wait for their fare on App based aggregator companies to pay them back after 2 days. They also get the 100% of the fare directly without any deductions. This would increase the earnings and their money is with them only without delay. This way the cancellation will be decreased as most of the cancellations by the drivers were due to the reason that they wanted the trip fare to be paid them directly and not to the App based aggregators.

According to the H_9 optimal business model, has significant impact on the taxi drivers' satisfaction. The key variable considered as part of this dimension are, 1. Drivers happiness with current situation of App based taxi aggregator model, 2. There would reduction in cancellation of trips by the drivers, when they accept trips of their preference, 3. Drivers would earn more if not App based taxi aggregator model, 4. Drivers prefer monthly subscription for the app or monthly maintenance charges for the platform, 5. Drivers wish to have business model where is there is no commission on the trip fares, 6. Drivers wish get paid directly by the customers for the trips they take once they are completed, 7. Drivers earn more in share option than normal trips, 8. I would like to have break after every 2-3 trips or once after every 3 hours and 9. Drivers request the customers to cancel the trips and book directly with drivers.

As explained previously, the drivers not happy with the current situation of the App based taxi aggregator model. Most of them feel that business is completely under the control of aggregator company. They decide the price for the trip and even the trips are thrust on the drivers. As for as accepting the trips by the drivers rather than being thrust on them there will be significant decrease in the cancellation of the trips. Once the driver himself accepts the trip, he knows the details of the trip, the pickup point, destination and fare for the trip. So there will not be any point which will cause the driver to cancel the trip.

Drivers also feel that they can more if the business model is changed in App based business model. If the commission model is replaced with any other model like subscription model or platform fee model, where business is run by the taxi drivers and the business is only aggregated by the App based taxi aggregator, not intervenes in payment of trips, allocation of trips and so on. They don't their fare on the trips be paid to the aggregator and then it is paid back to drivers after 2 days deducting the commission. Driver wants to own their business as its run by them and facilitated by the aggregator. Another issue with trips being allocated or thrust by the aggregator on drivers is that, drivers are assigned trips continuously without break

and some times before even their current trip is still on going. In the share trips customers pay discounted price. So if the driver gets more than one customer in share trip will be able to make more money than the normal trips. However if there's only one customer in the share option then, then drivers would significantly less. As the share option pricing discounted pricing and after the deduction of the commission on the same would be less compared to the normal trips.

In some cases, the drivers call the taxi user and request them to cancel the trip and book directly with driver, reason for the same is they would be saving the commission part of the trip fare and also the money would be paid directly to them.

According to the $H_{10,}$ better compensation model has significant impact on the taxi drivers' satisfaction. The key variable considered as part of this dimension are, 1. Cab cancellations will come down by increasing the earnings on trips for the drivers and getting paid directly by the taxi users, 2. The cancellations would come down significantly if the drivers are compensated for the empty rides or dead mileage, 3. Drivers will be motivated if there is an apt business model, 4. Drivers prefer to take trips directly rather than being assigned or thrust by the App based taxi aggregators and 5. By improving the earnings and work life balance of the drivers from the current situation they will be motivated to provide better service the taxi users or customers.

As discussed earlier while explaining for the other hypotheses or dimensions, there will be decrease in the cab cancellations if the driver is paid directly by the taxi user or customer and the earnings is increasing. In the current model which is commission based, the payment cannot be directly to driver as the commission part of the trip fare has to be retained by the App based aggregators. Similarly, the increased earning to the drivers will have impact on the overall increase of the fare in greater proportion to the taxi user of customer. There taxi users or customers will not prefer to book the cabs frequently. Similarly, as discussed earlier as part of the inferring explanation the drivers will be motivated if they are compensated for the dead mileage or empty return rides. However, this would have repercussive effect on the overall trip fare for the taxi users or customers. So aggregators will not be able to address this with the current aggregator business model and cancellations may not come down if the current same model of commission is employed by the App based taxi aggregators. Drivers will be satisfied if any App based aggregator model without commission model and is apt which can increase the driver earnings and include the fare for the dead mileage or empty return trips. Apt model also needs to include an option where drivers accept the trips directly from the taxi user or

customers rather than being assigned or thrust by the aggregators. Another major issue for the drivers apart improved earnings is the work life balance. Currently the drivers are due to work load and long hours at wheel and they are not having much time for the family of other social events. They wish for an apt App based taxi aggregator business model, which allows them to earn more form the trips, takes care of the dead mileage or empty return trips, where drivers accept the trips of their own and run the business by themselves and also takes of earnings with less work load or stress free. Currently they are not able to catch up with their families or family events like children's school even, birthday events or other socials events like marriages or any other functions. So currently the drivers are distressed and in despair. They are not happy or satisfied with current App based taxi aggregator business.

Chapter 5.3 App based aggregator situation and solution

Even the situation of the App based taxi aggregators is not very happy situation. They are also facing lot of problems and financially pressurised, major players in the domain, even after more than a decade are not able to make profits. They are still struggling with lot issues both internally and externally. There were many entrants in to the App based taxi aggregator domain but most of them are out of the market because they could not sail thru the Covid pandemic situation. Covid pandemic had the biggest blow to the hospitality and transportation business. Some small players who were waiting for the funds either closed or declare bankrupt as they could not sustain the as it was double blow during the pandemic for the App based taxi aggregators as they did not have the opportunity to run the business during the pandemic and another blow was lack of funds which drained during the pandemic, were not funded by the VCs or PE companies. As they were averse to invest in this domain post the pandemic.

Financial situation was not easy even for the key players in the App based taxi aggregator business in India like Ola and Uber. For example, Ola even after its market presence since 2010, it could not cross the breakeven and make profits till date. Covid pandemic was big blow to aggregator and are continuously making losses and not able to recover. According to article "Ola posts INR 1,970 Crores revenue and INR 1,522 Crores loss in FY22", in ENTRACKR by Harsh Upadhyay and Md Salman Ashrafi, dated August 9, 2023, the Ola in FY20 posted a loss of INR 2208 crores, in FY21a loss of INR 1116 Crores and in FY22 a loss of INR 1522 Crores.

The major issues for the App based taxi aggregators are, the customer dissatisfaction due to cancellation of the trips by the drivers after the confirmation, Booking experience for the taxi

users of customers, peak hour or surge pricing, Cleanliness of the cabs or taxis and drivers, Transparency in the pricing from the taxi user or customer perspective. Major issue from the drivers' perspective are, earning is meagre and very less, too much of stress due to long hours at wheel, trust in the aggregator company. From the analysis of the situation and talking to industry experts, the root cause of the problem is the commission based business model adopted the App based taxi aggregators.

In the commission based model of the App based taxi aggregator model, the source of the revenue is commission on the trips that are availed by the taxi users or customers and provided by the taxi drivers. Typically, in a commission based model if the App based aggregator has to make more top line or revenue, the aggregator company can do it in 2 ways, 1. By increasing the commission of each trip availed by the taxi users or customers, 2. By increasing the number of trips in given day. The aggregator companies apply both the mechanisms in order to achieve higher top line or revenue. They are charging surge or peak hour hike during the busy hours of the business, and to increase the number of trips in given day, they put undue pressure on the drivers as the same number of drivers have generate more trips for the given day. Taxi users or customers are dissatisfied with the App based taxi aggregator due to surge or peak hour pricing and drivers are not happy with pressure to do more trips because of the stress and long hours at wheel. Another major issues with the commission based model of the App based taxi aggregator is that fares for the trip and adhering to the law of land. They are currently flouting laws of the land for the fares. For example, if the driver has to be paid more than the minimum fare per kilo meter as stipulated by the local government regulation, then the fare for the trips to the taxi users or customers goes high even during the non-peak hours. During the rush hours when the App based aggregator companies are charging surge or peak hour pricing and in such instances they are flouting the local regulation by exceeding the stipulated maximum fare per kilo meter.

Another major issue is the not so good practises exercised by the App based taxi aggregator companies. In case of the surge or peak hour pricing where the taxi users or drivers are charged unduly, the proportion fare share between the aggregator and drivers is not same in case of non-peak hour pricing. The App based taxi aggregator keeps or retains the major portion the fare, lesser %age of is shared with the drivers. Another major issue is regarding the incentive plan executed by the aggregator companies. They apply all the tricks available in order to fail the drivers fail the incentive plan. For example, when a driver is nearing the target levels for the given incentive period, they are deliberately not assigned trips or long duration trips with less

or no probability of no return trips. Its ensured by the App based taxi aggregators to fail maximum driers from succeeding the intensive plan after the completion of the target number of trips. Drivers don't have any trust in the App based taxi aggregator for this very reason.

If the App based taxi aggregators do away with the commission model, it could solve most of the major issues. For example, if a taxi user books a trip from point A to B, and the fare according the commission based model is INR 100, in that App based aggregator retains INR 30 as his portion and INR 70 is paid to the driver. In case of the rush hour, taxi user is charged with Surge or Peak hour pricing. Assuming that the trip fare for the same point A to B is INR 200 due Surge. Assuming the desistance between point A & B is 5 kilo meters. In the first case driver is paid INR 14 per kilometre in the non-peak hour trip and taxi user or customer is paying INR 40 per kilo meter. If the regulation as per the local regulatory authority says that "fare per kilometre is declared as not less than INR 18 and not to exceed INR 28". As per above example as per the commission model the App based taxi aggregator is flouting the laws of the local regulators.

Taking the same example of the trip from A to B in the normal and rush hours and same fare as describe in the previous example. In the case of the non-peak hours, drivers are not happy as the fare is less than the minimum fare as per the regulation. Situation worsens when the taxi user or customer is given discount or some offer, the impact of the same on the driver is to the proportion of 70%. In such situation, drivers are forced psychologically to cancel these trips after the booking is confirmed to the taxi user or customer. If the trip is to a destination where there's very less or no probability of getting the return trips, drivers invariably cancel trips after booking is confirmed to the taxi user or customer. Earlier the drivers used to get to the know destination for the trips upfront during the trip allocation and drivers used to cancel the trips before the booking is confirmed. So the taxi user or customer was oblivion of the cancellation of the trips to this magnitude. However, the App based taxi aggregators changed trip allocation logic, so that drivers are not aware of the destination and would accept the trips without cancellation. But over a period, the drivers usually call the taxi user or customers before pick up and cancel the trips if the destination is not viable for them financially. Another reason the App based taxi aggregator was allocating such trips to drivers was to deliberately fail them if they are nearing the incentive plan target number of trips. So the driver cancellation is common after calling the taxi user or customer.

There was another counter strategy by the drivers for the strategy of App based taxi aggregator to deliberately fail the driver from achieving the target number trips as per the incentive plan. The drivers used to gather in particular location where the bookings are relatively less by the regular taxi users or customers. They book trips to one another to a convenient destination of their choice. This way they would be reaching the incentive targets easily and in time. So the App based taxi aggregator to counter this malpractice by the drivers, they started assigning the trips to drivers which are not in the near neighbour hoods. This caused the dead mileage problem to the drivers. So in most of the bookings by the App based taxi aggregators, had dead mileage of at least 2-3 kilo meters of extra over and above regular dead mileage possibly would have been, if the booking allocation was to nearest drivers. Another major issue with this counter strategy of the App based taxi aggregators is the pressure to society by burning the fossil fuels undue and causing more pollution. According to Statista the major data statistical analytics company, the number of trips per day in 2016 was 1.6 million and in the year 2017 was 1.9 million and was fore casted to be 5.2 by the year 2020 this number is probably more than this in the year 2023 and 2024. Considering the dead mileage for only 80% of the trips, i.e. around 4 million trips and taking average extra dead mileage of 2.5 KM per trip, the total undue distance the taxis on App based taxi aggregator run per day is 10 million kilo meters per day. This huge amount of wastage of fuel and pollution in effect to the society this could be easily handled with the modification of the business model in the App based taxi aggregator model. If the commission model is done away with all these issues could have been avoided easily.

In the same example, taking the surge or peak hour case, the customer is ending up paying INR 40 per kilo meter, which is atrociously more than the maximum fare as per the regulation. In case of the surge 2.5X to 3X times, it nothing outright looting of the taxi users or customers. Is happening because of the business model where the App based taxi aggregators make more top line is during the surge as they get more from commissions. The main issues of App based taxi aggregator business for the taxi users or customers are, 1. Cancellations by the drivers after the booking is confirmed, 2. Surge or peak hour pricing and 3. Cleanliness of the cabs and the drivers. As discussed earlier the cancellations by the drivers is predominantly because of the issues with earnings and the dead mileage. This is caused due to the business model of the current App based business model. The issues of the surge or peak hour pricing is mainly because of the business model of the App based taxi aggregator as discussed above. Cleanliness of the taxis/cabs and drivers is not apt as perceived by the taxi user or customers currently.

This is because again the business model of App based taxi aggregators. To earn more top line for their companies they are put pressure on the drivers to do more and more trips and the drivers are stressed due to long hours of drive. They are finding time or motivated due to fatigue to keep the cabs clean.

Taking example of one of the non-commission based model like monthly subscription of monthly maintenance charges for the platform, where drivers pay monthly subscription or the monthly maintenance charges to the App based taxi aggregators, the aggregators have no motive or intention to charge Surge or peak hours to the customers which could bring down the cancellation drastically and give a good booking experience to the customers. The drivers will be paid directly by the taxi users or customers and the full amount goes to the drivers without any deduction of commission and as soon as the trip is completed without any delay. This motivates the drivers hugely as they earn more and psychologically satisfied that nobody is taking away their earnings of hard labour. Another very good point is that since the fare is going to be the same, per kilo meter charges for the driver and customer and during the lean and rush hours. The app based taxi aggregators are not flouting any regulatory mandates. This also avoids trip allocation to drivers of farther distance and thus reduction of undue fuel burning and less pollution to society. This also eases aggregator companies of operation complexities that they are encountering to handle the challenging situations from drivers. Their business model will be operation light.

So by changing the commission based business model there could be a great satisfaction to all the stake holders of the App based taxi aggregator business.

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Main study questionnaire used for survey

There 2 questionnaire prepare separately for taxi users and drivers. Taxi users were reached out for the survey via mail and WhatsApp and survey was conducted online on google forms. Driver survey was conducted by reaching out to the drivers in person with print out of the questionnaire.

Taxi user questionnaire

Question	Scoring					Research Question Reference	Objective Reference	Hypothesis Reference	Remarks
Topic : General									
I am happy with current situation of Taxi business	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I am having some pressing issues/pain points currently in the app based taxi business	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
On Average I use taxi	Rarely	Once a week	3-4 times a week	Daily	Once a day	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I preferably book	Auto	Mini	Sedan	SUV	Share	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I use taxi to commute to	Office / College	Business	Weekly outings	Airport	Outstation	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I commute to airport	Rarely	Every month	Every week	3-4 times a week	Daily	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
Topic : Trip Fare & Payment									
I am satisfied with trip fares	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of current Pricing models in temarket	Analysis of current pricing models	
I usually pay using wallet	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of current Pricing models in temarket	Analysis of current pricing models	
I feel paying the trip fare directly to the driver would be motivating to driver	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of current Pricing models in temarket	Analysis of current pricing models	
I feel, I am paying the more than "maximum fare per KM" as stipulated by the law	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of current Pricing models in temarket	Analysis of current pricing models	
I feel drivers are not getting fair %age of trip fares	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of current Pricing models in temarket	Analysis of current pricing models	
I feel there is no transperency with billing details in case of toll	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of current Pricing models in temarket	Analysis of current pricing models	
I have a problem with payment when the network issues is there while closing the trip	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of current Pricing models in temarket	Analysis of current pricing models	
Is the payment mechanism provided by the aggreator accurate, in case of payment by cas to the driver	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of current Pricing models in temarket	Analysis of current pricing models	
Is the payment mechanism provided by the aggreator accurate, in case there is "part" payment from wallet and remainder as cas to the driver	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of current Pricing models in temarket	Analysis of current pricing models	
Topic : Booking experience									
I am happy with availablity of cabs currently	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I get the cab in optimal time whenever the cab is booked	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
Booking takes more time for assigning the cab	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
Driver arrives in time as per the ETA specified in the App	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel the current booking experience is good	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
Topic : Cancellations									
There are cancellations of trips by drivers after the booking is confirmed	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I am requested by drivers to cancel the trips and book directly with them	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I am requested by drivers to pay in cash/UPI to driver directly instead of paying by wallet	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
Sometimes cancellation charges are levied even when the driver cancels the booking	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
Sometimes when booking takes longtime and when the trip is cancelled prior to confirmation of ride, cancellation charges are levied unduly	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
Topic : Peak hour / Surge charging									
I feel the surge charges by the aggregators are not justifiable	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of current Pricing models in temarket	Analysis of current business model	
Most of the time surge/peak hour charges are more than the "Maximum fare" stipulated by the law	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of current Pricing models in temarket	Analysis of current business model	
I am aware that drivers are not getting proportionately in case of surge	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of current Pricing models in temarket	Analysis of current business model	
Surge is charged in case of rains, political gatherings or any other choking events	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of current Pricing models in temarket	Analysis of current business model	
Non availability of cabs also causes the surge pricing	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of current Pricing models in temarket	Analysis of current business model	
Topic : Driver Behavior									
I feel the drivers are friendly and behave courteous	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel drivers are neat & well groomed	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel the rides are comfortable and safe	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
Drivers assist me with my luggage whenever I have luggage	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel some drivers don't switch on A/C unless requested again	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel drivers behave tensed or inappropriate due to the workload	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel driver is on the phone/call during the trip	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel driver is talking unwantedly or getting into undue discussions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel the drivres behavior is not normal	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel the drivers' language is inappropriate	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel the drivers' body language and gesture are in appropriate and obscene	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel the drivers are honest enough to give back the forgotten valuebles in the taxi	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel drivers are unhappy & not motivated enough as they are not earning sufficient in spite of long hours	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
Topic : Cab Cleanliness									
I am happy with cleanliness of the cab when picked up	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel the cleanliness of cabs gets deteriorated as the drivers sometime take trips continuously with out break in between trips	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
I feel it would be good if driver is a given a short break cleaning the cab between trips	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Customer Satisfaction	Survey of Customer Satisfaction	
Topic : Share options									
I book a share cab often when not going to office	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I book a share cab often when going to office	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I am happy with share journey	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I am happy with share trip fare	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I wish I had an option to chose my co-passengers for share trips	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
Topic : Customer support & Grievance									
Customer support Hotline is not available	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of Current Customer support levels of existing aggregators in te market	Existing Safety and security practises	
Customer support is available thru app or mail	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of Current Customer support levels of existing aggregators in te market	Existing Safety and security practises	
Customer support is not user/customer friendly	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of Current Customer support levels of existing aggregators in te market	Existing Safety and security practises	
Customer is automated with standard issues/complaint and not customised or flexible to handle issues which are not standard	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of Current Customer support levels of existing aggregators in te market	Existing Safety and security practises	
Resolution or Grievance system is also highly standardise with not flexibility	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of Current Customer support levels of existing aggregators in te market	Existing Safety and security practises	
I am usually satisfied with resolution	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of Current Customer support levels of existing aggregators in te market	Existing Safety and security practises	
Resolution usually is not in time	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of Current Customer support levels of existing aggregators in te market	Existing Safety and security practises	
Resolution usually is not very apt	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of Current Customer support levels of existing aggregators in te market	Existing Safety and security practises	
Topic : Practices & Fairness									
I feel driver is being treated fairly by aggregators	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I would be happy if there's no peak hour or surge at any point of time	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I would be happy if the complete fare goes to driver for the trips	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I agree that currently drivers' situation is grievous	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I feel or agree that drivers' earnings should improve	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I am aware of the commission %age aggregators take	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I feel subscription model is probably a better option as driver earn more and will be motivated to provide a better service	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	

Taxi driver questionnaire

Analysis of Driver Satisfaction in App Based Taxi Aggregation

Question						Research Question Reference	Objective Reference	Hypothesis Reference	Remarks
Topic : General									
I am happy with current situation of Taxi business	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I am having some pressing issues/pain points currently in the app based taxi business	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
On average I run the taxi in a month for	10 days	15 days	20 days	25 days	>25 days	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I prefe to run the taxi in a week	weekend	weekdays	Both	Random	part time	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I enjoy my profession	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
Topic : Earnings									
I am satisfied with my earnings	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of driver Earnings	Analysis of current pricing models	
Per day I usually earn	Upto INR 500	INR >500 <1000	INR >1000 <1500	INR >1500 <2000	INR >2000	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of driver Earnings	Analysis of current pricing models	
Per day I run taxi for	Upto 5 Hours	Upto 8 Hours	Upto 10 Hours	Upto 12 Hours	14 Hours	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of driver Earnings	Analysis of current pricing models	
On average "dead mileage" for the pick ups & after the drops usually is	<1 KM	1 KM	2 KM	4 KM	>5 KM	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of driver Earnings	Analysis of current pricing models	
I earn more in share trips	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of driver Earnings	Analysis of current pricing models	
I am shared the same %age of earnings during "Peak or Surge" as other normal trips	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of driver Earnings	Analysis of current pricing models	
I am paid the "minimum fare per KM" as stipulated by the state law	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of driver Earnings	Analysis of current pricing models	
Need to drive for long hours in order to inrease earnings	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of driver Earnings	Analysis of current pricing models	
I would earn more if not app based model	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 3: What are the existing pricing models in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of driver Earnings	Analysis of current pricing models	
Topic : Work-life balance									
I am working for long hours at wheel	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Market study of taxi availability	Survey of Driver Satisfaction	
I am not having any breaks for bio requirements every 3-4 hours	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Market study of taxi availability	Survey of Driver Satisfaction	
I usually run the taxi at a stretch for the duration without breaks	1-2 hrs	2-3 hrs	4-5 hrs	6-7 Hrs	>8 Hrs	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Market study of taxi availability	Survey of Driver Satisfaction	
I am not stressed with current work load or number trips per day	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Market study of taxi availability	Survey of Driver Satisfaction	
I am able to balance "Work & Life" for example able to attend family and community gatherings and celebrations	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Market study of taxi availability	Survey of Driver Satisfaction	
I drive more during the nights	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Market study of taxi availability	Survey of Driver Satisfaction	
Topic : Health & wellness									
I am able to take care of my health	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I am having health insurance provided by the aggregator	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
My family is having the health insurance provided by Aggregator	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I am able to take care of my personal well being	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I would like to have breaks regularly after every 2 trips or 3 hours of duty	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I am having time for exercise or physical fitness	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I do exercise or Physical training regularly	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I have health issues due to long hours of driving like back pain, knee pain, insomnia etc.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I am having enough time for sleep	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 1: What are the key issues of city commute in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
Topic : Social welfare & life security									
I feel safe & secure in my current job/profession	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of social life of drivers	Existing Safety and security practises	
I am able to secure children's education	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of social life of drivers	Existing Safety and security practises	
I am having social security in case of any eventuality	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of social life of drivers	Existing Safety and security practises	
I am having time for social events or social outing with my family	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of social life of drivers	Existing Safety and security practises	
I usually go out with family/friends on a social event or outing	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of social life of drivers	Existing Safety and security practises	
I have support from aggregators for social & financial counseling's or planning	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 4: What are the existing safety & security measures existing in the current App based taxi aggregator model and how do they impact the overall customer and driver satisfaction?	Study of social life of drivers	Existing Safety and security practises	
Topic : Professional commitment									
I am having enough time and motivation to clean my cab regularly	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I am motivated and happy with earnings and treatment of aggregators to treat customers with courtesy and peacefully	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I am motivated to provide apt service to the customer	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I cancel the trips allocated by aggregators at times to receive payment immediately and directly for immediate needs	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I request the customers to cancel the trips and book/pay directly to ease financial issues or problems	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I am happy with the services, benefits & amenities provided by the aggregator	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I am happy with current aggregator and feel emotionally connected & integrated with it	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
Topic : Business Model suggestions									
I wish to have a change in Business model where there is no commission for the trip fares	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I prefer getting paid directly by the customer as and when the trips are completed	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I feel having a fixed monthly payment instead of commission would be good	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I feel having mobility as a service (MaaS) would be good	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I prefer accepting the trips I take, rather than being assigned or thrust	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
When I accept the trips of my preference, would reduce the chances of cancellation	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I Would prefer a "monthly subscription or monthly maintenance charges" over the commission model	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
Topic : Dignity of Labour									
I feel in current situation "The stature" for cab drivers is good	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
Being driver I feel having "respected" social status	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
Being driver I feel I am in a position to stand on par with other industry workers in society	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I feel I can talk about my profession in my circles with due dignity	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
My family takes pride of my profession/occuaptation						RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
I feel the "Dignity of labor" has to be restored for drivers	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 2: What are the current satisfaction levels of customers and drivers in App based taxi aggregator model?	Measuring the Current Driver Satisfaction	Survey of Driver Satisfaction	
Topic : Service Improvement									
I feel by improving the earnings and work-life balance of drivers from current situation, will be motivated to provide better service to customers	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I feel having less "dead mileage" would bring down cancellations	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I feel, it would be good if I am compensated for my empty return trips in case of drops to a no business zone	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
If compensated for empty return trips, cancellations would come down	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I feel the Cab cancellations would come down by increasing the earnings of trips & getting paid directly by the customers	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I will be motivated if Heath & other social security is provided by the aggregator	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	
I will be motivated if an apt business model is available	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	RQ 5: What are the existing business models overall? Is it possible to create an "Optimal business model" which can boost the satisfaction levels of both customers and drivers?	Study of Existing Business models	Analysis of current business model	

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Signature of applicant:



Signature of thesis supervisor:

Date received: …… Date approved: ……. Signed: …….

Comments: