



## A Conceptual Study on "Ride Sharing System"

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**Abstract :** The purpose of the Ride Sharing System is that those people who need a ride to go on the same route can easily get the ride for a minimum amount. A lot of money can be saved by the Ride Sharing System and a lot of fuel can also be saved by this. We can also control pollution through ride sharing systems. Car ownership can also be reduced so that traffic can be prevented from increasing. Ride sharing system is the biggest need of a middle class man. This application will be reliable, secure, error free, and fast. Because of these features, it will be easy for any organisation or person to manage these applications. Dijkstra Algorithm, A\* Search Algorithms and Routing Based Algorithms are used in Shortest Path Algorithms. So that source and destination can get the best path. Dijkstra's algorithm makes it easy to find the source to destination shortest path. Dynamic ride sharing approach has been implemented, with the help of which the project has been made flexible, such that dynamic pricing can be calculated. Demand and supply can increase due to dynamic ride sharing because on demand rides are available due to which user attraction can increase

**Keywords**---Pollution, Capacity, Time, Cost, Savings.

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### 1. INTRODUCTION

"Ride sharing system" is an application that you can use from anywhere and book your ride with less money and faster time [1]. It is designed for those who travel daily from one place to another for any reason and also want to save their money and reach their destination as soon as possible. Ride sharing system solves the problems that usually a person faces when booking an offline rideshare. There was no data store so that it could not be known which person is travelling from where. So all problems are solved by this application. In this application Your travel history is stored for solving future problems. Apart from money, other problems can be improved such as pollution and fuel consumption. Apart from money, other problems can be rectified, such as pollution, which is causing many diseases. Ride sharing system is a good option to control pollution. If any person is going from one place to another and his vehicle is empty, he wants to find someone who can share the ride with him, so this application helps him. It will be beneficial for both. If he finds 2 people together his problem will be resolved by 2 times. Many challenges will come in ride sharing systems like handling users payment, vehicle details, person details, booking details, employee details. So we have to keep in mind that this system should be a secure system and even a reliable one. We have to make a strategy for the future challenges. The System will give an error message on entering wrong data and the system will be user friendly so that users can easily use it. This application will be reliable, secure, error free, and fast. Because of this, it will be easy for any organisation or person to manage these applications[2]. This document is divided into these following sections : In Section II, Survey has told what people think about the ride sharing system. In Section III, Explains the impact on revenue, It has been told about the survey on why a ride sharing system is necessary. In section IV, the problems are identified. In section V, Implementation And result, In section VI, the future scope is mentioned. In section V, the whole project conclusions were told.

### 2. LITERATURE SURVEY

Ride sharing is a very important topic according to the Scopus Literature Survey. According to the database of Scopus, research on ride sharing system should be done because many facts are very important according to the scientist, such as the ownership of the car and the use of petrol. 520 scientific documents found by ride sharing keywords and this topic is even more important when suddenly in 2015 more and more papers will be sold. This data in the Scopus database revealed that the main author name is Bruno et al. According to a literature survey, ride sharing services are very important, because the demand for these vehicles will decrease the traffic, or the consumption of petrol will decrease. That is why the scientist believes that this topic should be considered first and foremost so that the emission of CO<sub>2</sub> is minimised. The reduced number of vehicles, more will be the efficiency of the utilisation. Dong et al. believes that the development of ride sharing will not only meet people's diverse travel demand, but will find a new solution to control traffic in urban areas. Researcher explains the benefits of ride sharing, If ride sharing vehicles and taxis are compared, a good amalgamation can be seen in the coming times between ride sharing services and traditional taxis. It has been told by the researcher that not only the cost of ride sharing services will be reduced, but the safety will also change and the personal choice of the vehicle of the daily people will also be less, and the accidents will also be reduced, the rescue and support services will also benefit from the ride sharing system. can be of great use in the future. A very important question arises whether ride sharing services will really work for ownership, the answer is that there is a lot of potential, the number of ownership will

reduce and the role of digital platforms becomes very important that how they allow consumer ride Search more and faster sharing provider, and set up your business in this field through online platform. Ride sharing systems can also be considered as a new business model. Ride sharing service is broadly divided into 4 segments Business to Business , second is Business to Consumer , third is Peer to Peer and other is Hybrid.

Boons and Bosken say that ride sharing systems are a way of organising the human needs, but they are organised into nine parts. In covid 19 a new ride sharing was introduced and the demand for mobility was growing a lot even for short distance or even for long distance and cycle rental and bike sharing and scooter sharing services were already available and later electrical vehicles also added Ride sharing services were studied in 85 articles which proved that this project should be studied per keyword vehicle was found in 61 articles which proved that elements are connected to transportation but the trend is increasing electric vehicles, research which is covered in 42 articles and the keyword electric automobile is covered in 62 articles and 45 articles have been written about public transport which is a topic of discussion which is considered best public transport or ride sharing.

Keyword optimization has been well researched in 40 articles and traffic congestion in 37 articles. The keyword sharing economy is seen in 34 articles as one of the best theoretical topics and the urban transportation keyword in the study of ride sharing is seen in 40 articles. Further literature The keyword motivation has been found in 42 articles in the 520 ms indexed in the Scopus database. During the research we concluded that this is the timely solution at present, the solution that will ensure the development of the transport system, the so-called 3rd revolution, in three components, fuel-driven vehicles should be replaced by electric vehicles, and two components, based on the necessary technology. should be and private ownership has to be transformed into shared mobility. The third component is related to human behaviour, according to the research the combination of the three components of the transition contributes to achieve the goal and the article mainly focuses on, according to the third component is to bring private ownership towards share mobility. An analysis has shown that in the last 3 years ride sharing services are having a positive impact on electric vehicles due to which it has become a topic of discussion, an important set of keywords in which academic interest remains ride sharing Towards, and the research cluster is divided into 5 main parts, the user's behaviour, his cooperation, his attitude, his motivation, his trust.

Hui Wang Sun and Tang reported in a study that people in China prefer ride sharing because their income is low. An analysis showed that the trust of ride sharing services PR users is increasing day by day and the motivation factors divide users into 3 parts, the first part is economic benefit, the second part is environmental benefit and the third part is cost. Who plays a good role. Every user has a different perspective, ride sharing system services pointed out that the relevance of the different motivational factors in the user's perception is not the same. Some studies have found that the reasons for participation in the ride sharing process are considered most important and users highlight cost savings, personal utility and trust in the provider. So ride sharing is a very important topic on which a lot of research has been done and is being done further. Ride sharing services satisfy the demand of transportation people, and reduce traffic congestion, reduce costs and social interconnection will be given to users because of ride sharing.

Central Road Research Institute in a survey of Delhi, It was found that till 31st January 13400000 vehicles were registered in Delhi, out of which 7700000 were active registrations. In the survey, about 500 people were asked what they believed about the ride sharing system[3].

**Shortest Path Algorithm:-** Dijkstra's Algorithm - Dijkstra's algorithm is a shortest path finding algorithm that works from source to destination or provides the shortest path from one node to the other node in the tree. Dijkstra's algorithm is used to solve the single source shortest path problem. In Dijkstra's algorithm, when the number of nodes is more, then it consumes more memory. They do two searches at the same time, one towards the front from the starting point and the other towards the back from the starting point and when these two come in between, both stop and such can be applied only if it knows its initial value.

**A\* Search - Search Techniques** are used in artificial intelligence. This allows Dijkstra's algorithm to search further using the lower bound. The efficiency of this approach depends. A search uses both cost and estimated value. The lowest and simplest values are based on geographic coordinates, but perform poorly in road networks.

**Reach Based Routing -** Reach based the length of the shortest paths on which a vertex lie is known as reach of a vertex. The high value of reach can be achieved by having the vertex on the shortest path which extends to a large distance in both directions from the vertex. As hierarchy of levels are generated using highway hierarchies by swapping between edge and node contraction. Node contraction removes all low degree nodes and gives shortcut edges to give shortest path distances. Thus hierarchy consequently progresses in higher levels through bidirectional query. In contrast, the distinct "importance level" is assigned to each node by contraction hierarchies. And then nodes are shortlisted from the graph according to the order of importance and then shortcuts are added so that shortest paths are gained between the remaining nodes[13].

### 3. PROBLEM IDENTIFY

#### 1. Financial Barriers

Time and cost are very important for ride sharing system as maximum 2 types of people would like to use ride sharing system One is those people who want to reach office in minimum amount, they are not worried about time and other are those people who have to reach their destination on time Money and time both matter to them.[5]. We have to take care of both these reasons because some people cannot wait, they start looking for some other way which is our ride sharing. If we can affect the system, Ride Sharing is a very good option in today's busy life but time is more important than that Person has to reach office fast in minimum amount And someone needs a quick ride in emergency In such a situation, if there is any kind of delay in the application, then due to that there are bad effects. And people start looking for other options, then a solution to this type of problem should be found and implemented.

#### 2. Business Barriers

Great revenue can be generated by integrating various business models with Ride sharing systems. Most used models are by taking commission charge on total ride charge or by flat rate charge. [5] Another way of generating revenue other than from ride charge, is generating revenue from advertisements of various products or companies on the Ride sharing website. From the data of research only 7% of platforms charge directly from ride charges which means 26 platforms neither aim to focus on growing their business,

users nor do they aim to grow financially in the future and thus they are not making profits neither now nor in future. Olsson et al. has proposed a solution which says to integrate the ride sharing system with such a system where were who owned private vehicles will move to any subscription transport service also places where transport services are low or places where people have less access to public transport can merge the ride sharing system with public transport which will increase usage of ride sharing system.

### 3. Behaviour Barrier

Behaviour is a very important barrier in the ride sharing system, because if a person books a ride, he books it for many reasons such as travelling for emergencies and for fun. [5] Human behaviour is very important because both passengers and owners do not know each other's nature. In such a situation, safety comes to such a point that it can become the biggest barrier for the ride sharing system. It becomes very important for the owner of the vehicle and the passenger to share their details with each other as the behaviour disruption may affect the business of the ride sharing system. It is necessary to have good behaviour on both sides because sometimes there are journey people in which Passenger always wants to get such a ride whose owner is good and the behaviour of the owner is friendly. So that he can enjoy the journey while talking to the owner or pass the time in the journey by talking to other passengers.

### 4. Technology Barrier

Amey, A.M. Ride sharing system is supported by websites to match the potential ride providers with ride seekers. People usually only share the ride with relatives, friends and colleagues rather than sharing the ride with unknown people or with whom they are meeting for the first time. Matching the rides and users will affect the ride sharing system usage with existing or new users[6]. Even if the ride provider and ride seekers are matched successfully, the passenger can see the information of other passengers sharing rides with them by viewing his history, identity details, criminal records, etc. Using positive feedback from passengers or ride providers can make the ride sharing system successful. Therefore providing wrong information to users or passengers can lead to less usage of ride sharing systems because of lack of trust and security. People who are using social networking sites will have less trust issues while travelling with users that are unknown to them as they can access their social networking sites to know more about them. So, ride sharing systems can be integrated with platforms like Google and Facebook which will increase the usage of ride sharing systems along with secure rides.

## 4. IMPLEMENTATION & RESULT

This application is web based application. We have used Spring boot, Hibernate, JPA technology for server side and angular , javascript html , css , Ajax , Jquery for client side. Ajax is a programming language HTML, CSS, JavaScript , UI Bootstrap , Jquery are used to design the interface and improve the web pages of the project. APIs have also been used.

First of all the ride owner will register himself and enter the details of his ride where he has to go and how many seats are available in his ride and what will be the timing of going, What will be the end price and will monitor how many seats are available or filled , Parking Charges & How Many Females Are Allowed, Owner Will Drive Himself or Will be Driver, Driver's License Details etc.

The passenger will register himself and enter all his information, after that he will search the vehicle for the place where he has to go and will check their price and other details. If he likes that ride, he will click on the book button and enter his details. And will book the ride and the ride booked by the passenger will be displayed to the ride owner so that he can confirm. I have researched some barriers like human behaviour was a barrier in which it was said that trust is an issue so some extras have been added for that. Like driver's licence, his behaviour ratings, his photographs, email id, details of the same passengers. driver's call number, vehicle number, and toll free customer service number provided.

Some extra information has been added like which places will stop, where will we eat? From where the passenger will sit. Showing the details of the passengers to each other So that the security issue can be solved, after some time the location can also be added to it, so that the live location is available.

**Business Barriers** :- Business model is a barrier in which the problem is that how can you trend in the market, then digital marketing is an option for this. The second option was to give free of cost to the users in the beginning then later charges should be taken, some offers should be given like 50% off on coupons , Along with providing better services in comparison to other competitors Like giving good quality customer care service, getting offers on weekends and keeping the price constant for a short period of time etc.

**Technology barrier** :- Technology barrier was a problem, in which good quality and fast service was to be provided. For which the best technology Spring Boot , Hibernate , JPA and Angular 11 have been used. Due to these technologies the quality of the app has become very good and the speed of the app has also increased

**Financial barrier** :- The financial barrier was how the app would earn money. In whose solution some techniques were extracted such as advertisement, membership fee and some charge will be taken from the owner side.

#### 4.1. Demand and supply:-

seen in a survey Young people show more trust in ride sharing compared to older people , As told by this table, in this table,, the older person is shown as (X) and the younger person is shown as (Y,Z)[7].

#### Ride sharing service by category show in table no.2

**Table 2.**

Category	answerable%	People who use ride sharing	People who do not use ride sharing	Total Sum
X	answerable%	20	65	85
		25	75	100
Y	answerable%	62	65	127
		45	55	100
Z	answerable%	89	69	158
		55.6	44.4	100
Total	answerable%	157	210	370
		43.8	56.2	100

Survey results show that ride sharing is used more by males as compared to females. Show in table no.3

**Table no.3**

Category	answerable%	People who use ride sharing	People who do not use ride sharing	Total Sum
Man	answerable%	88	67	155
		55.8	44.2	100
Women	answerable%	76	130	206
		35.4	64.6	100
Common	answerable%	5	4	9
		26.0	74.0	100
Total	answerable%	160	203	370
		44.8	55.2	100

It has been revealed from some motivational factors that the demand for ride sharing is low and high. These are very important factors like the exact location of the ride, what is the size of the ride, how much is its impact on the environment.

● **These factors are divided into 3 categories**

1. Benefits to the environment
2. Benefits to the economic
3. Economical benefit according to usage

A case study shows that passengers looking for a comfortable ride for long distance travel And give more importance to low cost ride and safety It has been confirmed that economic benefit has gained more importance in ride sharing system as low cost ride is more preferred in India. The demand for ride sharing, which benefits .The environment is also on the high. A case study has told some factors that affect the demand. Show in graphical representation.[7]. It can be seen from this graph what

percentage is affected by these factors like environment, cost saving and utility. The design of the car shows its price and the facilities and comfort present in it, which increases the demand for ride sharing service. Demand is known from the price that the lower the price, the higher the demand.[7]. The location also has a lot of effect on where the car should be booked because many times your location is not available which affects the ride funding.

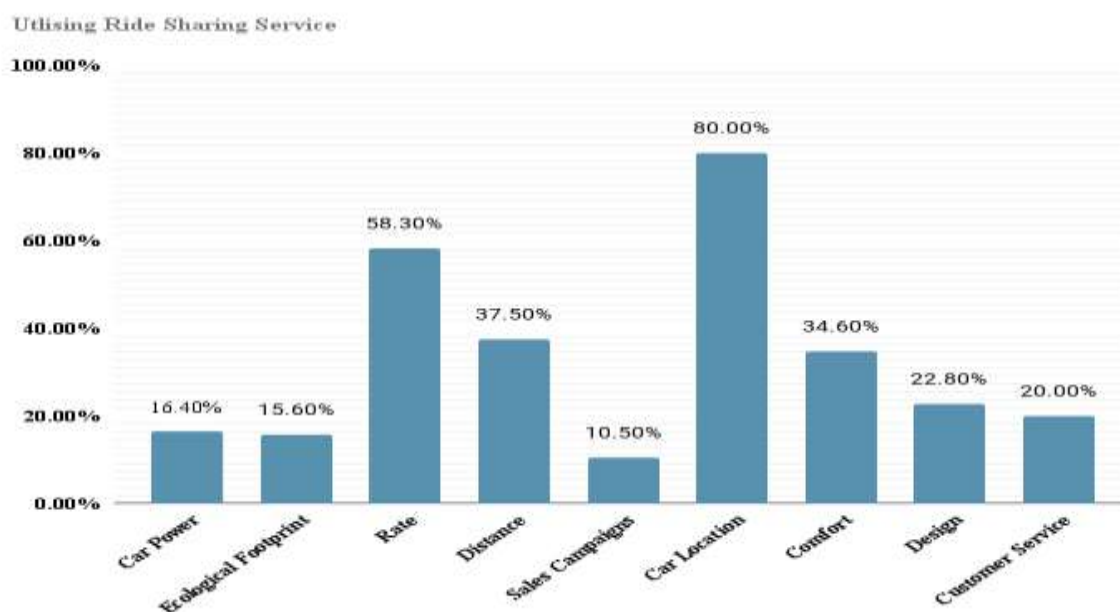


Figure 3 : Some Importance Factors for Ride Sharing Service

❖ There are some factors that affect the ride sharing system. In these 2 most important facts are they are ride parking and another is fund a ride.

- Often people have to face the problems of ride parking, parking problems can be solved due to the shortage of vehicles with the ride sharing system.
- If any person has to go from one place to another, then that person is very upset due to not getting the ride. This problem can be rededicated through this app.
- Often, when a person goes from one place to another, due to traffic, he has to travel at a low speed, due to which he gets late. Traffic can be reduced through this app.
- Because of this app, there will be no problem in communication because in this the decryption of the user's best language has been given in the user profile so that they can talk to each other[8].

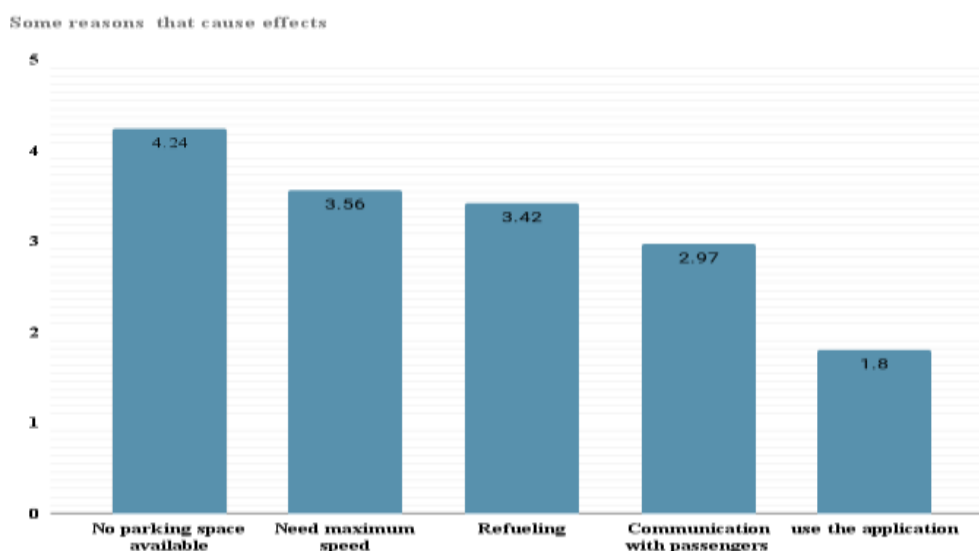


Figure 4 : Some problems due to which effects come in ride sharing service.

## 4.2. Analysing according to a hypothetical scenario

Ride sharing demand is less in early mornings between 12 am to 6 am as most of the people are either sleeping or want to stay at home. Only those people do it, mostly who have come from outside and due to being late they are not getting another ride, or passengers going to the airport[8]. The demand for ride sharing starts in the morning from 6 to 9 am because people go to office and school and go to the temple, that's why the demand is high at this time. Demand ride sharing is constant from 9am to 4pm as most of the people avoid riding due to sunlight or stay in office school. Those people who have to go for lunch or meeting or on any vacation or party only these people need. Demand is high in the evening from 4 to 7 pm as people come home from office and school and when they come home from parties and lunch, the demand is very high. The demand is very high from 7 pm to 12 pm because most of the people go to pubs and parties at this time. Many go for dinners, go for outings with family, do social work, attend events, due to which the demand is very high at this time[8].

## 5. CONCLUSION

Maintain the registered details of the Users and also maintain the details of the rides booked by them. In the future we can also add the printer option in it. This system will keep the records of rides along with passengers' details travelling with them. This system is mainly designed for users who want to share their ride while travelling across cities or states which will make them less lonely and the ride will be cost efficient for them. Users can access the details of their previous ride and can post the new rides. Users and passengers will mutually decide the costing for travel. We can launch a better and advanced version which will have more features. We can open many branches in the future. Create master and slave database structure to reduce the overload of database queries. Create a mechanism to take backup from different servers. The scope of this application will increase in the future because due to high inflation people will start using this application so that they can get some relief from money. Because of this, more data will have to be stored, which will increase the capacity and increase the usage. And apart from this, keep in mind that any kind of changes may happen in the future, so that its scope will increase.

The purpose of creating a ride sharing system is provide ride sharing to the person so that the user can reach his destination in less money. This application is very secure, easy to use, its user interface is very easy for the users. This application is mainly for people who want to share rides so that they can save money and time. Through this application, the environment will be greatly benefited as the ownership of vehicles may decrease in the future. Due to which the vehicles will be less visible on the road, due to which the pollution in the environment will start reducing, so it will be very beneficial for the Environment. In the end, these conclusions have come out, in which we have paid attention to some points. Detail of the backdrop and factory of the application and its association to prior work in the same field. Making an assertion regarding goals and perspective of the system. Illustration in details about the aim, capacity, significance of the application. Explaining the problems on which we are building the project. We tried to understand the requirement and specification of the application and took action on it, And we understood the problem domain and created a per process model. Describes all the work that will be in the application. We have added various properties and are working on the application to make it better. We have kept the user interface simple so that users can use it well. We have also taken care of the security of the application.

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