

Impact of Uber on the Autorickshaw Industry – Consumer Perspectives in Pune

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Abstract: The emergence of ride-hailing services like Uber has disrupted the traditional transportation industry worldwide, and India has not been an exception. In India, Uber competes with the ubiquitous autorickshaws, which are a popular and affordable mode of transport. This paper examines the impact of Uber on the autorickshaw industry from the customer's perspective in Pune, a city in western India with a population of approximately 4.3 million people. Ride-sharing services like Uber and Ola have rapidly grown in popularity, particularly in urban areas. In Pune, Uber has emerged as a significant competitor to autorickshaws, with over 1 million registered users in the city. Uber offers customers a range of benefits, including a cashless payment system, reliable service, and the option to track their ride in real-time. Moreover, the autorickshaw industry relies on a closed, exclusive system that favors drivers over customers. This approach has resulted in poor service quality and a lack of innovation. Uber has had a significant impact on the autorickshaw industry in Pune and India. The study conducted in Pune suggests that Uber has significantly impacted the autorickshaw industry by increasing competition and pushing for improved service quality. Overall, the paper contributes to the literature on the sharing economy and its impact on traditional industries in emerging markets.

Keywords: Sharing economy, collaborative consumption, ride-sharing services, commons-based peer production, disruptive innovation.

1. Introduction

In today's world, organisations constantly look for opportunities where they can incorporate a common service with advanced technology, in order to provide their customers with a new revolutionary way of obtaining said service. These new introductions often lead to a gradual shift in the consumption of services. The online cab booking system is one that has now established a firm grip on the taxi industry in various countries around the world. Arguably the biggest name in this field is that of Uber, which was founded in 2009 in the USA. It was inevitable for their services to eventually branch out of the USA, hence why it is now used in 72 countries today, with India being one of them. India's case is intriguing due to the wide popularity of autorickshaws and how said mode of transportation is often seen as a cultural representation of the country. In spite of that, the online cab booking industry was able to create quite the shift from the regular system in favour of a more modern and technological approach. This study aims

to focus on the magnitude of change in the autorickshaw industry, with the help of public perceptions and their usage of similar services. Furthermore, this study is narrowed down to the city of Pune, which allows for more efficient data collection, and also provides a grasp on the general opinion held towards Uber from a relatively modern perspective. Pune being a city consisting of a relatively high young population would mean that their perspective will consist of relatively more open-minded thinking. I will be looking to make use of the aforementioned perspectives in order to reach a conclusion in the research.

A. Brief History of Ride-Hailing Services

Ride-hailing is not a concept that is completely uncommon, as it is simply an iteration of the common taxi services, which have been around since the 17th century. The modern version of this service is defined by the introduction of 'UberCabs' in 2009. The official launch along with a mobile app came in the following year in the USA. At first, Uber's service was built around luxury black car service, with prices significantly higher than that of regular cabs. However, after studying the demand of these services, Uber soon began leaning towards providing regular cabs as part of their service as well. This is what comes to closest to reflecting the state of ride-hailing services in today's world.

B. History of Uber and Ola in India

Uber's direct competitor in India is Ola, an organisation providing the same services as Uber. While Uber had its origin in the USA back in 2009, Ola was founded in 2010 as an online cab aggregator in India. It took three years for Uber to join Ola in the Indian market, after which the two have competed with each other a lot. Said competition only increased with the introduction of their respective autorickshaw services.

C. Purpose of Study

The need for this study became apparent as a result of the review of literature based around this topic. There was a lack of literature that dived into a comparison between autorickshaw services before and after the introduction of Uber. Furthermore, it is important to look into more than just the objective numbers. This study looks at how well people have adjusted with the technological advancements, which could help develop an understanding of how well Indians are capable of adapting to

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certain changes to what can arguably be an integral part of their country's cultural identity.

D. Characteristics and features of Uber in India

Sharing Economy: The concept of sharing economy, also known as collaborative consumption or peer-to-peer-based sharing, emphasizes that individuals may prefer renting or borrowing goods instead of buying and owning them.

Collaborative Consumption: Collaborative consumption involves shared use of goods or services by a group, with costs borne by multiple people instead of just one individual. Ridesharing is a common example where multiple people share the cost and access to transportation.

Ride-sharing services: Companies offering ride-sharing services connect private vehicle drivers with people seeking local taxicab-like transportation. Uber and Lyft are two of the biggest names in this industry, with Uber operating in 58 countries.

Commons-based peer production: Commons-based peer production involves contributors creating shared value through open systems, governed by participatory practices, resulting in shared resources that can be used in new iterations. This approach contrasts with capital accumulation, and promotes the accumulation of the commons.

Disruptive Innovation: Disruptive innovation refers to technologies that significantly alter how an industry or market functions. The Internet is an example of a modern disruptive innovation that has transformed the way companies do business and negatively impacted those unwilling to adapt.

2. Literature Review

Mohan, D., & Roy, D. explore the experiences of auto-rickshaw drivers in Delhi, India, focusing on their working conditions, earnings, and social status in *Operating on three wheels: auto-rickshaw drivers of Delhi*. The author highlights the challenges faced by auto-rickshaw drivers, including limited earning opportunities, competition from other drivers, and harassment by authorities. The article also discusses the social and cultural factors that contribute to the marginalization of auto-rickshaw drivers in Indian society. Overall, the article provides a glimpse into the lives of a significant and often-overlooked segment of Delhi's workforce.

Uber Pricing Strategies and Marketing Communications is a research paper by Farris, P., Yemen, G., Weiler, V., & Ailawadi, K. L. that analyzes the pricing and marketing techniques employed by Uber to entice and retain customers. The study examines Uber's employment of dynamic pricing, which adjusts fares based on variables like supply and demand, time of day, and traffic patterns. It also evaluates how Uber uses targeted advertising and marketing tactics to appeal to specific customer segments such as business travelers and occasional riders. The paper concludes that Uber's pricing and marketing methods have been successful in creating a robust customer base and brand, but highlights the need for Uber to address concerns related to safety and driver welfare in order to maintain its competitive edge.

The Political Economy of Auto-Rickshaw Fare-Setting in

Mumbai is a research article by Bhat, A. that examines the factors influencing the fare-setting process for auto-rickshaws in Mumbai, India. The study is based on interviews conducted with auto-rickshaw drivers, union leaders, and government officials. The article argues that the fare-setting process is influenced by a range of political, economic, and social factors, including the power of auto-rickshaw unions, the influence of political parties, and the interests of various stakeholders. The study suggests that the current fare-setting process in Mumbai is inefficient and leads to underpayment of drivers and overcharging of passengers. The article concludes by calling for reforms to the fare-setting process to ensure that the interests of all stakeholders are taken into account and that auto-rickshaw drivers are paid fair wages.

In their paper, the social costs of Uber, Rogers, B. examines the negative externalities created by the ride-hailing company. The paper argues that Uber's business model creates a range of social and economic costs, including increased traffic congestion, air pollution, and decreased public transit use. The author suggests that Uber's focus on individual car trips undermines efforts to build more sustainable and equitable transportation systems. The paper also discusses the impact of Uber on the labor market, with drivers facing low wages, lack of benefits, and limited job security. The author suggests that Uber's treatment of drivers as independent contractors is a way to shift costs onto workers and society. Overall, the paper highlights the need for policymakers to consider the broader social costs of Uber and to develop policies that ensure a fair and sustainable transportation system.

The paper *In Peeking Beneath the Hood of Uber* by Chen, L., Mislove, A., & Wilson, C. analyzes the ride-hailing company Uber's pricing algorithm and its impact on passengers and drivers. The study found that Uber's pricing algorithm is a complex system that takes into account factors such as supply and demand, time of day, and traffic patterns. However, the paper also identified a number of issues with Uber's pricing model, including price surges during peak demand times, limited transparency around pricing, and the potential for drivers to manipulate the system to their advantage. The paper suggests that policymakers and regulators need to closely monitor Uber's pricing practices to ensure fairness and transparency for both passengers and drivers.

The article *The Uber Million Dollar Question: Are Uber Drivers Employees or Independent Contractors* by Bales, R. A., & Woo, C. P. focuses on the ongoing debate about whether Uber drivers should be classified as employees or independent contractors. It explores the various legal and economic factors that are considered when making this determination, such as the level of control Uber has over its drivers, the nature of the work, and the benefits and protections afforded to employees. The article also examines the potential consequences of reclassifying Uber drivers as employees, including higher labor costs for Uber and improved job security and benefits for drivers. Overall, the article presents a nuanced discussion of a complex and controversial issue in the gig economy.

The article by Chakraborty, S. on *Uber vs Ola: The battle for dominance in India's taxi market* discusses the competition

between Uber and Ola in the Indian ride-hailing market. It describes the market dynamics, including the factors that have contributed to the growth of ride-hailing in India, such as the increase in smartphone usage and the need for reliable transportation options. The article also highlights the challenges faced by both Uber and Ola in the Indian market, including regulatory hurdles, driver shortages, and price wars. The article notes that both companies have made significant investments in the Indian market and are continuing to expand their services to new cities and regions. Finally, the article predicts that the competition between Uber and Ola will continue to intensify, with both companies focusing on expanding their offerings and improving their technology to gain market share.

Davidov, G. examines the employment status of Uber drivers in *The Status of Uber Drivers: A Purposive Approach*. The paper analyzes the legal framework and case law relevant to determining the employment status of Uber drivers in the United States and the United Kingdom. The paper argues that the legal tests used to determine employment status in these countries are outdated and not well-suited to the gig economy. The paper proposes a new "purposive approach" that takes into account the economic realities of the gig economy and the relationship between Uber and its drivers. The paper concludes that Uber drivers should be classified as employees rather than independent contractors, based on the purposive approach.

The paper *Auto-rickshaws in Indian cities: Public perceptions and operational realities* by Harding, S. E., Badami, M. G., Reynolds, C. C., & Kandlikar, M. examines the public perceptions and operational realities of auto-rickshaws in Indian cities. The study is based on surveys of auto-rickshaw drivers and passengers in three cities, and explores issues such as safety, comfort, fare pricing, and competition from ride-hailing services. The study finds that while auto-rickshaws are perceived as convenient and affordable modes of transportation, they face several operational challenges such as safety concerns, inadequate regulation, and competition from ride-hailing services. The study concludes by suggesting that policymakers need to take into account the views of both auto-rickshaw drivers and passengers in order to develop policies that address the operational challenges faced by this mode of transportation.

The Uber-All Economy of the Future by Smith, J. W. refers to a concept where on-demand, sharing economy platforms like Uber will become the norm across all industries, leading to a more efficient and flexible economy. The paper argues that traditional business models will become outdated, and companies that fail to adapt to this new paradigm will struggle. The author predicts that technology will continue to drive this trend, with advancements in automation and artificial intelligence enabling greater connectivity and real-time decision-making. Ultimately, the paper suggests that the Uber-All Economy will lead to a more democratic and accessible marketplace, with individuals able to monetize their skills and assets on a global scale.

The article *Where Do Autorickshaws Stand in the Times of Ola and Uber?* by Khan, M. U. discusses the impact of ride-hailing services like Ola and Uber on the autorickshaw

economy in India. Autorickshaws, which are a popular mode of transportation in many Indian cities, have faced competition from these app-based services. While autorickshaw drivers have faced declining incomes and increased competition, some have also found ways to adapt and compete with Ola and Uber by improving their services, such as using technology to offer better customer service or forming associations to negotiate better rates with ride-hailing platforms. Ultimately, the article suggests that while ride-hailing services have disrupted the autorickshaw economy, autorickshaws are still an important part of India's transportation landscape and will continue to coexist with these new platforms.

Paul, S. M. examines how Uber's pricing practices can be viewed as a form of price-fixing. In their paper titled *Uber as For-Profit Hiring Hall: A Price-Fixing Paradox and its Implications*. The paper argues that Uber operates as a for-profit hiring hall, in which drivers are hired to provide transportation services to passengers at a predetermined price set by Uber's algorithm. This, according to the paper, is similar to the behavior of traditional employers who fix wages and restrict competition among workers. The paper discusses the implications of this pricing paradox for antitrust law, and suggests that current antitrust laws may need to be updated to account for the unique characteristics of the ride-hailing industry. The paper concludes that there is a need for more research and analysis on the pricing practices of the ride-hailing industry and its implications for competition and antitrust law.

The paper *Drivers of disruption? Estimating the Uber effect* by Berger, T., Chen, C., & Frey, C. B. presents an empirical study on the impact of Uber on the taxi industry, using data from New York City. The study finds that the introduction of Uber has led to a decline in the demand for traditional taxi services, resulting in reduced revenues and increased bankruptcy rates among taxi companies. The study also finds that Uber has led to an increase in the number of for-hire vehicles and that the introduction of Uber has had a particularly large impact on the market during peak hours. The authors suggest that the study provides important insights into the factors driving the disruption of the taxi industry by Uber and highlights the need for policymakers to consider the impact of ride-sharing services on traditional industries.

On Ridesharing Competition and Accessibility: Evidence from Uber, Lyft, and Taxi is a research paper by Jiang, S., Chen, L., Mislove, A., & Wilson, C. that examines the impact of ride-hailing services on transportation accessibility in various cities in the United States. The study analyzes data on the availability and prices of ride-hailing services as well as traditional taxi services in different neighborhoods. The paper finds that ride-hailing services such as Uber and Lyft have increased accessibility to transportation in many areas, particularly in low-income and minority neighborhoods. However, the paper also notes that there are significant differences in accessibility across different neighborhoods and that traditional taxi services still play an important role in providing transportation in certain areas. The paper concludes that policymakers need to consider the potential benefits and drawbacks of both ride-hailing services and traditional taxi services when designing

transportation policies.

The paper *Taxi Drivers and Taxidars: A Case Study of Uber and Ola in Delhi* by Kashyap, R., & Bhatia, A. presents a case study on the impact of Uber and Ola on the taxi industry in Delhi. The study examines the experiences of taxi drivers and owners, or "taxidars," who have been affected by the entry of Uber and Ola into the market. The study finds that the entry of these ride-hailing platforms has led to increased competition and reduced earnings for traditional taxi drivers and owners. However, the study also highlights the benefits of these platforms, such as increased convenience for customers and improved working conditions for drivers. The study concludes that policymakers need to take into account the experiences of both traditional taxi drivers and ride-hailing drivers in order to create policies that are equitable and address the challenges faced by both groups.

Kim, K., Baek, C., & Lee, J. D. on their research on *Creative destruction of the sharing economy in action: The case of Uber* examine the impact of Uber on the traditional taxi industry and the broader sharing economy. The paper explores the concept of "creative destruction," which refers to the process by which new technologies or business models disrupt and replace existing ones. The paper argues that Uber's success in disrupting the taxi industry is an example of creative destruction in action. The paper also discusses the implications of Uber's success for the broader sharing economy, including the potential for similar disruptive business models to emerge in other industries. The paper concludes by discussing the challenges and opportunities presented by the sharing economy and the need for policymakers to adapt to these changes.

The article *Uber and the labor market: Uber drivers' compensation, wages, and the scale of Uber and the gig economy* by Mishel, L. discusses the compensation and wages of Uber drivers, as well as the overall scale of the gig economy. It examines how Uber's business model affects the labor market, particularly in terms of job stability, benefits, and income. The article highlights the challenges of classifying Uber drivers as employees or independent contractors and the impact of this classification on their rights and compensation. Overall, the article provides insights into the complex relationship between Uber and the labor market.

In the research by Pepić, L. titled, *The sharing economy: Uber and its effect on taxi companies*, the researcher examines the impact of Uber on traditional taxi companies in the context of the sharing economy. The study presents a comparative analysis of Uber and taxi companies, and explores the factors that have contributed to Uber's success in the market. The paper argues that Uber's innovative business model, which relies on a peer-to-peer platform and a focus on customer experience, has allowed it to gain a competitive advantage over traditional taxi companies. The study also highlights the challenges faced by taxi companies in responding to the disruption caused by Uber, and suggests that the sharing economy is likely to continue to transform traditional industries in the future. The author concludes that policymakers need to consider the broader implications of the sharing economy for labor markets, consumer protection, and regulation, and to develop appropriate

responses to address the challenges posed by these new business models.

In their paper titled *A Study on Consumer Perception of Ola and Uber Taxi Services*, the authors Rajesh, R., & Chincholkar, S. presents a study on consumer perception of Ola and Uber taxi services in India. The study is based on a survey of 250 respondents and examines factors such as customer satisfaction, trust, and reliability in relation to the two services. The study finds that Ola and Uber are both perceived as reliable and trustworthy services, with high levels of customer satisfaction. However, Ola is perceived as being more affordable than Uber, which is seen as a premium service. The study also finds that factors such as safety and security are important considerations for customers when choosing between Ola and Uber. The authors suggest that the study provides insights into the factors driving consumer preferences for ride-hailing services in India and can be useful for companies seeking to improve their services and gain a competitive advantage in the market.

Wang, M., & Mu, L. wrote *Spatial disparities of Uber accessibility: An exploratory analysis in Atlanta, USA*, a research paper that analyzes the accessibility of Uber services in different areas of Atlanta, USA. The study examines the relationship between Uber's spatial distribution and various socio-economic and demographic factors such as income, race, education level, and population density. The paper finds that areas with higher incomes, higher levels of education, and higher population densities tend to have greater access to Uber services. However, the paper also identifies significant disparities in Uber accessibility based on race and ethnicity, with predominantly Black and Hispanic neighborhoods having less access to Uber services than predominantly White neighborhoods. The paper suggests that policymakers need to address these disparities to ensure equitable access to transportation services.

The paper titled *The Value of Flexible Work: Evidence from Uber Drivers* by Chen, M. K., Rossi, P. E., Chevalier, J. A., & Oehlsen, E. examines the benefits of flexible work arrangements for Uber drivers. The paper analyzes data from a survey of Uber drivers to assess the impact of flexibility on job satisfaction, earnings, and work-life balance. The paper finds that the flexibility provided by Uber's platform is highly valued by drivers and is a significant factor in their decision to work for Uber. The paper also finds that drivers who value flexibility are willing to accept lower pay in exchange for more control over their work schedules. However, the paper notes that the lack of employment benefits and protections for gig workers may limit the overall value of flexible work arrangements. The paper concludes by discussing the implications of these findings for the broader debate over the future of work and the gig economy.

Your Uber Is Arriving: Managing On-Demand Workers Through Surge Pricing, Forecast Communication, and Worker Incentives by Guda, H., & Subramanian, U. is an article that discusses the challenges of managing on-demand workers, such as Uber drivers. The authors propose a model that incorporates surge pricing, forecast communication, and worker incentives to improve the efficiency and effectiveness of the on-demand

workforce. The model aims to balance the demand and supply of workers by adjusting prices and providing incentives to workers, which in turn leads to a better experience for customers and higher earnings for workers. The authors also provide empirical evidence to support their proposed model.

In their paper titled *Measuring accessibility: A big data perspective on Uber service waiting times*, Insardi, A., & Lorenzo, R. O. analyze the accessibility of Uber services using data on waiting times for rides. The study examines the relationship between waiting times and various socio-economic and demographic factors such as income, race, education level, and population density. The paper finds that areas with higher incomes, higher levels of education, and higher population densities tend to have shorter waiting times for Uber services. However, the paper also identifies significant disparities in waiting times based on race and ethnicity, with predominantly Black and Hispanic neighborhoods experiencing longer waiting times than predominantly White neighborhoods. The paper concludes that policymakers need to address these disparities to ensure equitable access to transportation services.

The paper *Joint Model of Application-Based Ride Hailing Adoption, Intensity of Use, and Intermediate Public Transport Consideration among Workers in Chennai City* by Devaraj, A., Ambi Ramakrishnan, G., Nair, G. S., Srinivasan, K. K., Bhat, C. R., Pinjari, A. R., Ramadurai, G. & Pendyala, R. M. proposes a joint model to understand the factors that influence the adoption, intensity of use, and consideration of intermediate public transport (IPT) among workers in Chennai City for application-based ride-hailing services. The model incorporates individual and contextual factors such as age, gender, income, trip purpose, travel behavior, and the availability of IPT. The study found that younger and male workers with higher incomes were more likely to adopt and intensively use ride-hailing services, while the availability of IPT had a negative effect on adoption and intensity of use. However, the availability of IPT positively influenced the consideration of IPT as a complementary mode to ride-hailing services. The findings have implications for policymakers and service providers in promoting sustainable transportation and improving accessibility for urban workers.

Dynamic pricing and price fairness perceptions: a study of the use of the Uber app in travels examines the impact of dynamic pricing on customers' perceptions of price fairness in the context of the Uber ride-hailing app. Santos, F. A. D. N., Mayer, V. F., & Marques, O. R. B. use survey data from Uber users in Brazil to investigate the factors that influence customers' perceptions of price fairness during periods of dynamic pricing. The findings suggest that customers' perceptions of price fairness are influenced by their understanding of how dynamic pricing works, the availability of alternative transportation options, and their experience with Uber. The study also found that customers who perceived dynamic pricing as unfair were less likely to use the Uber app in the future. The study provides insights into the effects of dynamic pricing on customer behavior and highlights the importance of transparency and communication in managing customers' perceptions of price fairness.

On the determinants of Uber accessibility and its spatial distribution: Evidence from Uber in Philadelphia is a research paper that analyzes the factors that determine the accessibility of Uber services in different areas of Philadelphia. Shokoohyar, S., Sobhani, A., & Ramezanzpour Nargesi, S. R. examine the relationship between Uber's spatial distribution and various socio-economic and demographic factors such as income, race, education level, and population density. The paper finds that areas with higher incomes, higher levels of education, and higher population densities tend to have greater access to Uber services. The paper also identifies disparities in Uber accessibility based on race and ethnicity, with predominantly Black and Hispanic neighborhoods having less access to Uber services than predominantly White neighborhoods. The paper concludes that policymakers need to consider these disparities in transportation access when designing policies related to ride-hailing services.

In *Comparative evaluation of commuters' preferences and expectations for sharing auto-rickshaw* authors Das, D., & Mandal, P. present a comparative evaluation of commuters' preferences and expectations for sharing auto-rickshaw services in two cities in India, Delhi and Mumbai. The study explores the factors that influence commuters' willingness to share a ride, including travel time, distance, number of passengers, and fare. The authors also analyze the differences in preferences and expectations between commuters in the two cities, as well as the potential impact of government policies on the adoption of shared auto-rickshaw services. Overall, the study provides insights into the potential for shared mobility solutions to improve transportation efficiency and reduce congestion in urban areas.

3. Research Methodology and Design

A. Aim

The aim of this research is to understand whether the usage of autos has increased or decreased in Pune after Uber introduced their auto service and why it did. Understanding customer perspectives on how the introduction of the Uber Autos changed their means of travel are key to this.

B. Research Objectives

1. To conduct an in-depth study of the autorickshaw industry and determine the impact Uber has had.
2. To analyse the effectiveness of Uber on the consumer base by comparing their experiences of regular autorickshaws and by using existing empirical evidence.
3. To conduct a primary study of the autorickshaw consumers to determine common opinion on the role Uber plays in influencing people's decisions when choosing between Uber and regular autorickshaws

C. Research Question

The research question being targeted through this study is:

How has the introduction of Uber in the autorickshaw industry of Pune impacted general consumer behavior, opinion, and usage intention specific of consumers who have used

autorickshaws?

D. Hypothesis

Hypothesis details:

The main hypothesis being tested is if the introduction of Uber in the autorickshaw industry of Pune has a considerable impact on the usage of autorickshaws.

- Null hypothesis - There is no correlation between the introduction of Uber and autorickshaw usage.
- Alternative hypothesis - There is a strong correlation between the introduction of Uber and autorickshaw usage.

E. Research Design

1) Population

Pune has an estimated population of 4.3 million people. This is the wider population being targeted, consisting of individuals across different platforms and services who have had experience in the usage of app-based taxi services. The population parameter being followed in terms of restrictions is that of past or current experience in using Uber, so as to not clog up the sample with respondents with no experience.

2) Sampling method

In order to reach a wider audience, an online questionnaire in a structured format was used. Online questionnaires allow for a wider reach, with low barriers to filling in the survey being utilized so as to gain maximum results. Thus, convenience sampling was used.

3) Sample size

- Population – 4.3 million
- Confidence level – 95%
- Margin of error – 10%
- Given/targeted sample size – 250
- Collected sample size - 268

The sample size is a mix of respondents of different age groups, genders, opinions and experiences, and other factors so as to collect a sample of responses that best represents a spread-out population with different factors and population parameters. The collected sample is higher than the targeted sample, which will help in equalizing results and reducing the likeliness of errors.

4) Time frame

The time frame utilized for this study is a frame of 7 days for the collection of responses, so as to give maximum time for the collection of responses and continual outreach of the survey whilst also ensuring maximum responses within a short period of time to increase efficiency and reduce time being spent on collecting responses.

F. Area of study

The study is contained to the city of Pune. Being a relatively modern Indian city allows for judgements to be made in regards to technological advancements.

G. Data Collection

1) Tool utilized

For the purpose of this study, an online questionnaire was used to keep the survey at low levels of commitment in order to

facilitate maximum responses. This also helped reach a wider and diversified audience of different age groups and genders.

2) Review of existing research

Considering the lack of literature before and after the introduction of Uber, existing studies have found how Uber operates, sets prices and adapts to meet customer requirements. Additionally, studies have also highlighted public perceptions, working conditions and competition faced by autorickshaw drivers.

The results of these studies have helped guide the questionnaire through establishing known and general opinions.

3) Format of questionnaire

a) Arrangement

The flow of questions in this study follows a logical sequence that leads the respondent through the basic to more thought inciting questions. The questionnaire begins with information oriented, structured questions that collect basic details of the respondent. This leads to questions that explore the nature of the respondent's consumer behavior specific to autorickshaws, which introduce the targeted topic and the flow of thought. This then leads to the last leg of questions that directly address the respondent's opinion and reaction to Uber autos to ascertain the level of impact these strategies have on individual consumers. The survey therefore flows from basic questions to direct questions, guiding the respondent to think deeper and deeper into the topic as the survey proceeds.

b) Scale of measurement used

The scale of measurement used to structure the questionnaire is a combination of a generic nominal scale and a particular 5-point scale to guide the respondent through the last stage of questions.

4) Limitations

The main limitation of this study is the lack of a large consumer base. An extended base where consumers from all walks and age groups being equally reviewed would have helped equalize results and provide perspectives from all consumer groups. This would help arrive at heavily supported actionable conclusions, although the current study provided many insights as well.

5) Data cleaning

The questionnaire is structured in a particular format and flow, therefore not resulting in unrequired data. Duplicates were checked for, and with no particularly extreme outliers, there was no requirement for data cleaning beyond basic restructuring and paraphrasing of collected data for better analysis and study for conclusions.

4. Data Analysis and Findings

A. Analysis of Survey Results

1) Frequency of use of autorickshaws for travel of the sample taken

Analysis: A majority of the respondents frequently use autos. In fact, only 17% of the respondents use autos less than twice a week, if at all. This could be a reflection of the age of the respondents (81% of the respondents are below 30 years old).

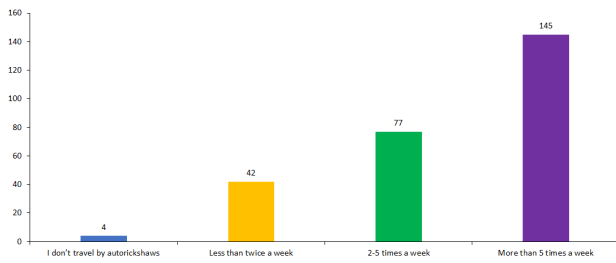


Fig. 1. Frequency of use

2) Preferred method to travel via autorickshaws

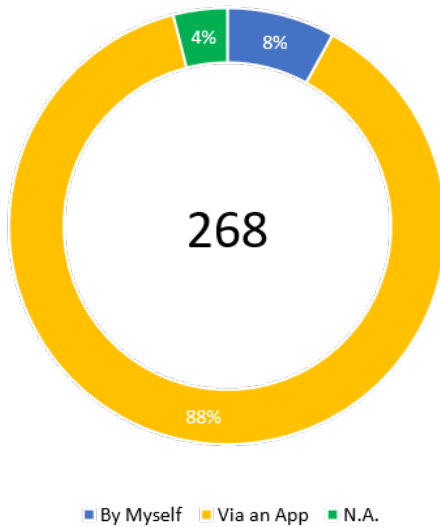


Fig. 2. Preferred travel method

Analysis: 88% of the people filling out the survey chose app-based autos as their preferred mode of travelling via autorickshaws. Although a majority of the participants prefer app-based autos, 8% of them still travel via local autos despite the multiple apps available today.

3) Comparing available options

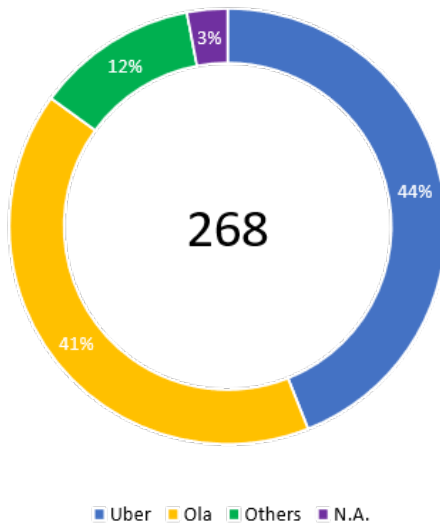


Fig. 3. Available options

Analysis: Nearly an equal number of respondents use Uber (44%) and Ola (41%) as their primary ride hailing app. However, in the “Additional comments” section at the end of the questionnaire revealed that multiple respondents had both apps and did not have a preference between them. Instead, they opted for the cheaper option or the ride that arrived first. This was mainly prevalent amongst the younger respondents.

4) Price comparison – Uber vs. local autos

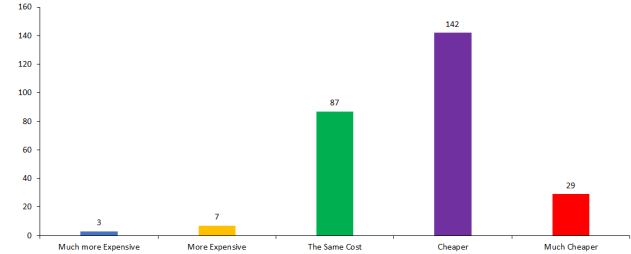


Fig. 4. Price comparison

Analysis: 64% of respondents believe that Uber is a cheaper alternative to local autos. Assuming the respondents that see no major difference in price but may prefer Uber due to the convenience, this accounts for 96% of all respondents.

5) Mode of payment

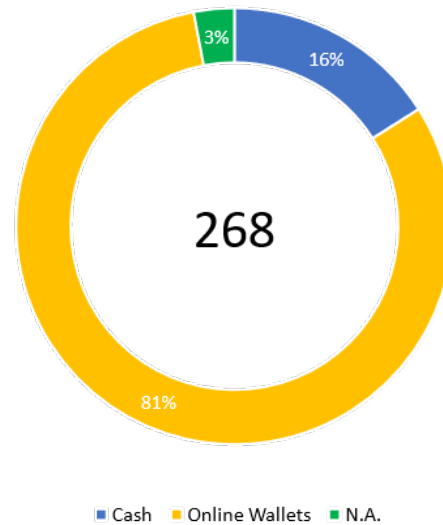


Fig. 5. Mode of payment

Analysis: Respondents across all age categories prefer using online wallets to pay for their rides. The “Additional comments” section at the end of the survey also revealed that Ola customers prefer using the “Ola paylater” credit facility for convenience/business use.

6) Safety features offered by uber

Analysis: These safety features seem to be given least importance by the respondents as seen by the large jump in “N.A.” responses, which was more constant throughout the rest of the responses. Approximately a third of the respondents do not prioritize these safety features when selecting their rides.

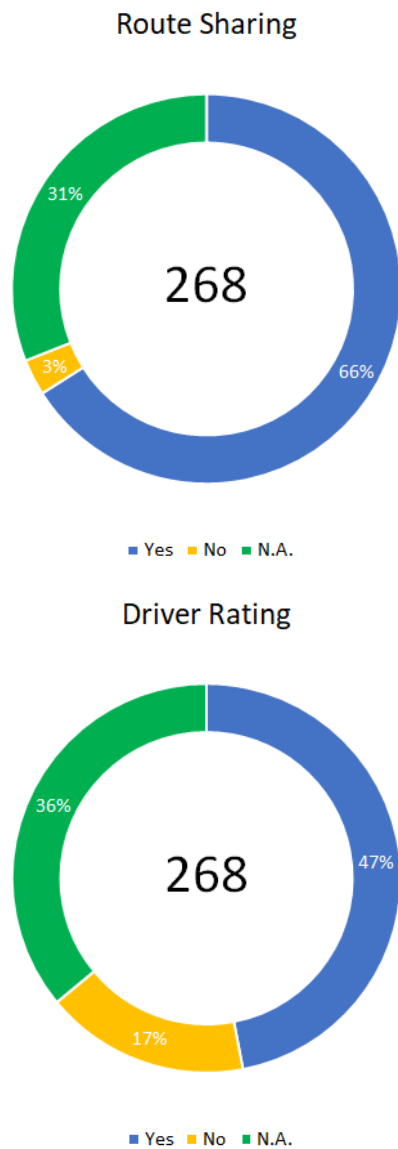


Fig. 6. Safety features

Analysis: These safety features seem to be given least importance by the respondents as seen by the large jump in “N.A.” responses, which was more constant throughout the rest of the responses. Approximately a third of the respondents do not prioritize these safety features when selecting their rides.

7) *Impact of trip distance on consumer preferences*

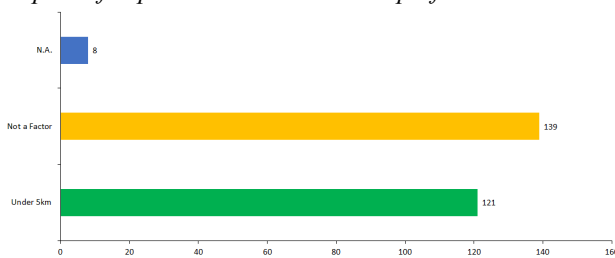


Fig. 7. Trip distance

Analysis: Trip distance is not a factor for 52% of respondents. While some of the older respondents prefer Uber autos for shorter distances, a majority of the respondents seem to give

lower importance to the total distance they need to travel while picking their preferred mode of travel.

5. Discussion and Conclusion

The emergence of ride-sharing services has disrupted the traditional autorickshaw market, leading to changes in customer behavior, industry structure, and business models. The convenience, reliability, and affordability of Uber have made it a popular choice among customers, and has also created new opportunities for drivers to earn a livelihood, with flexible work hours and no upfront investment required.

Overall, the study has highlighted the complex dynamics between ride-sharing services and traditional modes of transportation, such as autorickshaws, in emerging markets like India. While ride-sharing services like Uber have disrupted the autorickshaw industry, they have also brought about new opportunities for drivers and improved the customer experience. The concept of the sharing economy, collaborative consumption, commons-based peer production, and disruptive innovation have played a significant role in shaping the autorickshaw industry in Pune. The findings of this study can provide valuable insights for policymakers, industry stakeholders, and future research on the impact of ride-sharing services in developing countries.

A. Limitations

There are several limitations to the study that need to be taken into consideration when interpreting the results.

Sample Bias: The study relies on a convenience sample of Uber customers, which may not be representative of all customers who use Uber or autorickshaws in Pune. This could affect the generalizability of the findings.

Social Desirability Bias: Customers may be hesitant to express negative views of either Uber or autorickshaws due to social desirability bias. Customers may not want to appear critical or negative towards the services, which could affect the validity of the responses.

Limited Scope: The study focuses only on customer perspectives and does not provide insights into the impact of Uber on autorickshaw drivers' livelihoods or the wider impact of Uber on the transportation industry in Pune. Therefore, the findings should be interpreted with caution as they do not represent a comprehensive analysis of the impact of Uber on the autorickshaw industry in Pune.

B. Scope for Further Research

While the paper provides valuable insights into this topic, there is scope for further research in this area.

One area that requires further investigation is the impact of Uber on autorickshaw drivers' livelihoods. The paper touches upon this topic briefly, but a more in-depth study could provide a better understanding of how Uber's entry into the market has affected autorickshaw drivers' earnings and employment opportunities. For instance, a study could examine how the demand for autorickshaws has changed since the arrival of Uber, and how autorickshaw drivers are adapting to this change.

Finally, the paper notes that there is a lack of literature on

Uber autos, indicating that more research is needed in this area. Researchers could investigate how Uber autos are affecting the autorickshaw industry in other Indian cities, such as Mumbai or Delhi, and compare their findings with those of the Pune study. This would provide a broader perspective on how Uber autos are transforming the Indian transportation industry.

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