

WOMEN'S PERCEPTIONS TOWARDS RIDE-SHARING SERVICES: THE CASE OF DHAKA CITY

By

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A thesis submitted to the Department of BRAC Institute of Governance and Development
in partial fulfillment of the requirements for the degree of
Master of Development Studies

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Declaration

I hereby declare that:

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2. The thesis does not contain material previously published or written by a third party, except where it is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or institution.
4. I have acknowledged all main sources of help.

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Approval

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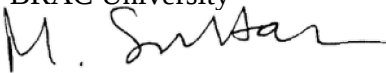
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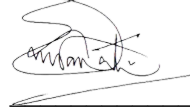
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Abstract

The global ride-sharing industry is booming and Bangladesh is no exception. Today, it makes up almost a quarter of Bangladesh's transport sector. It has increased the mobility of the middle class in big cities such as Dhaka. By adopting a mixed-methods research technique, this research study sought to explore the varied perceptions, experiences and concerns of female users of ride-sharing services in Dhaka city. The results showed that women opt for ride-sharing services primarily due to convenience, time-saving, cost effectiveness, safety and comfort. Women face a number of problems such as cancellation of trips, reckless driving, and sexual harassment by drivers. Findings suggest that these problems can be addressed by ride-sharing companies by hiring more female and skilled drivers, activating hotlines and boosting security measures. BRTA should play a stronger role in monitoring the ride-sharing industry to maintain service quality and safety.

Keywords: Ride-sharing, Dhaka, female users, transportation, Uber, Pathao

Dedication

To Ma and Baba for your unconditional love, support and inspiration.

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List of Acronyms

BRTA	Bangladesh Road Transport Authority
CNG auto-rickshaw	Compressed Natural Gas-Powered Auto-Rickshaw
COVID-19	Coronavirus Disease of 2019
GPS	Global Positioning System
PRI	Policy Research Institute
SEM	Socio-Ecological Model
SPT	Social Practice Theory
TAM	Technology Acceptance Model
TIB	Theory of Interpersonal Behavior
TPB	Theory of Planned Behavior
TTM	Transtheoretical Model
VMT	Vehicles Miles Travel

Chapter 1: Introduction

1.1 Background

Mobility – the ability to move from point A to point B – is crucial for access to social and economic opportunities and is a marker of quality of life in a city. Urban mobility today is a topic of major policy interest for governments worldwide as it is essential to the basic functioning of cities. As the majority of the world's population today live in cities, promoting urban mobility is essential for their wellbeing and livelihood.

According to the UN's report titled "World Urbanization Prospects: The 2018 Revision", Dhaka is set to become the fourth largest megacity in the world by 2030, with a population of around 28 million. In a highly dense city such as Dhaka, mobility of the population is a major policy concern and, with an increase in population in the future, mobility issues will surely gain more currency.

In a world of rapid urbanization and technological innovation, the global ride-sharing industry has greatly transformed the urban landscape by offering ease of mobility for populations who can both access and afford these services. The case is similar in Dhaka where the entry of ride-sharing services has improved the mobility of a large segment of the upper-middle and middle-income population.

The 21st century has brought forth what we know as the "sharing economy". This brand new "economy" is primarily dependent on three factors: innovative technologies, simplicity, and the economic pressures facing small businesses (Gardner, 2013). Although there remains a lack of clarity regarding the definition of the sharing economy, it would be helpful to conceptualize the

sharing economy as one where consumers allow others temporary access to under-utilized resources and assets, in exchange for a monetary transaction (Frenken, Meelen, Arets & Glind, 2015).

The ride-sharing industry is a major part of the sharing economy. Ride-sharing is one of the many aspects of the sharing economy, which also includes crowdfunding, P2P accommodation sharing and music streaming. Globally, the ride-hailing industry is expected to be worth USD 285 billion by 2030, according to Goldman Sachs (Huston, 2017). A number of factors have contributed to the rise of the ride-sharing industry in recent years; these include convenience, reduced time duration to reach destination, reduced travel costs, comfort and safety for consumers across the globe. Moreover, ride-sharing also has environmental benefits such as reduced vehicular emissions because of more efficient use of automobiles (Teubner & Flath, 2015).

One of the megatrends of our times is the changing mobility behavior of consumers worldwide. In an increasingly digitalized world, mobility and transport solutions that are swift, ubiquitous and can be accessed via smartphones and the Internet are a major part of consumer demands today (Bongaerts, Kwiatkowski & König, 2017). This is why app-based solutions through which vehicles can be found in the nearest location have proved to be so popular. Whereas car ownership was largely seen as a status symbol, in many parts of the world that attitude is changing with the advent of alternative forms of transport such as those offered by ride-sharing. In recent years, the ride-sharing industry has seen the rise of top players such as Uber, Lyft in the US, Gojek in Indonesia, Ola in India, Carpooling.com in Germany and Didi in China, among many more (Tarek & Amit, 2019).

Bangladesh saw the emergence of app-based ride-sharing services in May 2015. Pathao, a local ride-sharing company, entered the market in 2016 and Uber in late 2016. The ride-sharing industry in Bangladesh is worth an estimated USD 260 million and accounts for 23% of the transport sector, according to a 2018 study by the Policy Research Institute (PRI) (Rahman, 2019; Tarek & Amit, 2020).

The operations of ride-sharing services are concentrated in Dhaka due to the capital's large consumer base, high internet penetration relative to rural areas, and rising incomes (Kamal & Ahsan, 2018). The Bangladesh Road Transport Authority (BRTA) only last year began to issue enlistment certificates to ride-sharing companies in line with Ride-sharing Service Guidelines 2017 as earlier there was no legal basis or official guideline to formalize ride-sharing services (Shawki, 2019). The services of 12 ride-sharing companies, including Uber Bangladesh Ltd, Obhai Solutions Ltd, Chaldaal Limited, Pathao Limited, Shohoz Ltd, Buddy Ltd, and Akiz Online Limited, have been approved for the enlistment certificates by the BRTA, although more than 20 app-based ride-sharing companies have been operating their services for the last few years in the country (ibid). The new policy, which came into effect on March 8, 2018, prohibits ride-sharing services in vehicles registered outside of Dhaka. According to January 2019 data, commuters in Bangladesh took on average 6 million rides each month via ride-sharing apps, and more recent figures point to the average number of rides per month increasing to 7.5 million (Tarek & Amit, 2020). Moreover, the market value of ride-sharing start-ups is expected to reach USD 1 billion in the next five to seven years.

The top three players in Bangladesh are Uber, Pathao and Shohoz (Tarek & Amit, 2019). Compared to developed countries where the penetration of car-sharing services is quite high, in Bangladesh app-based motorbike ride-sharing services have seen massive growth in recent years

(Tarek & Amit, 2020). Motorbike sales have grown by over 40% year-on-year. Pathao, which is very popular for its motorbike-sharing service, has over five million users and more than 200,000 registered drivers (Rahman, 2019). Moreover, not only are ride-sharing companies easing mobility for millions but also creating much-needed employment opportunities. Around 2,500 drivers get registered with Uber every week in Bangladesh, and the platform became an attractive income source for 100,000 people between 2016 and 2018, according to an official of Uber in India and South Asia (“One lakh people”, 28 Nov 2018).

The rise of the ride-sharing industry in Bangladesh is not difficult to comprehend in the backdrop of traffic congestion of nightmarish proportions and a weak transportation sector which is in dire need of major reform. According to a 2017 World Bank study, traffic jams in Dhaka lead to the wastage of 3.2 million working hours per day and in the last decade, average traffic speed has declined from 21 km to 7 km per hour, which is only slightly higher than the average walking speed (“Traffic jam in Dhaka, 19 July 2017). Furthermore, a large population, internal migration and urbanization have put tremendous pressures on the transport sector (Rio+20: National Report on Sustainable Development, 2012) which has not expanded at the same pace and has thus been unable to match consumer demands. With an extremely poor public transport system, lack of proper road networks and infrastructure, and absence of sustainable means of transportation for urban dwellers, the state of urban mobility in the capital, the most densely populated city in the world (Amin, 2018), remains a major policy concern in particular.

1.2 Problem Statement

Urban transportation is an important marker of quality of life and vibrancy of commercial cities. In this context, urban traffic congestion in Bangladesh no doubt signals poor quality of life and

poor state of urban mobility. Road space in Dhaka – one of Asia’s least motorized capitals – comprises only 7.5% of total land area which is much less than the global standard of 20% and other major metro areas around the world (Siddique, 2018; World Bank, 2016). Only 5-8% of people in Dhaka use private vehicles which occupy a much larger portion of roads whereas about 80% of residents use public transport (Sakib, 2019). Government institutions have been unable to cope with rising demand for safe and sustainable modes of transport in the backdrop of an increasing urban population and rising number of low-capacity vehicles (Zaman, 2017).

Women make up almost half of Bangladesh’s population and according to World Bank data, the female labor participation rate is 36.3%. Women’s increased involvement in the social, cultural, economic and political spheres in recent decades has led to their higher physical mobility, particularly in urban areas such as Dhaka. However, the spike in women’s demands for sustainable and safe transport has outpaced the supply. Women’s travel experiences are not identical to those of men and neither are their transport needs, which is why it is of paramount importance that women’s mobility patterns, behaviors and experiences be given specialized attention.

Women in Dhaka city are some of the worst sufferers of the capital’s poor urban transport system. A study carried out in Dhaka (urban), Gazipur (peri-urban) and Birulia (rural) of Savar among men and women above the age of 15 found that 94% of women commuters faced sexual harassment – verbal, physical, or in other forms – in public transport (“Public transport: 94pc women harassed”, 2018). The study found that the lack of the implementation of existing laws, lack of proper monitoring and surveillance and overcrowded public vehicles are among the factors that contribute to this situation. In the study, women who were interviewed complained about being inappropriately touched, being subjected to abusive language and catcalls, and

around 45% of them said they had to hear comments on their clothing, anatomy and physical appearance.

Rickshaws, CNG auto-rickshaws and taxis are other available forms of transportation but they are not affordable for women across all socioeconomic classes. Moreover, rickshaws are not suitable for travelling long distances, especially when speed is required to reach the destination, and the availability of CNGs is low in the capital.

It is in this context that the ride-sharing industry has, in many ways, provided some relief to female commuters in Dhaka city. The unfriendly conditions of the transportation system towards women in Dhaka created a fertile ground for ride-sharing companies to enter the market and attract female commuters. Not only did these companies see a wide array of opportunities to capture market share and generate revenue but also saw how their services could lead to creation of employment (Tang & Wang, et al., 2017).

More and more women in Dhaka city are using ride-sharing services for a variety of purposes: to go to work, university or college, social gatherings, etc. Women's usage of app-based cars and bikes offered by ride-sharing companies in the capital is now commonplace. It is not uncommon to see a woman hitching a ride in a motorbike, wearing a helmet printed with the name of a particular ride-sharing company. An increasing number of women are challenging conservative societal attitudes and gender norms by riding bikes being driven by male drivers (Hasan, 2019).

However, a number of challenges exist even when it comes to ride-sharing services which are supposed to provide a sense of safety and cost-effective travel option to women. Countless complaints have come to the fore regarding drivers refusing to go by the app and taking passengers on a contract basis, misbehaving with passengers, driving recklessly, sexually

harassing passengers, ignoring commuters' requests, cancelling trips even after accepting the request, and so on (Bosu, 2020). These emerging problems in the ride-sharing economy in Bangladesh prompted the Government of Bangladesh to formulate the Ride-sharing Service Guidelines 2017 to bring ride-sharing companies under the legal framework. However, although the guidelines came into effect in March 2018, many of the provisions of the guidelines – such as the obligation of drivers to carry passengers no matter the distance – are being flouted openly (ibid).

Such incidents point to the fact that the security of female ride-sharing service users in Dhaka is not being ensured and their concerns are not being prioritized. Ride-sharing services have no doubt given way to newfound opportunities for women in terms of quick, convenient, and cost-effective travel in Bangladesh's traffic-ridden capital. However, there are legitimate safety and other concerns related to women's ride-sharing experiences in Dhaka city which need urgent attention.

1.3 Research Objectives

The broad objective of this study is to assess the state of urban mobility of educated, working women in Dhaka city. Women's mobility in the field of transportation remains an under-researched area, especially in the context of Bangladesh. Thus this study aims to contribute to filling that gap by focusing on the ride-sharing industry and bringing in women's perspectives.

Although it is well-known that the transportation system in Dhaka city is far from women-friendly, the problems and experiences faced by women have received very little attention in the research arena. It is paramount to gather evidence-based data on the wide array of problems faced by women, in terms of accessing or using the services of the transportation system, to have

any effect at the policy level. Thus this study explores the following question: What are the varied experiences, perceptions, beliefs and attitudes of female users towards ride-sharing services in Dhaka city?

The ride-sharing industry is relatively new in Bangladesh, and the industry continues to grow. Such services have emerged at a time when there is growing demand for better transportation services among women in the country, particularly in big cities with sizeable female populations. Given that women's transport needs and travel behavior differ from those of men, it is imperative to explore why ride-sharing services are appealing to female commuters. Thus this research study seeks to explore the following question: What are the primary factors that prompt women in Dhaka to opt for ride-sharing services instead of alternative modes of transport?

Finally, there is no doubt that there is an urgent need to improve transportation services in order to cater to women's transport needs and improve their mobility. Ride-sharing services have proven to be quite popular among female commuters in Dhaka. However, it is clear that these services are not without their drawbacks. Therefore, this study attempts to explore the following question: How can ride-sharing experiences of women living in Dhaka city be improved?

1.4 Significance of the Study

To the best of this researcher's knowledge, very limited number of studies have been conducted focusing specifically on women's experiences, perceptions and concerns about ride-sharing services in Dhaka city. Given the widespread use of ride-sharing services by female commuters, this study is very timely and can help document the major problems women face when they avail ride-sharing services in the capital. The findings of this study can help both ride-sharing

companies and government bodies associated with transportation planning to identify and address the topmost concerns of female users of ride-sharing services in Dhaka city.

1.5 Limitations of the Study

The study captures the perceptions of a limited number of female users of ride-sharing services. Semi-structured interviews and an online survey of female commuters in Dhaka were conducted for data collection. A much larger sample size would lend more validity to the findings. However, due to time and resource constraints, capturing a bigger sample size was not possible. Furthermore, this study was conducted during the outbreak of COVID-19. Social distancing measures and city lockdowns were in place which made it quite impossible to conduct face-to-face interviews. However, the best efforts were made to maintain the quality of data collected and ensure a significant number of respondents for the study, by utilizing the networks of this researcher.

Chapter 2: Literature Review

2.1 Gender and Mobility in the Developing World

Allen (2018) lays out the gender inequalities in access to transport and the gendered differences in travel behavior. She states that since income-generating (productive) trips are valued more than care-based (reproductive) trips, men have higher access to motorized transport compared to women. Therefore, in the developing world, the majority of women either walk or use informal and public transport. Furthermore, the transport options that women of all social classes have access to vary between countries, oftentimes due to cultural, religious or economic (income) reasons. Access to transport plays a pivotal role in improving or worsening the social conditions of women, particularly those belonging to low-income groups. However, differences in men and women's travel behavior decline as women's incomes increase. She also states that the perception of security differs between men and women and it also differs among women of different socioeconomic backgrounds, age, race, etc. People's opinions about the same service and the same destination can change depending on the time of the day. Women are more likely to face different forms of harassment – verbal, physical, visual – compared to men, especially in public transport. Such occurrences reduce the freedom of movement of women and girls. Allen (2018) states that to achieve gender-responsive urban mobility, public transport has to be made affordable, conditions of walkability have to be improved, more female staff should be hired, and awareness-raising campaigns should be carried out, among many other things, if women are to access more economic opportunities and to make transport conditions harassment-free.

Uteng (2011) states that de-regularization and opening up of markets in the developing world have given rise to employment opportunities for women. However, access to such opportunities

depends on access to safe and affordable transport. Uteng (2011) cites the example of Egypt where women's commuting frequencies have plateaued for the period 1988-98, whereas those of men were higher as the latter were accessing more job opportunities in the private sector. Such discrepancies in men's and women's geographical mobility reflect a growing gender imbalance during the decade of the 1990s (Assaad & Arntz, 2005). Such limited mobility of women can lead to less access to economic opportunities by "limiting their choice of work location, their access to final goods and factor markets, their access to information relevant to their work and the freedom to combine jobs in the informal sector" (Uteng, 2011). Whereas in the developed countries, transport planning usually consists of a balance between cars and public transport, in developing countries achieving this balance can be very tough. In the developing world, para-transit and non-motorized vehicles account for a huge share of the modal split which poor people in the informal sector are dependent on (Houpin, 2009).

In Bangladesh, the mobility needs of women have changed over the years with more and more women getting an education and joining the workforce, even while remaining responsible for care work (e.g. children) and household chores (e.g. grocery shopping) (ADB, 2017). Furthermore, the weakening of social constraints such as *purdah* has paved the way for more women to leave their homes and step into the public space for educational purposes, household work, etc. At the same time however, these social changes have forced women to put themselves in hostile and unsafe environments, such as public buses, to fulfill their needs. In urban settings, women take both short and long trips, and their transport needs vary, depending on age and occupation. The lack of a reliable public transport system, coupled with poor conditions of roads, lack of walkability, and inadequate facilities such as public toilets or waiting areas for buses, greatly hamper the geographical mobility of women in Bangladesh. These challenges faced by

women are a form of social exclusion which has an effect on all aspects of women's lives, including their economic livelihoods and health (Duchene, 2011).

2.2 Ride-sharing and Travel Behavior

In the developing world, ride-sharing is popular for its efficiency and affordability in particular, whereas in the developed world, the emphasis is more on convenience and environmental friendliness (Vayouphack, 2020). Ride-sharing has the social benefit of offering increased travel options, especially in developing cities where public transport systems are inadequate, and could be improving “accessibility and mobility in developing cities, while discouraging private motor ownership” (Vanderschuren & Baufeldt, 2017).

There are varying definitions of ride-sharing that have emerged throughout the past decades. Furuhashi et al. (2013) define ride-sharing whereby individuals share a vehicle with those who have the same destination as them via smart means of transportation, and they share the trip-related costs such as gas, tolls or parking fees. Le Vine et al. (2014) refer to ride-sharing as a phenomenon whereby individuals obtain permission to access and use a car that is owned by another individual or institution in exchange for some kind of monetary payment. For the purposes of this study, the latter definition will be used.

Ride-sharing services can be offered in two forms: static and dynamic. Static ride-sharing services refer to those whereby users are matched based on their published requests. However, the static system of ride-sharing does not work in real time and users can only communicate via email which leads to improper, ineffective communication (Saadat et al., 2018; Jahan, 2019).

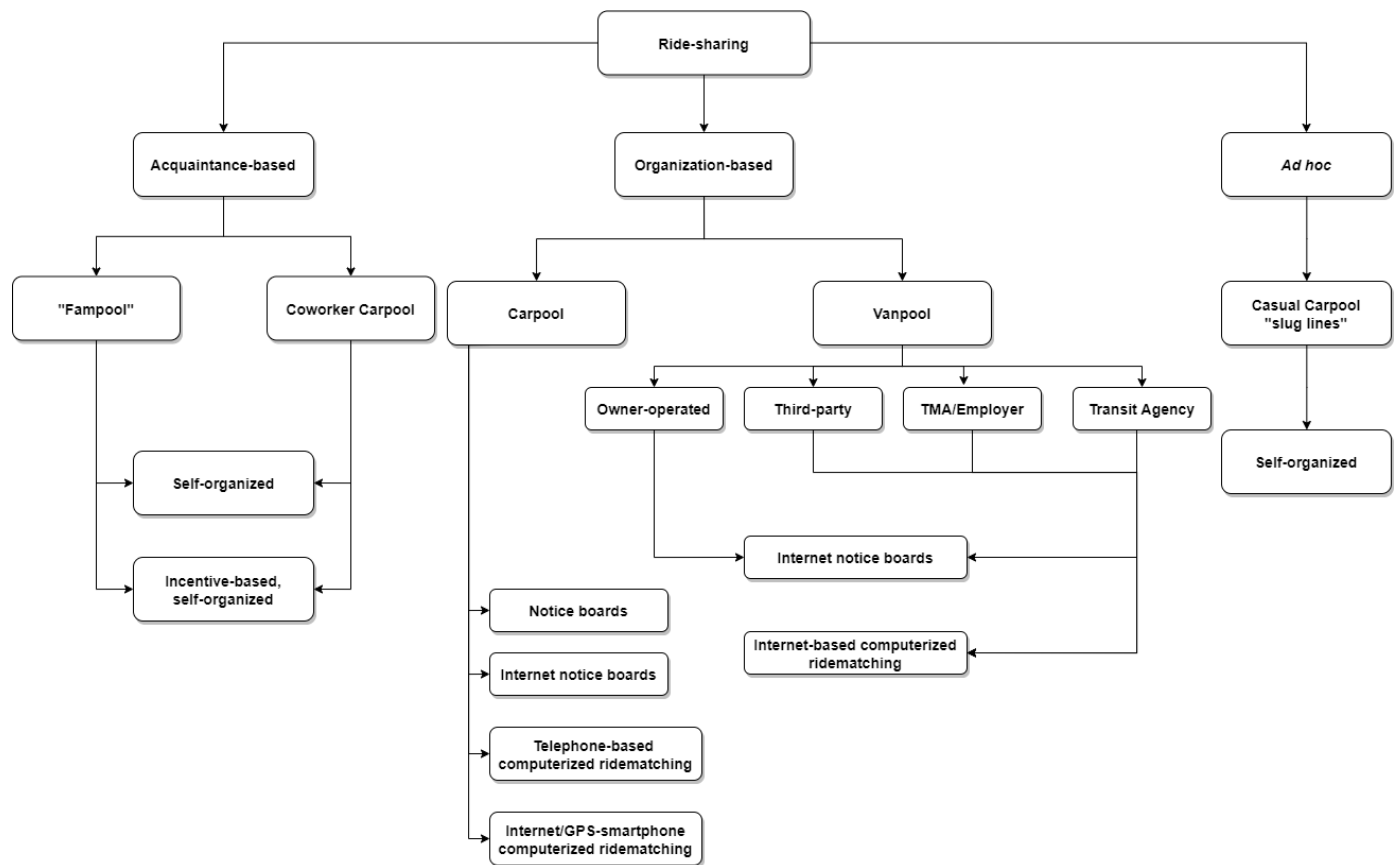
Dynamic (or ad-hoc) ride-sharing on the other hand is deeply reliant on technology and smartphones. This category refers to services whereby the passenger can insert data such as his

or her intended destination, existing location, and preferred time of departure. The driver inputs data such as his or her car model, license plate number, current location and destination and time of departure. The driver and the user are then matched based on their data inputs via algorithmic computations. The passenger and the driver then meet at a certain location and time after the driver accepts the passenger's request (Haddad et al., 2013). This study explores the dynamic system of ride-sharing.

Chan and Shaheen (2012) categorized ride-sharing into at least three groups: “acquaintance-based” (carpools organized by families or friends or colleagues), “organization-based” where the carpools are formed by an institution or organization, and “ad-hoc based” which is where pool users do not know each other (see Figure 1). In this study, ad-hoc based ride-sharing is explored.

It is imperative that the difference between ride-sharing and similar modes of transportation such as carpooling is elucidated. In carpooling, an individual gets access to a number of cars for hourly or daily use (Agatz, et al., 2012). In dynamic ride-sharing on the other hand, real-time information is taken into account to match the passenger and the driver (Gargiulo, et al., 2015). Although the concept of ride-sharing as such is not new, the dynamic system of ride-sharing powered by mobile technologies, as we know it today, is a recent innovation (Brereton & Ghelawat, 2010).

Figure 1: Conceptualization of ride-sharing



Source: Nielsen et al.'s (2015) conceptualization of ride-sharing; modified from Chan & Shaheen (2012).

Understanding individuals' travel behavior is a complex process. A number of research studies have been undertaken in numerous country contexts, adopting multiple models such as Bauer's (1960) concept of perceived risk and uncertainty, Shove et al.'s (2012) Social Practice Theory (SPT), Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991), Theory of Interpersonal Behaviour (TIB) (Triandis, 1977), Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989), and Socio-Ecological Model (SEM) (McLeroy et al., 1988).

TPB, which has proven to be quite a popular model to explain travel behavior, consists of three basic paradigms: (i) attitudes, (ii) subjective norms and (iii) perceived behavioral control. These three factors “influence behavioral intentions, which, in turn, influence behavior” (Quintal et al., 2010).

A good number of research studies have attempted to explore travel behavior through analyses of psychological and contextual factors. Amirkiaee & Evangelopoulos (2018) found a strong relationship between an individual’s attitude towards ride-sharing and intention to participate in it. Here “attitude” refers to a negative or positive perception towards a specific behavior, and “intention to participate” in this context refers to an individual’s readiness to take part in ride-sharing. The study also found time benefit (time-saving) and trust (trust in the ride-sharing network, driver, or passenger) as “strongly significant influencing factors on attitude towards ride-sharing.”

Brewer and Kameswaran (2019), in their study involving the visually impaired, found that individuals value the freedom and independence that dynamic ride-sharing services offer and that they rely on drivers, weak ties (e.g. strangers) and strong ties (family or friends) for assistance in these services.

Nielsen et al. (2015) has identified three common factors that influence a person’s perceptions towards travel: price, safety and convenience. In their study, they found that in Denmark factors that contribute to negative perceptions towards ride-sharing include lack of availability, safety, inconvenience, awkwardness, and social exclusion, whereas positive perceptions revolve around low costs, comfort, speed, flexibility and socialization. Cost-saving was identified as the number one reason behind people’s positive perceptions whereas lack of availability of car rides,

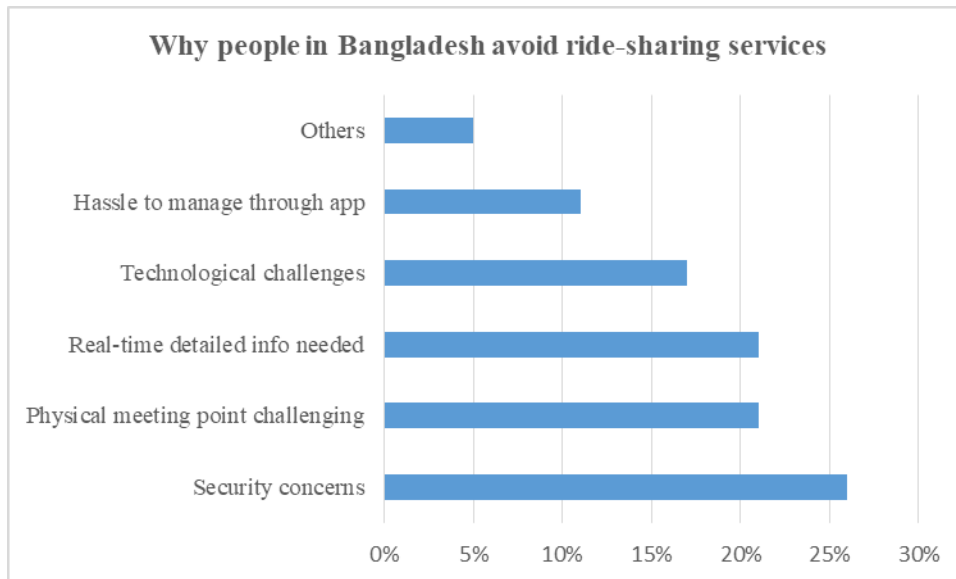
particularly on less popular routes, was identified as one of the major problems. Safety and privacy concerns were also repeatedly mentioned by respondents.

A number of studies have been carried out on user satisfaction of ride-sharing services in Bangladesh. Jahan (2019) found the speed of ride as the most significant factor influencing users of ride-sharing services in Bangladesh, followed by the cost of ride and convenience of ride. A good example is the increasing number of ride-sharing users, including women, who are opting for bikes in Dhaka city due to its comparatively faster speed. One of the recommendations in the study is that ridesharing service providers should pay more attention to making their rides more cost-effective, and improve speed and convenience of rides.

Saadat et al. (2018), in their study assessing the perceptions of the students of North South University regarding car-sharing services, found that the general attitude was positive, but that their biggest concern was safety.

Islam et al. (2019) found that dynamic ride-sharing users in Bangladesh value the “flexibility, convenience, time-saving, and ease of use.” The most common users of these services are young people as they are tech-savvy which is a requirement for the gig economy. The study found that most of the respondents avoid ride-sharing due to safety concerns (see Figure 2), and women especially felt unsafe during trips taken at night.

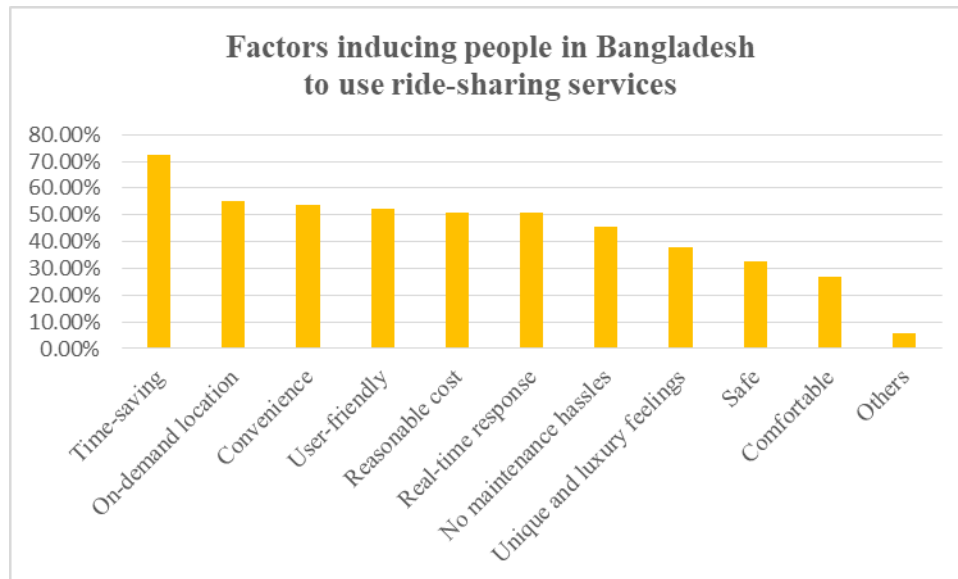
Figure 2



Source: Islam et al. (2019)

Sakib & Mia (2019) similarly found safety and reliability to be the most common concerns among those who choose to avoid ride-sharing services in Bangladesh, which reflects people's lack of knowledge and lack of trust in these services. The study also found that time-saving, on-demand location and convenience are the top factors that persuade people to opt for ride-sharing services in the country (see Figure 3). These three factors are absent in the traditional transport system in Bangladesh, which points to the fact that dynamic ride-sharing services fill a gap in the demand for transport. Both Islam et al. (2019) and Sakib & Mia (2019) found Uber, Pathao and Shohoz to be the top three preferred ride-sharing service providers, respectively.

Figure 3



Source: Sakib & Mia (2019)

Cynthia et al. (2019), in their study evaluating security concerns in ride-sharing services in Bangladesh, found that most female respondents are worried about their safety both in public transport and ride-sharing services when they travel at night. 54% of male respondents and 74% of female respondents claimed that harassment is commonplace in public transport in the country. When respondents were given the choice of taking a trip on a crowded public bus versus an Uber, 79% chose Uber. Interestingly however, when the rest of the 21% respondents were asked whether they would prefer Uber if it cost as much as the bus, 63% of them changed their original answer, which reflects the importance that commuters place on travel costs even when security is at stake.

None of these studies in the Bangladesh context, however, provided detailed insights into the perceptions and travel behavior of female users of ride-sharing services, particularly their concerns about security.

2.3 Theoretical Framework

Triandis' Theory of Interpersonal Behaviour (TIB) has been used to assess the psychological variables – individual attitudes, subjective norms and perceived behavioral control – that go into understanding individuals' mode choice (Schneider, 2013). The Theory of Planned Behavior (TPB), another closely related theory to TIB, constitutes “‘attitudes towards the behaviour’, ‘subjective norms’, and ‘perceived behavioural control’ which in turn influence intention which in turn influences the performance of behaviour” (Robinson, 2010). TIB is a cognitive model, and goes beyond TPB by adding habits and conditions that either aid or hinder the process of a certain behavior (ibid). Both TIB and TPB are popular cognitive models that have been used by researchers to explain travel psychology.

Schneider (2013) proposes an operational theory called the Theory of Routine Mode Choice (see Figure 4) which can be used to determine the process through which people choose transport modes for “routine travel purposes”. He calls this the “mode choice decision process”. Schneider (2013) puts forward five steps that ought to be taken into account: (i) awareness and availability (which refer to an individual's awareness about the existence of certain modes of transport and the availability of those possible forms of transport); (ii) basic safety and security; (iii) convenience and cost; (iv) enjoyment; and (v) habit. Steps (ii), (iii) and (iv) can be carried out simultaneously or sequentially and the final step (habit) “reinforces previous choices and closes the decision process loop” (ibid). The differences in socioeconomic characteristics affect how an individual considers each part of the process.

Schneider's (2013) operational Theory of Routine Mode Choice seems to be an appropriate analytical framework for this study for two main reasons. Firstly, in combining elements of *both*

the travel behavior and psychology fields, the framework presented by the Theory of Routine Mode Choice takes into consideration a number of variables such as time, cost, attitudes towards certain modes of transport, as well as “the thought process used to select a travel mode, including intentions and habits” (ibid). Such a framework is very suitable for this study as this research project intends to incorporate parts of *both* the travel behavior and psychological factors that go into shaping the transport decisions of female ride-sharing users in Dhaka. TPB and TIB, on the other hand, look at the psychological factors only.

Secondly, Schneider’s (2013) Theory of Routine Mode Choice can more easily help assess why women ride-sharing users in Dhaka city pick one mode of transport over other alternatives, compared to other frequently used frameworks such as the TPB and Transtheoretical Model (TTM). TPB and TTM tend to focus on a “thought process related to performing a particular behavior (typically a normative goal)”, rather than shedding light on why commuters choose between alternatives (ibid). Since this study seeks to explore, among other things, why women in Dhaka choose to use Uber, Pathao, or other ride-sharing service providers over other available modes of transportation such as public buses and CNG auto-rickshaws, the Theory of Routine Mode Choice seems to be a better fit than TPB and TTM.

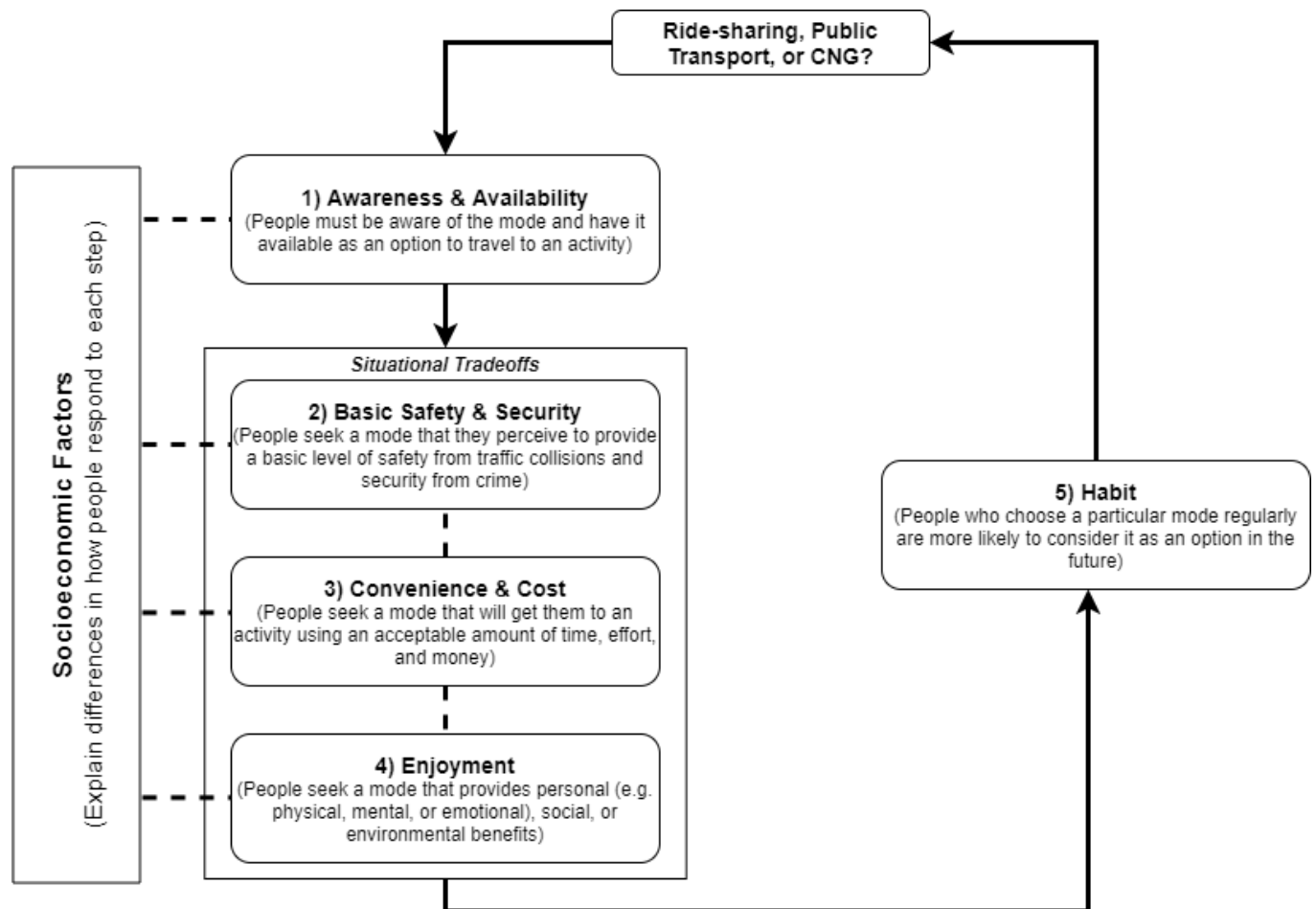
To sum it up, the Theory of Routine Mode Choice offers a much more holistic analytical framework for the purposes of this study, due to the fact that it consists of elements of both the travel behavior and psychology fields.

This research study undertakes two hypotheses:

Hypothesis 1: For women living in Dhaka city, safety is a major factor behind their decision to avail ride-sharing services.

Hypothesis 2: Ride-sharing can improve female students' and working women's productivity by saving commute time.

Figure 4: Schneider's Theory of Routine Mode Choice Decisions



Slightly modified version of Schneider's (2013) proposed Theory of Routine Mode Choice Decisions.

Chapter 3: Methodology

3.1 Research Design

This study utilizes both primary and secondary data. Secondary data has been collected through peer-reviewed journal articles, newspaper articles (both national and international), conference papers, and reports. Primary data has been collected from female users of ride-sharing services in Bangladesh as well as experts, professionals and policymakers in the field of urban transport.

This is a mixed-methods study which uses both quantitative and qualitative approaches. The main purpose of data triangulation is to increase the reliability of the findings of this study. Triangulation, simply put, assumes that “no one measure in the social sciences is a perfect measurement of the construct under consideration” (Heath, 2015) and therefore multiple methods are used to increase confidence in the findings of a particular study. Quantitative analysis helps produce numerical findings while qualitative inquiry helps delve deeper into the subject matter – in this case female users’ perceptions of ride-sharing services in Dhaka – and sheds light on attitudes, behaviors, experiences and perceptions, i.e. “why” people behave in the way that they do.

3.2 Sampling

The quantitative part consists of an online survey questionnaire which has been filled out by 150 female respondents. The main criterion for the online survey questionnaire was female users who have experienced, at some point of time, ride-sharing services in Dhaka city.

The qualitative method consists of two parts. The first part consists of 20 semi-structured interviews with female ride-sharing users in Dhaka. These respondents are both frequent and

occasional users of ride-sharing services in the city. The second part of the qualitative inquiry consists of three key informant interviews with experts and researchers in the field of urban transport in Bangladesh.

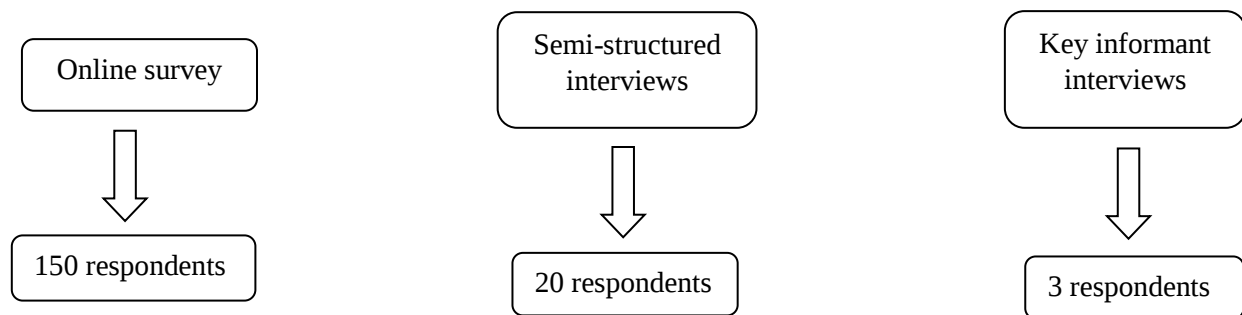
Both the quantitative and qualitative parts of this study were carried out using non-probabilistic sampling. The respondents of the online survey were selected using a combination of purposive sampling, snowball sampling and convenience sampling to attain maximum reach. Robinson (2014) states that “purposive sampling involves an iterative process of selecting research subjects rather than starting with a predetermined sampling frame.” This type of sampling involves selection of participants based on their knowledge and experiences of a specific concept or phenomenon, which, in this case, refers to prior experience of using ride-sharing services in Dhaka. Snowball sampling involves seeking the help of research participants to identify potential respondents or subjects who may be interested in taking part in the research project. Convenience sampling, one of the most common sampling methods, involves reaching out to potential participants who are easy to access. The online survey was thus circulated in private university and women-only Facebook groups in order to maximize the number of female respondents.

Due to the fact that using ride-sharing services requires literacy, technological capabilities and the ability to afford such services, the pool of 150 female respondents for the online survey were mainly from upper-middle or middle-income socioeconomic backgrounds who are highly literate and are familiar and comfortable with technology.

The selection process of female respondents for the semi-structured interviews was similar. Both purposive and snowball sampling methods were used to select 20 female users of ride-sharing

services in Dhaka city for the interviews. Since ride-sharing services are frequently used by women with transport needs and relatively high mobility, the 20 respondents for the semi-structured interviews comprised of university students and working women living in Dhaka city in the age range of 24-40.

The three experts, researchers and policymakers in the field of urban transport for key informant interviews were also selected using the method of purposive sampling.



3.3 Data Collection

The online survey questionnaire, for the quantitative part of the study, was used due to its convenience, quick nature, inexpensiveness, and benefit of anonymity. The close-ended questionnaire for the online survey was designed on Google forms and circulated via the researcher's own personal and professional networks of female ride-sharing users in Dhaka, via emails and social media platforms, as well as via the networks of the researcher's acquaintances. The survey was also circulated within private university and women-only Facebook groups.

Semi-structured interviews with the 20 female respondents allowed the interviewer to probe, thus making it possible to gather in-depth data, and at the same time maintain a structure in the interview process and remain focused on the research objectives. Furthermore, semi-structured

interviews gave the interviewees a sense of direction as well as a degree of freedom to express their views in their own words. Each of these interviews lasted, on average, 30 minutes.

Key informant interviews gave expert insight into the overall impact of the ride-sharing industry in Dhaka, and the emerging concerns and policy constraints related to ride-sharing. Each of these interviews lasted 30 minutes on average.

The semi-structured interviews with female ride-sharing users in Dhaka city and the key informant interviews with experts and researchers were both conducted remotely via the telephone. This is not only because telephone interviews are inexpensive and provide convenience and ease of access to respondents, but also because it was the best option available during the data collection period of this research study, when lockdown and social distancing measures were in place due to the COVID-19 outbreak. The best efforts, however, were made to ensure that the data collection process is not hampered and that the quality of data collected is satisfactory.

3.4 Data Analysis

For the online survey, spreadsheets consisting of all the submitted responses of the 150 female respondents were automatically available on Excel, as it is one of the in-built functionalities of Google form surveys. This spreadsheet was exported and the data was further analyzed and inter-relationships between the different categories were explored by using the additional functions on Excel.

For the semi-structured interviews with the 20 female respondents and the three key informant interviews, both the inductive and deductive methods of thematic analysis were applied to

analyze the data. Notes were taken on the computer during the phone interviews and were later organized into both pre-determined and emerging categories.

3.5 Ethical Considerations

The online survey clearly stated that it is anonymous and that the respondent's identity would remain protected. Respondents' name or addresses were not collected in the survey.

Verbal consent was obtained from all respondents of the phone interviews prior to the interviews being taken. The research purpose was elaborated to all respondents at the beginning of the interview and all interviewees voluntarily consented to participating in the interviews.

Chapter 4: Findings and Discussion

4.1 Findings

Demographic characteristics of respondents

Among the 20 female respondents of the semi-structured interviews, 8 are university students and 12 are working women living in Dhaka. The 20 respondents are within the age range of 24-40.

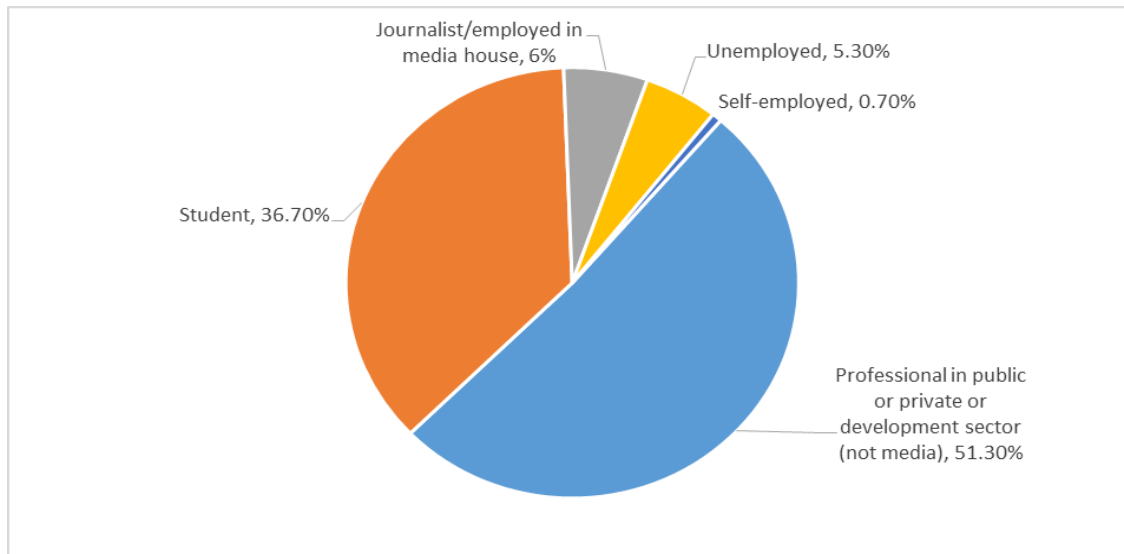
Table 1: Participants of semi-structured telephone interviews

Participant occupation	No. of participants	Age range	
		<30	>30
University student	8	7	1
Employed	12	10	2
Total	20	17	3

Source: Compiled by author

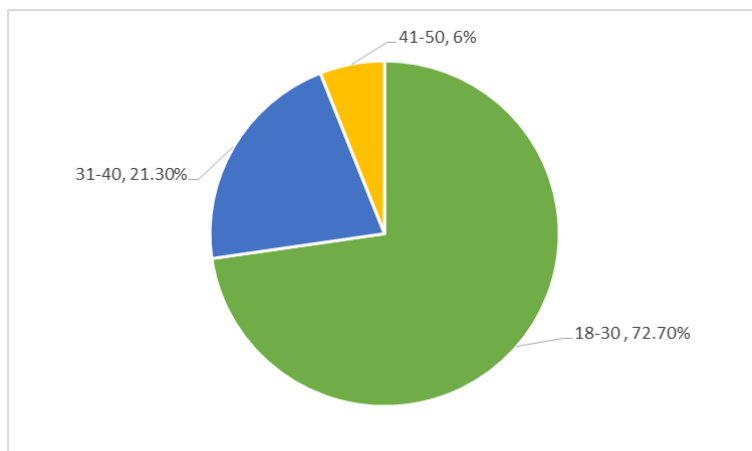
Among the 150 female respondents of the online survey, most are employed in the public or private sector (Figure 5) and are within the age range 18-30 (Figure 6).

Figure 5: Occupation of participants of online survey (total = 150 respondents)



Source: Compiled by author

Figure 6: Age breakdown of participants of online survey (total = 150 respondents)



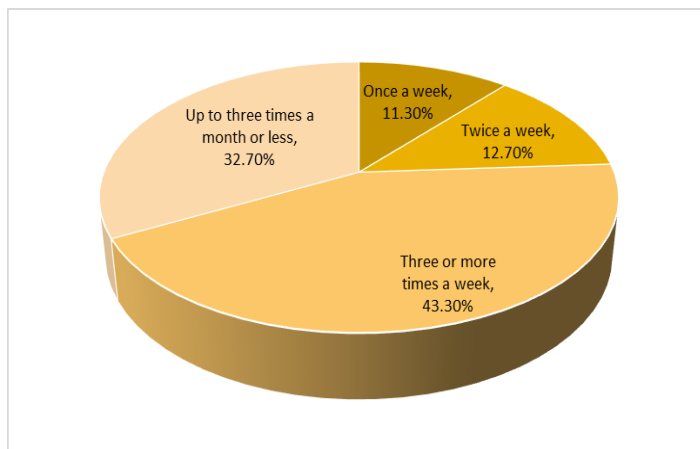
Source: Compiled by author

Frequency, purpose, and average amount spent on ride-sharing

Most of the female respondents of the phone interviews stated that they began using ride-sharing services in 2017, which is shortly after Uber and Pathao, the two most popular ride-sharing service providers in Bangladesh, launched their services. Thus most of the respondents of the interviews have at least two years of experience using ride-sharing services.

Most interviewees stated that they use ride-sharing services twice a day on average, followed by interviewees stating that they use these services 3-4 times a week and an equal number of interviewees stating that they avail these services 3-4 times a month on average. Online survey results similarly showed that most respondents use ride-sharing services three or more times a week (43.3%) followed by those who use these services up to three times a month or less (32.7%) (Figure 7).

Figure 7: Frequency of ride-sharing trips (online survey, total = 150 respondents)



Source: Compiled by author

Among the interview participants who said they use these services most frequently, i.e. twice a day on average, the average amount of money spent daily (on two trips) ranged within Tk 70 to Tk 600. The wide range of the average daily cost is due to the (i) different modes of transport availed by female ride-sharing users, (ii) travel distance, and (iii) time of day. Some interviewees said they ride bikes, which are relatively cheaper per trip compared to car trips, while some use a combination of different modes of transport, such as ride-sharing CNG and car services, or a combination of bikes and cars. Some have to travel a longer distance than others while some travel during rush hours which costs them more per trip.

Most interviewees use ride-sharing services during the morning and the evening/night time mostly to go to their workplace and/or university, and to return home. Although ride-sharing services are used for other purposes as well, such as social gatherings and weddings, for both frequent and occasional female users, ride-sharing services are most often used to go to their university and/or office.

Why do women in Dhaka use ride-sharing services?

The interview results showed that female commuters use ride-sharing services in Dhaka due to five main factors: (i) convenience; (ii) time-saving; (iii) cost effectiveness; (iv) safety; and (v) comfort. Here, two important observations ought to be pointed out. Firstly, these factors are not mutually exclusive. For instance, convenience and time are very closely related, and so are convenience and safety. Secondly, female commuters use ride-sharing services due to any combination of these five factors – not one factor only.

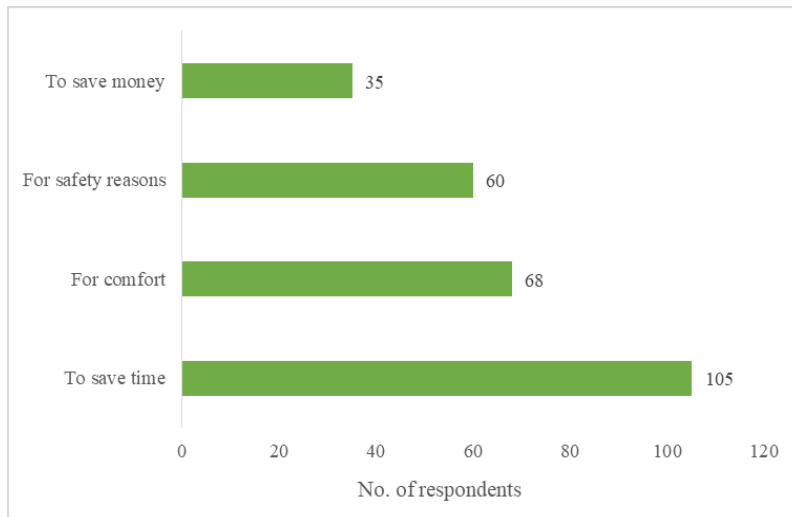
- Convenience: The primary reason why ride-sharing services are convenient is because both cars and bikes pick up passengers directly from the latter's location, be it their

homes or offices. Passengers do not have to take the hassle of walking long distances to search for vehicles. Furthermore, the availability of ride-sharing cars and bikes is higher than other forms of transport such as CNG and public buses.

- Time-saving: Ride-sharing motorbikes especially save a lot of time in terms of travel duration due to the fact that they take up less space and, therefore, are able to move through traffic or narrow alleyways or streets, unlike CNGs, buses or cars.
- Cost effectiveness: Ride-sharing bikes are perceived to be quite cost effective, compared to ride-sharing cars. A single car trip can sometimes cost as much as two bike trips.
- Safety: The primary reason why ride-sharing services are perceived to be safer than other available forms of transportation is due to GPS tracking on the ride-sharing apps. Real-time location can also be shared with family or friends which makes female passengers feel safe.
- Comfort: Ride-sharing cars are perceived to be comfortable mainly due to their spaciousness and air condition facilities.

Female respondents were also asked about the factors they take into account when opting for ride-sharing services in the online survey (Figure 8). The number one reason was time-saving, followed by comfort, safety and cost effectiveness, respectively.

Figure 8: Reasons for using ride-sharing services (online survey, total = 150 respondents)



Source: Compiled by author

Perceptions about safety of ride-sharing services

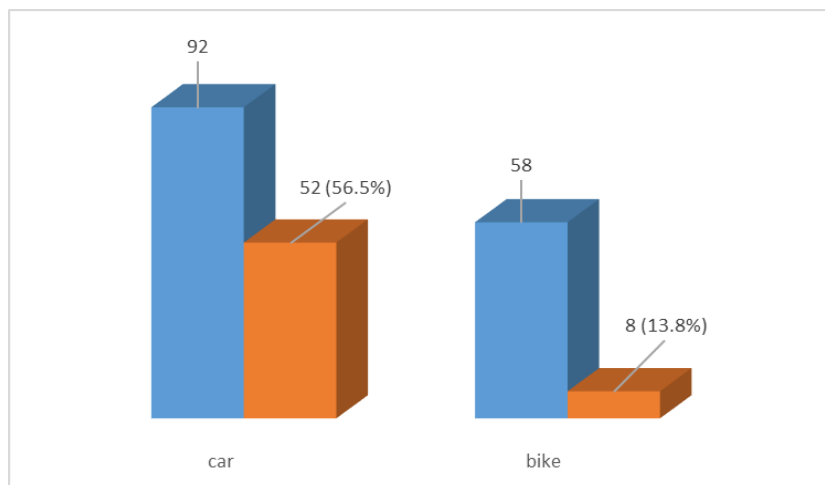
Most interview respondents cited GPS-tracking of the vehicles on the ride-sharing apps as their main reason for feeling safe during trips. The fact that drivers and vehicle information are registered under ride-sharing companies is another reason women feel safe to use these services as the driver and vehicle can easily be located. Furthermore, the fact that there are digital records of all ride-sharing trips makes female commuters feel safe. Some respondents said they perceived the car service to be safer than the bike due to lack of proximity and physical contact with the driver. A few respondents also mentioned that they feel safer using ride-sharing services because they do not have to walk to look for other forms of transportation such as CNGs or buses, and therefore they do not have to deal with CNG drivers who sometimes behave inappropriately or give odd stares at female passengers.

Most interview respondents perceive the car service to be safer than the bike service due to two main reasons. Firstly, in cars there is no proximity or physical contact with drivers unlike the bike service. Secondly, bikes are perceived to be heavily prone to road accidents due to rash driving and frequent bike accidents.

“Societal mindsets in our country are still very narrow. Even at universities, if we sit near boys, people judge. So I feel many bike drivers do not take the fact well that girls are sitting behind them. They perhaps enjoy it on a perverted level. This is the case most times. So I do not want to put myself in that position knowingly.”

❖ A 23-year-old female university student living in Dhaka

Figure 9: Percentage of female car and bike users who perceive safety as an important factor (online survey, total = 150 respondents)



Source: Compiled by author

Online survey results showed that of the 92 female respondents who mainly use the car-sharing service, 52 (56.5%) chose safety as a factor behind their decision to choose ride-sharing services

(Figure 9). By contrast, among the 58 female bike users, only 8 (13.8%) chose safety as an important factor behind their decision to opt for ride-sharing services. The online survey results thus similarly indicated that cars are perceived to be a safer mode of transportation compared to bikes.

Only a minority of interviewees said they feel safer while using the bike because of the ease with which they can disembark from the vehicle and call attention by shouting for help, should anything go wrong. These respondents said they perceive the car to be more unsafe than the bike due to the fact that it would be tougher to disembark from the car due to the doors and door locks and it would be very difficult to call for help in case of an emergency.

“Initially, I wasn't that comfortable with bikes. I used to carry a scarf or a knife in my bag. But with time, I realized that if something were to happen, then I could get off the bike quickly.

It took me some time to get comfortable.”

❖ *A 26-year-old female employee of a private company, living in Dhaka*

Most interviewees said that they prefer the ride-sharing car service over other forms of transportation at night time because they feel safer.

“I try my best to usually use Obhai because CNG fares are a little cheaper. But when it is night time and my safety is of bigger priority than the cost, then I have to settle with an Uber car.”

❖ *A 24-year-old female university student living in Dhaka*

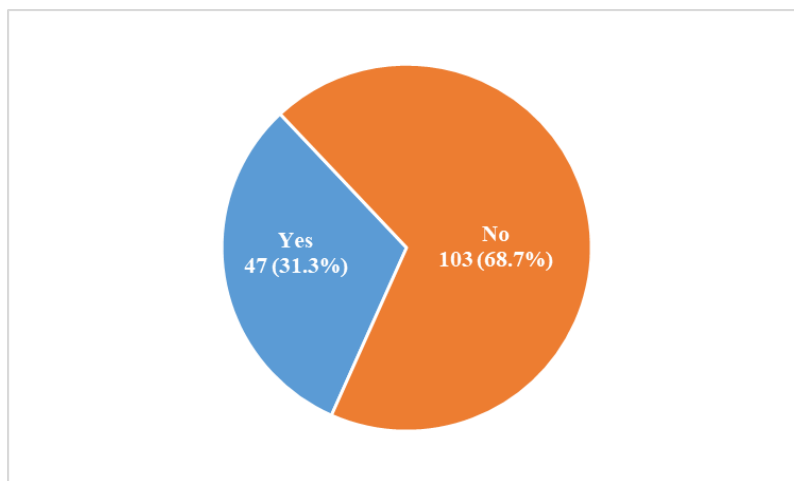
Despite the fact that ride-sharing services are perceived to be safer than alternative modes of transportation, almost all the interviewees stated that there remain anxieties and paranoia about

personal safety when they avail ride-sharing services, particularly at night time when they are travelling alone. Although the extent of anxiety varies among female commuters, almost all the interviewees stated that they think safety, especially at night, cannot be guaranteed because the driver may have bad intentions.

“At night time, after 10 pm, I don't find either public transport or Uber or Pathao safe.”

❖ *A 27-year-old female employee of a private company, living in Dhaka*

Figure 10: Have you ever felt unsafe while using a ride-sharing service?
(online survey, total = 150 respondents)



Source: Compiled by author

Coping strategies of female commuters

Given our cultural context, physical contact with bike drivers is a big concern for female bike riders. Some interviewees stated that they felt that bike drivers intentionally hit the brakes repeatedly to be in physical contact with female passengers, which is a form of sexual harassment.

However, women who use the bike-sharing service frequently have come up with their own coping strategies to tackle the problem of physical contact. Female bike-riders stated that they often put their bag in between themselves and the driver – and hold the handle at the back of the bike to remain steady – to keep a distance between themselves and the driver.

Furthermore, some interviewees said that they think it is important to not give an impression of vulnerability to the bike drivers, as this is perceived as a weakness and can be taken advantage of by drivers.

“The vibe I give out now is different from the vibe I used to give out initially. I feel like I used to seem vulnerable. If someone spoke to me aggressively, I would remain quiet. But now I am outspoken, and the moment anyone says anything to me, I reply back with more words and say it louder than them.”

❖ *A 26-year-old female employee of a private company, regular bike user, living in Dhaka*

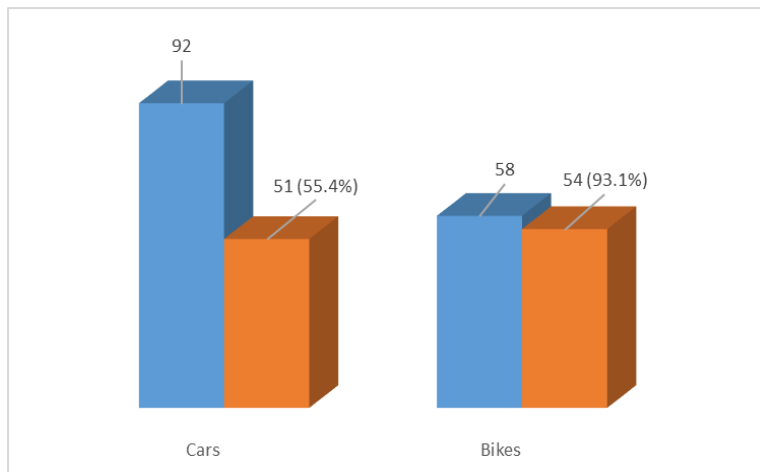
Some interviewees also stated that they share their locations with family members or friends after they embark on ride-sharing vehicles as a precautionary measure. This makes them feel safer, they said. Some women get on the phone and make a call to a family member or friend during their trip, in order to give the impression to the driver that their relatives or friends are aware about the trip and the passenger’s whereabouts.

Perceptions about travel time duration

Among the female interviewees, there is a general consensus that bikes are the fastest mode of transportation because of the fact that bikes are smaller in size and are therefore able to pass through roads and narrow streets much quicker than any other mode of transportation.

In terms of ride-sharing car service, some interviewees stated that they think CNGs are faster than cars because they are smaller in size and can therefore pass through narrow streets and roads more easily. However, others felt that ride-sharing car trips can sometimes take less time than CNGs because a lot of time is wasted on walking and searching for CNGs which, according to a number of respondents, are low in availability in their areas. On the other hand, no time is wasted on “searching” for ride-sharing cars; they come directly to the passengers’ location.

Figure 11: Percentage of female car and bike users who perceive time-saving as an important factor (online survey, total = 150 respondents)



Source: Compiled by author

Online survey results showed that of the 92 female respondents who mainly use the car-sharing service, 51 (55.4%) chose time-saving as a factor behind their decision to choose ride-sharing services (Figure 11). By contrast, among the 58 female bike users, 54 (93.1%) chose time-saving as an important factor behind their decision to opt for ride-sharing services. The online survey results thus similarly indicated that bikes are perceived to be a much faster mode of transportation compared to cars because they save more time.

All interviewees stated that they think both bike and car ride-sharing services are faster than buses which are the slowest mode of transportation for commuters because a lot of time is wasted on waiting for buses; buses stop at many pick-up and drop-off points; and take longer routes.

Perceptions about cost effectiveness

All interviewees stated that they think bike services are cheaper and, therefore, more affordable than car services and CNGs. In comparison, bus is the cheapest mode of transportation; however, “time is money” and that is one of the reasons why ride-sharing services are preferred over buses. Some respondents stated that they think the ride-sharing bike services are cheaper than CNGs, even when there is traffic. A few of the interview respondents also stated that they think the Shuttle bus service and Obhai CNGs are affordable.

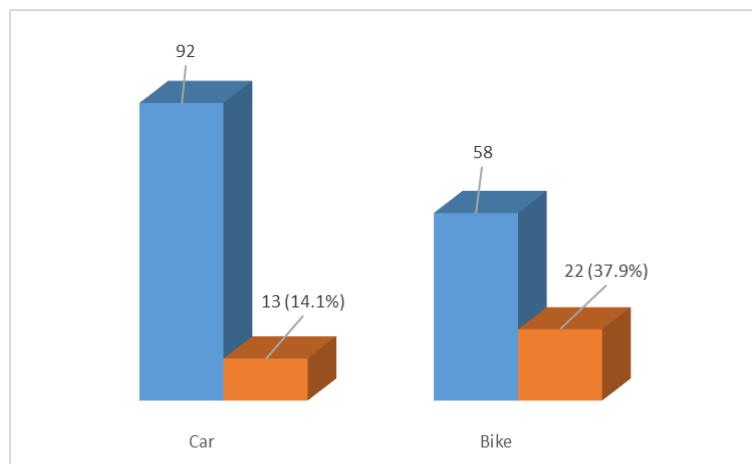
However, there was unanimous agreement among female respondents that ride-sharing cars are quite expensive, especially Uber cars. They observed that car fares are especially high during peak hours of heavy traffic, extreme weather such as rain and storm, and special occasions like Eid. The car services can only be afforded by a certain class of people, which makes it less appealing than bikes for many. While some respondents said that car fares and CNG fares are about the same, some stated that they think car services are more expensive than CNGs because with the latter, you can bargain and bring the price down. Some respondents pointed to the fact that discounts previously offered by ride-sharing service providers frequently have slowly disappeared.

“Uber car has become very expensive since 2019. Trips that should cost you no more than Tk 250 now cost Tk 350-370. It is now more expensive than CNGs, which wasn't the case when Uber first entered the market.”

❖ *A 38-year-old female journalist living in Dhaka*

Female users of Uber car stated that they think car fares have not decreased in general since Uber entered the market, and that Uber car may be affordable for short distances but not long distances such as Mohammadpur to Gulshan or Dhanmondi to Gulshan. For longer distances, they think CNGs would cost less.

Figure 12: Percentage of female car and bike users who perceive cost as an important factor (online survey, total = 150 respondents)



Source: Compiled by author

Online survey results showed that of the 92 female respondents who mainly use the car-sharing service, 13 (14.1%) chose cost effectiveness as a factor behind their decision to choose the car ride-sharing service (Figure 12). By contrast, among the 58 female bike users, 22 (37.9%) chose

cost as an important factor behind their decision to opt for ride-sharing services. The online survey results thus similarly indicated that bikes are perceived to be a much cheaper mode of transportation compared to cars because they save commuters money.

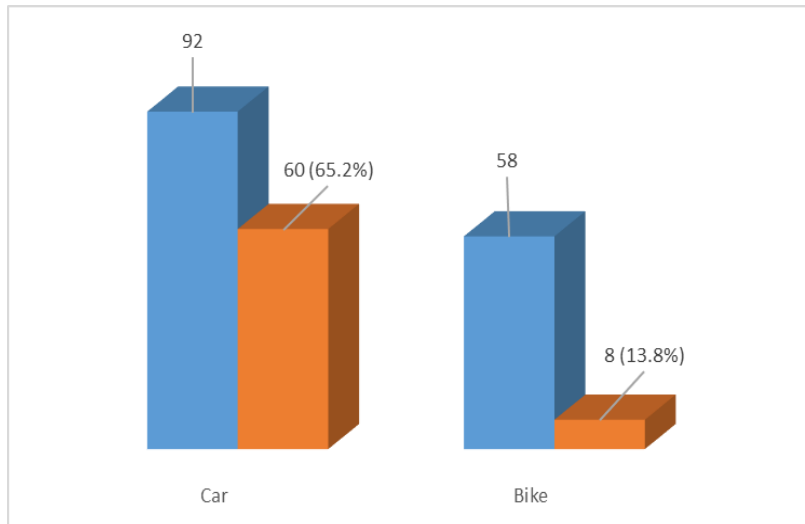
Perceptions about comfort

Among the interview participants, there is almost unanimous agreement that car ride-sharing services are more comfortable due to the fact that cars are spacious, have air condition facilities, and there is no proximity or physical contact with the driver unlike bikes. Respondents said that sometimes they have to carry laptops, backpacks and other materials while commuting which can easily be accommodated in a car while travelling. Another important reason why cars are perceived to be much more comfortable is that commuters are shielded from the air pollution and dust.

“While the travel time for Uber cars and CNGs may be similar, I am more comfortable in Uber cars. In an Uber car, you have AC, and you are protected from dust and pollution.”

❖ *A 33-year-old female employee of a private company living in Dhaka*

Figure 13: Percentage of female car and bike users who perceive comfort as an important factor (online survey, total = 150 respondents)



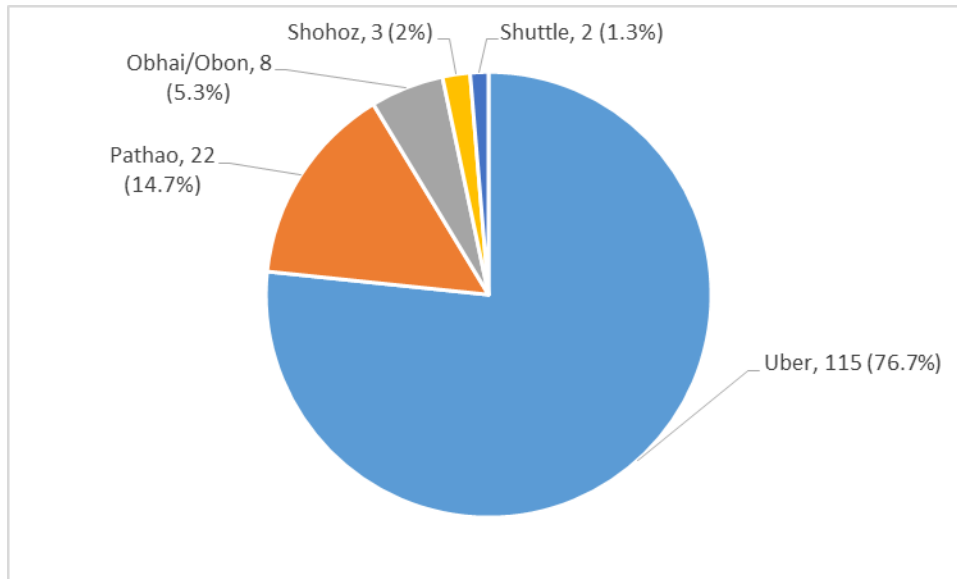
Source: Compiled by author

Online survey results showed that of the 92 female respondents who mainly use the car-sharing service, 60 (65.2%) chose comfort as a factor behind their decision to choose the car ride-sharing service (Figure 13). By contrast, among the 58 female bike users, only 8 (13.8%) perceive comfort to be an important factor behind their decision to opt for ride-sharing services. The online survey results thus similarly indicated that cars are perceived to be much more comfortable than bikes.

Most frequently used ride-sharing services

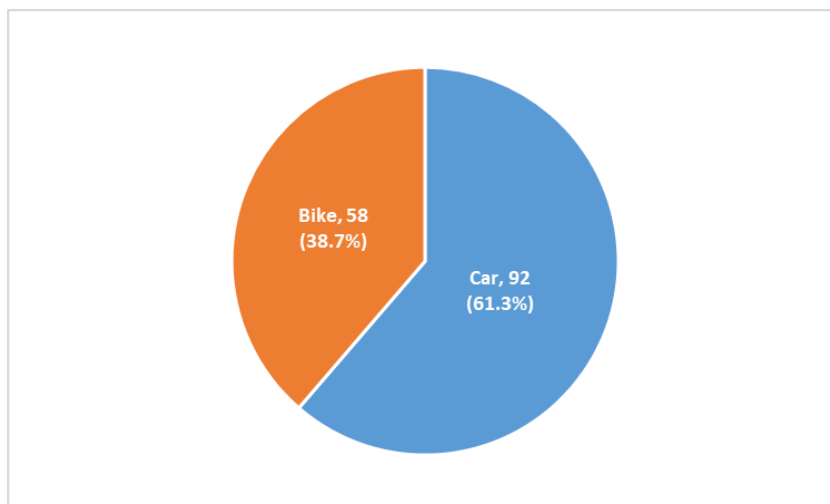
Most interview respondents said that they use Uber car the most, followed by Uber bike (UberMOTO). Other less common services used by respondents include Pathao bikes, Lily bikes and Obhai CNGs.

**Figure 14: Which ride-sharing company do you avail services from most often?
(online survey, total = 150 respondents)**



Source: Compiled by author

Figure 15: What kind of ride do you avail most often? (online survey, total = 150 respondents)



Source: Compiled by author

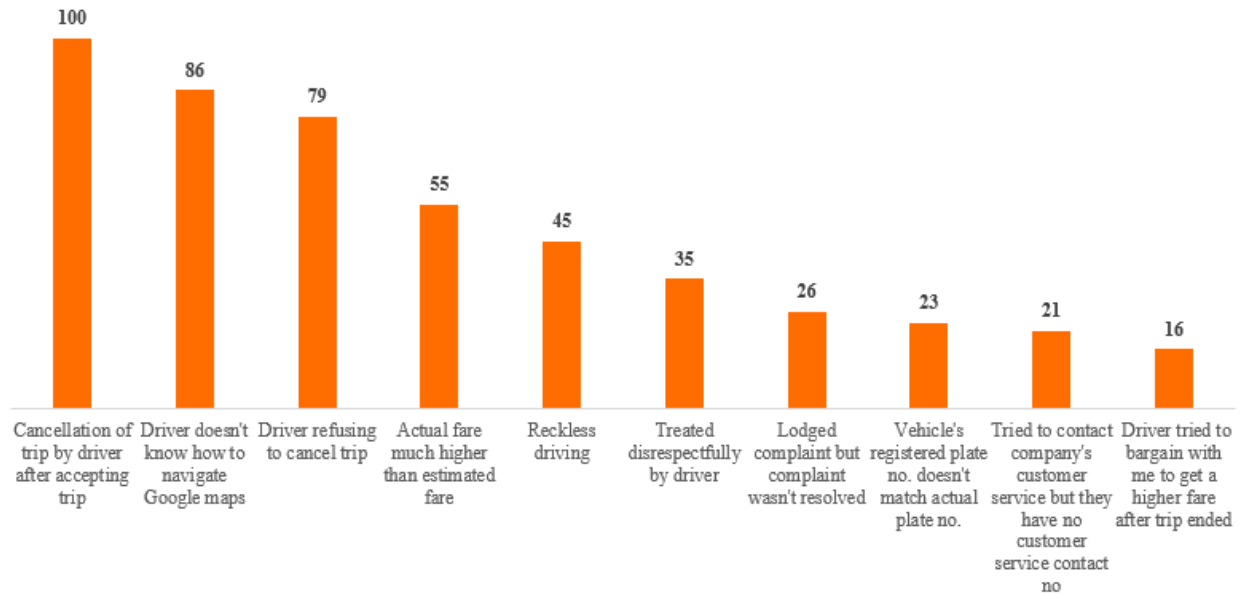
The findings of the interviews are consistent with the results of the online survey (Figures 14 and 15). The most popular ride-sharing service provider among female commuters in Dhaka city is Uber, while the most common choice of mode is the car. Pathao is the second most popular ride-sharing service provider. The popularity of Uber and Pathao has a lot to do with these two companies having the early mover advantage.

Most interview respondents stated that they preferred Uber to Pathao because the availability of Uber cars and bikes is higher than that of Pathao. As a result, the waiting time for them to get matched with a car or bike is much less. Two other common reasons for preferring Uber to Pathao are professionalism of drivers and car hygiene and quality. Many of the respondents' overall experience with Pathao was worse than their experience with Uber, although they faced problems with both service providers. Pathao fared worse than Uber both in terms of drivers' behavior and professionalism and car/bike quality, as per interview findings.

Problems faced while using ride-sharing services

Both the interviews and online survey revealed a number of major problems that female commuters have faced while using ride-sharing services. While some interview respondents mentioned that they did not face any major problems and have had an overall positive experience using ride-sharing services, the majority of the interview respondents revealed that they faced a number of problems. The most common problems have been listed in this section.

Figure 16: Problems faced by female commuters while using ride-sharing services (online survey, total = 150 respondents)



Source: Compiled by author

Cancellation of trips

Frequent cancellation of trips by both Uber and Pathao drivers has been found to be one of the most common problems faced by female commuters, as per both interview findings and online survey results (100 out of 150 respondents) (Figure 16). Both car and bike drivers of the top two most popular ride-sharing service providers (Uber and Pathao) have been found to cancel trips quite often, sometimes even after they accept the trip and tell the passenger that they are on their way to the location.

Many interview respondents as well as survey participants stated that drivers refusing to cancel the trip themselves and repeatedly asking passengers to cancel the trip is another major problem (79 out of 150 respondents) (Figure 16). Interviewees who frequently use Uber stated that due to Uber's policy regarding assessment of driver quality which takes into account drivers'

cancellation rates, drivers feel disincentivized to cancel the trips themselves. Uber's website clearly states: "There are several ways we measure driver quality, with the most important being Star Ratings, Cancellation Rate, and Acceptance Rate."

"One time a Pathao (car) driver couldn't find my location and he asked me to cancel. I refused to cancel. He said, 'Okay I am going to have lunch now. I can't cancel.' For almost 3 hours, the trip was left uncanceled. None of us wanted to cancel."

❖ A 27-year-old female employee of a private company living in Dhaka

Interviewees also stated that many drivers ask for their destination before the trip starts and end up cancelling the trip if they "do not like the destination". On its website, Uber Bangladesh under its Community Guidelines clearly states: "It is unacceptable to refuse to provide services based on where someone is going." Furthermore, the Ridesharing Services Guideline 2017 also states that drivers are obligated to carry passengers regardless of distance.

Drivers' inability to navigate maps

Another major problem as per findings both in the interviews and the online survey (86 out of 150 respondents) (Figure 16) is drivers' lack of ability to navigate Google maps. Multiple interviewees said that both bike and car drivers' inability to navigate Google maps poses a major hassle for passengers as they have to verbally give drivers directions which is both inconvenient and time-consuming. Often drivers end up in the wrong pick-up location. Some respondents said that they found drivers whose maps "did not work" on their phones and they thought some drivers did not seem educated enough to be able to navigate maps in the first place. Respondents also mentioned that they think some drivers are from rural parts of the country, and are therefore unfamiliar with routes in Dhaka.

Reckless driving

Rash driving has been found to be a major problem faced by female ride-sharing users, as per both interview findings and online survey results (45 out of 150 respondents) (Figure 16). Female bike riders in particular stated that reckless driving by bike drivers is an issue they frequently face on the roads, especially by bike drivers they felt are inexperienced. This problem has been faced more frequently in Pathao than in Uber, according to interview findings. A number of respondents said that they felt Uber drivers tend to be relatively more experienced and older than Pathao drivers. One respondent who uses the women-only Lily bike service stated that she experienced injuries as a result of a minor bike accident; the bike was being driven by a female driver.

Rude behavior

Rudeness and general misbehavior have been found to be another common problem. The online survey results showed that 35 out of 150 female respondents have been treated disrespectfully by the driver (Figure 16). Interviewees said that they encountered both car and bike drivers who would express anger and frustration (towards the passenger) because of bad traffic; did not accept their fault for driving recklessly and argued with the passenger; and refused to listen to passengers' suggestions about which route to take. Below is an excerpt of an interview with a female respondent who narrated an incident of the extreme kind:

“One time an Uber driver took a longer route even though I recommended another route with a shorter travel time. It was getting dark. He kept missing the signals, and he even fell asleep at the wheel on the main road and I ended up having to wake him up. That made me feel really unsafe. I ended up being in the car for hours.”

❖ A 25-year-old female employee of an inter-governmental organization, living in Dhaka

Sexual harassment

A few of the interviewees experienced blatant forms of sexual harassment. At least three respondents faced situations where drivers called them on their personal cellphones after the trip was over, which made them very uncomfortable. There were some instances where drivers offered to give them a ride back home. One respondent said that she would get stares from bike drivers which made her feel very uneasy. Female bike users also mentioned that some drivers intentionally pressed brake on the bikes to be in physical contact with them. Some bike drivers asked female commuters about their private life such as place of residence or workplace even though such behavior goes against the policies of the two major ride-sharing platforms, Uber and Pathao. The majority of interviewees and online survey respondents stated that female drivers would make them feel safer.

Stigma and discrimination against female commuters

The interviews revealed that a number of female commuters faced stigma and discrimination because of their sex while using ride-sharing services. These were experienced in both Uber and Pathao, even though according to the policies of these companies, discrimination on the basis of sex by drivers is prohibited and can result in drivers' temporary or permanent loss of access to their accounts.

One female interviewee stated that one time a Pathao bike driver refused to take her trip after he saw her, and she felt that it was because she is a woman. The same respondent said another driver refused the trip over the phone because he was not comfortable with carrying female passengers. Also, a number of interviewees said that they are not comfortable riding bikes in Bangladesh because they are aware of the social stigma attached to female users of bikes. They,

however, said that they would not mind riding bikes in a different country. The experience of a female Uber car user has been excerpted below:

“One time this Uber driver told me that I should wear an orna because I am a Bangali girl.

I told him to mind his own business, gave him the money and left.”

❖ *A 25-year-old female employee of an inter-governmental organization, living in Dhaka*

Spike in fares

Sudden rise in trip fares is another commonly faced problem. The actual fare is sometimes much higher than the estimated fare originally shown in the app, usually because of sudden traffic jams or waiting charges. Sometimes the estimated fare itself is very high during peak hours, extreme weather or special occasions like Eid. Respondents said that due to lack of discounts by Uber, Uber car service has become very expensive, especially for longer distances.

Car/bike of poor quality

Interviewees were generally positive about the car quality of Uber. However, a number of interviewees complained about the poor quality of Pathao cars and bikes. A few respondents said they were not happy about the quality of Uber bikes anymore either. Pathao cars were sometimes found to be unhygienic, with non-functional ACs, and broken windshields. Sometimes bike seats of both Uber and Pathao were found to be small and uncomfortable and there was not enough space on the footrests to rest their feet. One respondent stated that she thought Uber bike drivers are getting away with poor-quality bikes because as Uber is expanding, quality has gone down. Poor-quality helmets were also pointed out as a safety concern.

Lack of availability of rides

Low availability of cars and bikes is another problem faced by female commuters. The majority of the interviewees said that availability of Uber cars and bikes is quite high. On the other hand, availability of Pathao cars is lower than Pathao bikes. Availability of vehicles of less popular ride-sharing service providers such as Shohoz and Obhai/Obon is very low. Multiple respondents stated that they were unable to find any Obhai CNGs, sometimes even after waiting for 30 minutes.

Registered information does not match

Some interviewees complained about registered plate number of the vehicle not matching the actual plate number while some respondents said that the driver did not match his registered photo. This was one of the less common problems. Online survey results showed that 23 out of 150 respondents experienced the problem of vehicle plate numbers not matching (Figure 16).

No follow-up regarding action taken against drivers

Many of the interviewees lodged complaints via the app for major incidents such as driver stopping the vehicle in an empty street at night to refuel the vehicle or driver falling asleep at the wheel on the main road. While the customers got calls or messages from the companies, stating that action would be taken, there was no follow-up after this initial contact. All the interviewees who lodged complaints on Uber and Pathao regarding serious incidents said that after initial contact by these companies, they did not get any follow-up messages or calls regarding whether any action has been taken against the offending drivers.

Lack of knowledge about customer care

The majority of interviewees said that they do not know whether Uber has a customer care number because they never needed it, and that they do not know how to access it, even if there was such a number. Some respondents tried looking for Uber's customer care number through the app or Google search engine but were unable to ever find it. These respondents confidently stated that Uber has no customer care number for passengers/riders. One interviewee said that she called an Uber number which she obtained from a Facebook group. After she called the number, she was told to use the Uber app to lodge her complaint or send an email.

No customer care number was found for passengers/riders in Uber Bangladesh's website or the app, by this researcher. There is however 24/7 phone support for Uber drivers, as per Uber's website. Some interview participants mentioned that the lack of a customer care number is very worrying because they would be helpless in any emergency security situation.

Most interviewees who use Pathao said that they do not have any idea about whether Pathao has a customer service number because they never had to look for it or use it. Pathao, Shohoz and Shuttle have helpline numbers on their website, while that of Obhai/Obon and Lily can be found on their Facebook pages. Two interviewees who used Obhai's customer service gave mixed responses. One of them had a positive experience as customer care was immediately reachable while the other had a bad experience as she had to wait over half an hour to speak to a customer care representative.

Perceptions about driver portfolio

Most interviewees said that they do not perceive drivers' ratings to be too important. Some respondents said that they would cancel the ride if the driver's average rating was below 4, but

most interviewees said that they check the plate number of the vehicle, rather than the driver's ratings. A few respondents said that they have had drivers with low ratings who turned out to be professional and drivers with high ratings who were not as good as expected. Some respondents said they give more importance to Truecaller reviews rather than ratings.

Perceptions about ride-sharing apps

Interview findings revealed that female users of ride-sharing apps perceive the Uber app to be the most efficient and user-friendly. Most interviewees stated that they find the Uber app to be smooth and fast, with a good interface and a well-functioning map that is quick to show and pinpoint locations. Some respondents said that they found the option of adding/changing destinations and the 'free call' feature to be very useful. Many interviewees stated that they found the Pathao app to lag a lot and do not like the fact that you have to manually zoom in and pinpoint the location on the map. A number of respondents said that they use the Pathao app more for its food and courier delivery rather than its ride-sharing services. Almost all the respondents who used the Obhai app said that there is much room for improvement because the app is very crowded, lags a lot, shuts down automatically sometimes, and map does not work properly.

Negative externalities

Key informant interviewees stated that ride-sharing services have increased mobility and choices of transportation modes for a certain segment of the population (i.e. middle and upper income) in Dhaka city because only this segment of the population has 'access' to these. Also, there are other implications of these services. One key informant interviewee said that ride-sharing services have given rise to 'induced trips' which refers to increased total vehicles miles travel

(VMT). This is due to people taking more trips (trips they previously would not have taken) now that they have an extra option of transportation mode.

Furthermore, key informant interviewees also revealed that due to the economic incentive such services have given to vehicle owners, they now prefer utilizing their vehicles to earn money instead of letting it sit idle when it is not occupied for personal use. This has led to cars being on the roads longer, giving rise to additional traffic and increased vehicular emission and pollution. Also, the low passenger car occupancy rate of ride-sharing services (one person per car) makes these services an inefficient mode of transport, when viewed from the perspective of urban sustainability and social benefit.

Policy constraints

Key informant interviewees stated that the Ridesharing Services Guideline 2017 seems to be a haphazardly drawn up policy which includes a lot of regulations such as limiting the number of vehicles a person can operate and the number of companies a driver can work for at a time, and impractical rules such as the requirement of a written contract between car owners and companies. However, it glosses over the major issues of safety of passengers which is a prime concern for female commuters especially.

Lack of monitoring and supervision

Key informant interviews revealed that there is little to no monitoring of ride-sharing companies by the BRTA. Lack of monitoring and implementation of the Ridesharing Services Guideline 2017 remain major obstacles. Transport experts said that monitoring is crucial in order to ensure quality standards of ride-sharing services. Experts cited the example of Singapore where the government plays a strong regulatory role in urban transport. In 2017, the Singaporean

government announced that the growth cap of private cars would be brought to zero by 2018. No such regulatory measure has been taken with regard to the ride-sharing industry in Bangladesh which already has more than two dozen ride-sharing companies. BRTA's lack of skilled technical manpower and limited resources are largely to blame for the lack of monitoring over ride-sharing services and implementation of the Ridesharing Services Guideline 2017.

Also, experts mentioned that the lack of visible logos on ride-sharing cars in Bangladesh makes monitoring and surveillance even tougher, whereas Uber cars in the US and Australia and Ola cabs in India have their respective logos imprinted on the cars.

4.2 Discussion

In the absence of a women-friendly transportation system in Dhaka, educated working women and female university students in the capital – women with relatively higher transport needs – are opting for ride-sharing services primarily due to the following factors: convenience (includes availability of vehicles), time-saving, cost effectiveness, safety and comfort. The findings support Schneider's Theory of Routine Mode Choice Decisions and illustrate the importance of each of the five steps that Schneider (2013) put forward: (i) awareness and availability; (ii) basic safety and security; (iii) convenience and cost; (iv) enjoyment; and (v) habit. What is interesting to observe are the ways in which women prioritize these factors differently: for some time-saving is most crucial while for others safety is of biggest concern. An intriguing pattern that has emerged from the findings of this study is that female users of ride-sharing bikes tend to prioritize time-saving and cost, while female car users tend to prioritize safety and comfort. As cars are largely perceived as safer than bikes and as bikes are considered to be cheaper than cars, there seems to be an obvious tradeoff between safety and cost. This tradeoff can be interpreted

along the lines of socioeconomic status, as the study showed that of those who chose bikes as their routine mode of transport, the majority are students. Compared to working women, students' earnings are extremely limited and, therefore, they tend to avail the bike services more often than working women who earn more and can afford car services.

The findings support both the hypotheses undertaken by the study (Hypothesis 1: For women living in Dhaka city, safety is a major factor behind their decision to avail ride-sharing services; Hypothesis 2: Ride-sharing can improve female students' and working women's productivity by saving commute time).

Although ride-sharing services have improved the mobility of a certain segment of the female population, it is not the antidote to Dhaka's women-unfriendly transportation system. The gendered experiences of women who use these services indicate that they have to put up with misbehavior by drivers, sexual harassment, reckless driving and stigma and discrimination. As a result, women remain paranoid and anxious about personal safety even when using ride-sharing services. This anxiety is well-reflected in the fact that some respondents said they perceive the bike to be safer than the car, contrary to popular opinion, citing the reason that they can escape any bad situation more easily.

Moreover, social mindsets rooted in misogynistic attitudes and patriarchal beliefs remain a barrier to women's mobility and access to urban transport even today. These are forms of social exclusion that have a bearing on women's access to economic and other opportunities. It should be noted however that in the face of these obstacles, women are employing their agency to break through these social barriers and norms by deploying their own coping strategies, often at the risk of being further stigmatized. As the findings showed, women are using their body and

language to resist cultural norms and protest against misbehavior by drivers. Women are using these innovative means of resistance to ensure their own safety.

Despite having well-intentioned guidelines (such as non-discrimination based on sex or passenger's destination) in place, ride-sharing companies are not being able to ensure proper compliance by drivers to these guidelines, which is limiting women's access to these services and jeopardizing their safety. Also, there clearly are gaps in drivers' training and quality, both in terms of behavior and driving skills, and insufficient measures in place to ensure the safety of female commuters of ride-sharing services, such as in the form of distress alarms on the apps.

There also seems to be a lack of trust towards ride-sharing companies among female commuters, in terms of safety, especially at night, and the app-based rating system of drivers. The fact that some female commuters have more faith in the Truecaller review of drivers than the in-built rating system of ride-sharing apps means that they either do not trust the in-built rating system and prefer Truecaller's word-of-mouth reviews, or do not understand how driver reviews on ride-sharing apps work, or find it inconvenient or time-consuming to access the reviews on the ride-sharing apps compared to those of Truecaller. There also seems to be a lack of transparency and feedback regarding lodged complaints and actions taken against offending drivers, as well as a lack of quick, open communication channels between service providers and female commuters, which might explain the lack of trust of female ride-sharing users.

If the ultimate aim from a 'social good' point of view is to decrease traffic congestion and increase transportation efficiency, ride-sharing services are not the best option due to their contribution to traffic jams and emission of greenhouse gases. Other forms of transportation such as rickshaws and public buses are better in terms of overall environmental sustainability and passenger occupancy rates, respectively.

Furthermore, lack of governmental monitoring and supervision means that there is no cap on the number of ride-sharing vehicles and no oversight over the proper implementation of the Ridesharing Services Guideline 2017. This not only reflects lack of policy priority towards urban transportation, service quality and passenger safety, but also has far-reaching implications for urban pollution, traffic congestion.

The outbreak of COVID-19 has affected almost all aspects of society. With the gradual reopening of Bangladesh's economy, the government began to enforce social distancing rules in public transportation. Ride-sharing services, at the time of writing this paper, have not yet been allowed to resume operation. The fact that public health has been thrust into the limelight cannot be ignored by ride-sharing companies. Under this global scenario of the 'new normal', companies must take into account the outbreak of the novel coronavirus and take appropriate measures to protect public health once they resume operations. Bike services especially are a cause of concern since it is impossible to enforce social distancing on bikes. It is not yet clear when bike services will resume and what measures can be taken in this regard. However, the bottom line is that the COVID-19 outbreak has to be taken into consideration by ride-sharing companies before deciding to resume their operations. Measures could include regularly cleaning the vehicles with disinfectants, enforcing proper social behavior (wearing masks and gloves) of both drivers and passengers, limiting the number of passengers in car rides, etc. The pandemic has already disrupted business-as-usual in several sectors and blocked access of the general population, including female commuters, to ride-sharing services, thus affecting their mobility.

4.3 Cross-country scenario

In South Asian countries such as India and Pakistan, the issue of women's safety in transportation is a major policy concern, much like Bangladesh. In India, ride-hailing services Ola and Uber are the dominant players in the market. Even though such services have given female commuters a sense of safety during travel, incidents of sexual harassment are not unheard of. Women in India have reported incidents of being forcefully kissed and sexually abused by both Ola and Uber drivers (Punit, 2018). Female commuters in Pakistan – where Uber and Careem are the top players – too have faced instances of sexual harassment and verbal threats by Uber drivers (Munir, 2016). In Nepal, women have reported incidents of sexual harassment and inappropriate behavior when using the services of bike-sharing apps such as Pathao and Tootle. Thus safety issues are major concerns for female users of ride-sharing services in Bangladesh, India, Pakistan and Nepal.

A survey conducted by *Profit* magazine of *Pakistan Today* found that 30% of Pakistani women who have used ride-sharing services have felt unsafe (Pervaiz, 2019), similar to the research findings of the online survey of this study according to which 31.3% of Bangladeshi women surveyed said that they have felt unsafe at some point. According to *Profit's* survey findings, 33% of the women said that they would use these services more if they could select the gender of the driver. The majority of respondents of the online survey and the interviews of this study too, as mentioned previously, said that female bike and car drivers would make them feel safer.

Interestingly, in India and Pakistan, Uber has activated the 'emergency assistance button' in the app, which commuters can use to alert local authorities, should they seek help (Kansal, 2018; "Uber adds safety features", 2019). Ola in India has also integrated its in-app emergency button

with the Bengaluru City Police control room (“Ola adds police emergency button”, 2020). Although Pathao in Bangladesh has an emergency hotline number in the app, and Obhai/Obon has an SOS button in the app, Uber in Bangladesh – the ride-sharing service most widely used by women in the country – does not seem to have any such measure in place.

Uber in India and Pakistan has also begun the ‘two-way call anonymization’ which prevents the contact numbers of the drivers and passengers from being seen unless they themselves share it. Careem in Pakistan too has this call-masking feature. No such measure has been taken by any ride-sharing company in Bangladesh.

The security measures taken by Uber and other ride-sharing companies such as Ola and Careem in India and Pakistan may not be foolproof; however, it seems that there are more security measures in place compared to Bangladesh, where Uber has not yet activated the ‘emergency assistance’ button or the two-way call anonymization.

Furthermore, Uber in India had taken the positive step of sensitizing 50,000 driver-partners on violence against women through workshops in eight cities in the country, in order to improve drivers’ professional behavior towards female commuters. Such a large-scale initiative is yet to be seen in Bangladesh.

Furthermore, in Nepal, female users of bike-sharing app Tootle have the option of requesting female bike riders (Vats, n.d.) – an option which is not available to female bike users of Pathao or Uber in Bangladesh. In Pakistan, women-only taxi-hailing services such as Pink Taxi – driven by female drivers – are available. Careem in Pakistan also offers cab services by female drivers. Car-hailing services for women only with female drivers are not offered by any ride-sharing company in Bangladesh.

Chapter 5: Conclusion

This study sought to explore three research questions. The first research objective was to explore the varied experiences and perceptions about ride-sharing services from the perspective of female commuters. The findings of this study showed that female commuters have had both positive and negative experiences with ride-sharing services in Dhaka city. The negative experiences differ in gravity, as some women have faced more serious situations than others. Some women have rarely ever faced rudeness or behavioral issues with drivers, or stigma or discrimination. Other women, however, have faced serious safety issues and have experienced outright stigma and discrimination. Also, as per this study's findings, there are many issues that almost all women have faced, such as frequent cancellation of trips and spiked fares. Also, women prioritize their transport needs differently, which leads to some women giving more importance to, for example, time compared to comfort or safety. Women's experiences of travel are not universal, and neither are their perceptions.

The second research objective was to explore what prompts women to choose ride-sharing services over other transportation facilities. The findings of this study showed that women's decision to choose ride-sharing can be attributed to five main factors: time-saving, convenience, cost-saving, safety and comfort.

The third and final research objective sought to explore the question: How can ride-sharing experiences of women living in Dhaka city be improved? One of the most common recommendations made by female respondents of this study is hiring more female drivers and bike riders. Safety remains a major area of concern for female commuters.

The findings of this research study satisfied each of the five steps of Schneider's Theory of Routine Mode Choice. Furthermore, the findings support both the hypotheses undertaken in this study.

The ride-sharing industry has emerged in Bangladesh at a time when the transportation system is in a shambles. The demand for ride-sharing services has seen a spike among middle- and upper-middle-income women in Dhaka in recent years. While on the one hand, ride-sharing has boosted the mobility of a certain segment of the female population, it has brought with it additional concerns for women, which had not been adequately explored until now. Despite ride-sharing services being perceived as safer than other forms of transportation, fear and anxieties about personal safety still remain.

Ride-sharing companies along with the government have much more to do in terms of monitoring and ensuring compliance of drivers with rules and regulations and sensitizing drivers, and to boost quality of service as well as security measures for female commuters.

The study results pointed to the high demand for female drivers of ride-sharing bikes among female commuters. There is also a need to strengthen the overall recruitment process of ride-sharing companies, with special emphasis on experienced, skilled drivers. Basic skills such as the ability to navigate maps should be ensured. Regular gender-sensitive training for drivers should be put in place. Measures must also be taken to minimize or bar cancellation of trips by drivers. One of the major findings of this study is that adequate security measures for women are sorely lacking. Ride-sharing companies should seriously think about teaming up with local law enforcement and boosting its security measures, such as installing distress alarms on apps and GPS-tracking device on all vehicles. There is a need for increased transparency and clear communication channels between ride-sharing service providers and female commuters. All

ride-sharing companies must have emergency hotlines that are well-publicized in their apps and websites. Trust would also be fostered if these companies took the extra step of following up with complainants and informed them of the actions taken against errant drivers.

At the national level, BRTA needs to play a much stronger role in monitoring the ride-sharing industry; too many entrants means higher number of vehicles which makes management and supervision even tougher, affects service quality, and contributes towards traffic congestion and pollution. Environmental sustainability has been completely ignored as a policy priority as the ride-sharing industry in Bangladesh has grown over the years. A specific organogram and special technological unit in BRTA dedicated to ride-sharing services are needed. Moreover, both the government and the ride-sharing companies must take into account the outbreak of COVID-19 and ensure proper measures are in place to protect public health and safety.

Significance of the Study

Previous research studies on ride-sharing in Bangladesh have similarly found that consumers are concerned about safety, and highly value time-saving, cost effectiveness and convenience. Studies have also found that bureaucratic red tape and unprofessionalism and poor quality of the workforce are challenges being faced by ride-sharing businesses. This research study builds on existing literature by bringing to the fore the varied perceptions and gendered experiences of female users of ride-sharing services in Dhaka, which has not been explored in-depth thus far in the context of Bangladesh. Importantly, by synthesizing and documenting the perceptions of female commuters, this study records firsthand experiences of stigma, discrimination and sexual harassment faced by women using ride-sharing services in Dhaka.

This is significant because ride-sharing services are widely perceived as the modern-day solution to urban transport problems. However, while this innovative technology has boosted the mobility and choice of transportation for women belonging to a certain socioeconomic class, it is also subjecting women to unsafe and humiliating situations and, in many cases, threatening their physical safety. This points to the dire need and urgency for ride-sharing companies and government to work together to address these concerns. This also points to the fallacy of the notion that technology can liberate women in terms of their physical mobility. Such a notion is misguided and, as this study showed, indicates the need for critical analysis before we come to any generalization about technological solutions.

Limitation of Findings

The study could have benefited if representatives of the ride-sharing companies had shed light on their thoughts and perceptions about the Ride-sharing Service Guidelines 2017 and other policy perspectives. It would also have been interesting to learn what challenges they face in terms of ensuring personnel and service quality, and what the extent of the collaboration is between the government and the ride-sharing industry. Representatives of some of the ride-sharing companies were contacted for their comments but they were unresponsive.

Suggestions for Future Research

Women's travel experiences, perceptions and concerns require more attention in the field of transportation research. Large-scale studies should be conducted on this issue in order to capture the opinions of a larger segment of the female population in Bangladesh, which will also contribute to the validity of the findings. Government bodies associated with urban transportation should take up the initiative to commission such studies and disseminate the findings so as to garner more policy attention and effect changes at the policy planning and implementation levels to make the transportation system more women-friendly.

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Appendix A

Questionnaire for semi-structured interviews with female ride-sharing users in Dhaka city

This study is a part of this researcher's master's thesis for the MDS programme at BRACU. The study looks into the perceptions and experiences of female users of ride-sharing services in Dhaka city. Your participation is completely voluntary and you can withdraw from the interview any time you like. Your identity will not be revealed at any stage of the research process.

Background of respondent

1. What is your age?
2. Are you a student/employed/unemployed?
3. If employed, which sector are you in (public or private)?

Experience of ride-sharing services

4. Have you used or do you use any ride-sharing services? Since when? If yes, which ride-sharing services have you used? Why ride-sharing services do you use the most (Uber, Pathao, Obhai, Shohoz, etc.)?
5. Have you used the car or bike? If both, which do you use more? Why?
6. Do you use your own phone or someone else's phone to use the ride-sharing apps? Do you have them downloaded on your phone? If yes, which ones?
7. How often do you avail ride-sharing services (no. of trips daily)? What time of day do you usually use them (morning, afternoon, night)?
8. For what purpose do you use them most often (office, university, wedding functions, etc.)?
9. What is the average amount of money you spend on ride-sharing services per day/per week/ per month?

Perceptions about ride-sharing services

10. Which ride-sharing company do you like the most? Why?
11. Why do you use ride-sharing services instead of private car, public transport, CNGs, or other forms of transportation? What are the main factors that you take into consideration when using ride-sharing services?
12. Safety: How do you perceive personal safety when using ride-sharing services? Do ride-sharing services give you a sense of safety? Why or why not? What is your perception of safety of car versus bikes?

13. Travel time duration: How do you perceive travel time duration when using ride-sharing services? Is it faster or slower than other forms of transport? Why do you think so? What is your perception of travel time of car versus bikes?
14. Cost: How do you perceive cost issues when using ride-sharing services? Is it cheaper or more expensive than other forms of transportation? Please give examples. What is your perception of cost of car versus bikes?
15. Comfort: How do you perceive comfort when using ride-sharing services? Do you think it is more comfortable than other forms of transportation? Why or why not? What is your perception of comfort of car versus bikes?
16. Have you ever faced any problems when using ride-sharing services? What kind of problems have you faced?
17. Have you ever lodged a complaint via the app or via customer service for any of the problems you faced? What was your experience? Was your complaint resolved in a timely manner?
18. Have drivers ever cancelled your trip? Did you feel like it was justified?
19. Do you know how to contact the customer service of the ride-sharing companies whose services you avail? Have you ever used their customer service? Why or why not? If yes, what was your experience like?
20. As a woman, what are your biggest anxieties about ride-sharing services? What do you worry about the most when using ride-sharing services?

Perceptions and knowledge about app

21. What is your general perception about the app(s) of the ride-sharing services you use? What are their best and worst features, according to you? Why?
22. What other features of the app(s) are you familiar with and have used? (Probe: safety features such as sharing location, calling 999).

Perceptions about drivers' portfolio

23. Do you look at the portfolio of the driver you are matched with? How important is it for you? Why or why not?

Suggestions

24. How do you think ride-sharing companies can improve their services for women? What should they do to address women's primary concerns?

Appendix B

Online survey questionnaire

This is an anonymous survey. Your identity will remain unknown to us.

1. What is your gender?

- ☐ Female
- ☐ Male
- ☐ Third Gender

2. What is your age?

- ☐ 18-30
- ☐ 31-40
- ☐ 41-50
- ☐ 51 and above

3. What is your occupation?

- ☐ Student
- ☐ Journalist/working in media house
- ☐ Professional in public or private or development sector (not media)
- ☐ Home-maker
- ☐ Other: _____

4. How often do you use ride-sharing services?

- ☐ Once a week
- ☐ Twice a week
- ☐ Three or more times a week
- ☐ Up to three times a month or less

5. Which ride-sharing company do you avail services from most often?
- ☐ Uber
 - ☐ Pathao
 - ☐ Obhai/Obon
 - ☐ Shohoz
 - ☐ Lily Ride
 - ☐ Other: _____
6. What kind of ride do you avail most often from ride-sharing companies?
- ☐ Car
 - ☐ Bike
7. Why do you use ride-sharing services? (Please tick all that apply)
- ☐ To save time
 - ☐ To save money
 - ☐ For safety reasons
 - ☐ For comfort
8. Which of the following problems have you faced? (Please tick all that apply)
- ☐ Cancellation of trip by the driver after he confirmed he would take my trip
 - ☐ Driver asked me to cancel the trip and refused to cancel the trip himself
 - ☐ Driver doesn't know how to navigate Google maps
 - ☐ Driver's face does not match the photo in his portfolio in the app
 - ☐ Car or bike's actual plate number does not match the info given in the app
 - ☐ Actual fare/fee much higher than the estimated fare in the app
 - ☐ Driver tried to bargain with me to get a higher fare after trip ended
 - ☐ Had a hard time explaining to driver that I have "credit" which can be used for trip fare instead of cash

- ☐ Treated disrespectfully by the driver
- ☐ Reckless driving
- ☐ Lodged complaint but complaint wasn't resolved
- ☐ Tried to contact company's customer service but they have no customer service contact no.
- ☐ Called company's customer service but they were unreachable/did not answer
- ☐ Other: _____

9. Have you ever felt unsafe while using a ride-sharing service?

- ☐ Yes
- ☐ No

10. If you responded “yes” to the above, please state why. If you responded “no”, please skip this question: _____

11. Any suggestions to improve ride-sharing services for women in Dhaka?

Appendix C

Questionnaire for key informant interviews

1. What do you think has been the impact of ride-sharing services in Dhaka city? What has been its impact on traffic and people's mobility in Dhaka city?
2. Do you think it has benefitted some people more than others?
3. How do you think ride-sharing services have impacted the mobility of women in Dhaka city, in particular?
4. Do you think these services have helped mitigate some of the problems related to women's mobility?
5. What do you think are some of the major concerns that users, particularly female users, have related to ride-sharing services?
6. How can these be solved, particularly female users' security concerns?
7. Do you think the regulatory and policy environment is friendly enough for ride-sharing services to expand? What are the major policy hurdles?