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**COMPARATIVE ANALYSIS OF RIDESHARING REGULATIONS – A STUDY ON
RIDESHARING REGULATORY FRAMEWORK OF PAKISTAN**

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ABSTRACT

Ridesharing companies like Uber and Careem have been operating in Pakistan for the past 5 years however, there is no existing ridesharing regulatory framework. Countries like Bangladesh, India, China, and Malaysia, along with developed states that is State of the New York, have already responded to newly introduced TNCs by implementing new regulatory frameworks. In this study, a comparative analysis of ridesharing regulations of Pakistan with those of Bangladesh, India, China, Malaysia and State of the New York, have been carried out. With the aim to assist the policymakers, a basic regulatory ridesharing regulatory framework for Pakistan has also been developed.

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Keywords: Transport Network Companies (TNCs), Ridesharing Companies, Ridesharing Regulations, Ridesharing Regulatory Framework, Ridesharing Policy, Uber, Careem.

1.0 INTRODUCTION

In the past decade, the technology-based discoveries and progress in communication and information have resulted in the introduction of new services in the transport sector (Haider et al., 2015). On-demand ridesharing apps, which link the personal car owners with the passengers in nearby localities using GPS position system, have become very common (Alexander and González, 2015). Transport Network Companies such as Uber and Careem have already started providing e-hailing services in many countries.

As defined by the California Public Utilities Commission, Transport Network Companies (TNCs) are organizations providing services of pre-arranged trips using online portals or apps for linking passengers with drivers using their personal vehicles (Koffman, 2016). These TNCs have been known to enter the taxi market without prior approvals from governing regulatory authorities. When brought under the investigation of the regulatory framework, Uber argues that it is not a transportation company rather it is a technology-based company (Mundy, 2018). In many countries, such as the U.S., the majority of the states have developed regulatory frameworks to enable ridesharing (Flores and Rayle, 2017). Without seeking approval from regulatory authorities, in Pakistan, Careem and Uber, two of the most dominant TNCs, entered the taxi industry in 2015 and 2016 respectively (Imtiaz Ali, 2017b). In March 2019, Uber acquired Careem for \$3.1 billion so it started operating under its own name as a separate entity of Uber.

This paper aims to compare the ridesharing regulations of neighboring countries of Pakistan that is Bangladesh, India, China along with developed countries that is Malaysia and New York State. First, a literature review related to similar studies conducted has been discussed. It is followed by research methodology. Then, a comparison of the ridesharing company, driver, and vehicle-related regulations of the aforementioned countries is carried out.

The results section comprises of proposed ridesharing regulations for Pakistan. In the end, the paper is concluded, and future research recommendations have been provided.

2.0 LITERATURE REVIEW

The introduction of ridesharing companies in the taxi market has always evoked local regulators to think of ways and methods to outlaw them or achieve parity with taxicabs (Farren et al., 2016). Since the ridesharing companies consider themselves to be mobile applications rather than being a transportation company, most of these do not obtain permits prior to operation from local authorities (Cetin and Deakin, 2017). These new ridesharing companies have not been welcomed by taxi markets as well. Local taxi and transport companies, in various regions, have fought to completely ban or shut down the TNCs (Flores and Rayle, 2017). This is due to the fact that with the introduction of TNCs, the demand for taxis has reduced (Koffman, 2016). The business model of TNCs such as Uber does not clarify whether to treat it as a transport service or information technology service which makes it difficult to fit into existing regulatory frameworks nationwide (Kozik). With time, efforts were done to introduce new regulatory legislation for TNCs. In the United States, TNCs have been regulated in multiple states such as San Francisco and New York, at the local and municipal level (Board et al., 2016).

The prominent TNCs of Pakistan include Careem, Uber and Shahi Sawari (Anjum, 2017). Careem and Uber entered the ridesharing industry of Pakistan with a gap of a year. Following the pattern adopted by most of the ridesharing companies worldwide, these two TNCs started operating without prior approval from local transport authorities (Kanwal, 2017). In cities of Pakistan like Islamabad, where the majority of public transport is carried out by taxis, Uber and Careem badly disturbed the taxi industry. Following the economic imbalance caused by newly introduced TNCs, local taxi drivers started protesting (Bilal, 2018). There was also a notification issued from the Local Transport Department of Punjab Province, related to

the complete ban of TNCs (Imtiaz Ali, 2017a). Later on, the government officials and TNCs senior officials carried out various meetings for the formulation of a new regulatory framework for ridesharing vehicles. However, until now, no steps have been taken at the provincial level, which may indicate the practical implication of regulations for the TNCs.

In the past, very few researchers have done an effort to compare ride-hailing regulations of different countries. A case-specific policy analysis was carried out by the International Transport Forum which compared the ridesharing regulations of Portugal with international ridesharing regulations of countries; United Kingdom, Ireland, The Netherlands, France, Germany, and Bulgaria (Forum, 2016). In 2016, a study on passenger transport by taxi, hire car with driver and ridesharing in the EU, also compared ridesharing regulatory frameworks of all most all EU countries (Frazzani et al., 2016). Based on the comparative analysis and interviews from local authorities' officials, this report provided an in-depth qualitative and quantitative analysis of ridesharing regulations observed across EU countries. Igor Dosen and Helen Rosolen also researched and wrote a research paper on "Uber and Ridesharing" which comprised of the current disputes and legal actions against one of the biggest TNC of the world that is Uber (Dosen and Rosolen, 2016). The countries under consideration comprised of a wide mix from Asia, Europe, and states of America. Later in 2018, the Law Reform Commission of Hong Kong published an essay on the regulation of ridesharing services in Hong-Kong. A comparison of overseas ride-hailing regulatory frameworks of EU Countries, China, Australia, India, States of America and Canada, was presented in it based on which new regulatory recommendations for Hong Kong were made (Priscilla, 2018). In 2017, a study carried out on ridesharing regulations of major American Cities by Transport Research Record, qualitatively analyzed various company-based, vehicle-based and driver-based ridesharing regulations (Beer et al., 2017).

This research extends the ridesharing regulations comparative analysis effort being done at the international level by comparing ridesharing regulations of Bangladesh, India, China, Malaysia and State of New York and proposing policy recommendations for Pakistan based on the formulation of new ridesharing regulatory framework.

3.0 METHODOLOGY

In order to analyze the ways in which different countries and states have responded to the advent of on-demand ridesharing companies in their respective jurisdiction, a qualitative comparison of ridesharing regulations of these countries was carried out. The comparative analysis was conducted on the ridesharing regulations extracted from various ordinances and legislative documents that had been placed on the websites of transport departments of respective countries.

The countries chosen for comparison purposes included neighboring countries of Pakistan that is China, India as well as the countries sharing the same demographic characteristics as that of Pakistan that is Bangladesh and Malaysia. A developed state that is State of New York was also selected for incorporating the impact of technologically up-to-date ridesharing regulations. Since, at the time of research, Pakistan did not have its own regulatory framework for ridesharing, therefore its existing taxi/cab regulations were included in the comparative analysis.

For the comparison purpose, the ridesharing regulations of the aforementioned countries were sorted into three categories that is ridesharing company-based regulations, ridesharing vehicle-based regulations, and ridesharing driver-based regulations. The aim was to determine similarities and differences among the on-demand ridesharing regulations of these countries which might assist the government agencies and relevant provincial transport departments of Pakistan to form a basis of ridesharing legislation for regulating ridesharing in

the country. This basic regulatory framework was proposed to assist the policymakers in molding existing taxi regulations into ridesharing regulations of Pakistan.

4.0 CATEGORIZATION OF REGULATIONS

The comparison of regulations was broadly categorized into three types that is ridesharing company-based regulations, ridesharing vehicle-based regulations and ridesharing driver-based regulations, which comprised of regulations imposed on ridesharing companies, vehicles and drivers respectively. A detailed analysis of the ordinances of these countries showed a high number of regulations. Not all of the regulations were present in every country's legislation, based on which, only the most common regulations were chosen for comparison purposes with the objective to provide readers with more useful results.

However, some regulations were also selected for comparison based on their frequent discussion and highlighting in literature such as ridesharing driver criminal background check as discussed in "Study on passenger transport by taxi, hire car with driver and ridesharing in the EU" by European Commission (Frazzani et al., 2016) and in a research paper "Uber and Ridesharing" by Department of Parliamentary Services, Parliament of Victoria (Dosen and Rosolen, 2016).

5.0 COMPARISON OF REGULATIONS ON RIDESHARING COMPANIES

The regulations comparison of ridesharing companies comprised of 8 main regulations: (1) Minimum fleet size required, (2) requirement of a company operation license/permit, (3) acts or ordinances to be followed by TNCs, (4) adequate car parking provision, (5) professional trainings of drivers, (6) drivers' fitness check, (7) fare calculation criteria and (8) insurance coverage policy. Table – 1 summarizes the results of comparative analysis of company based ridesharing regulations. Apart from Malaysia, in all the countries, ridesharing companies are required to own a certain minimum car fleet size for example 200 in case of India (Conventus Law, 2017, Department of Motor Vehicles, 2017, Ministry of Road Transport and Highways,

2016). In all the countries, company operation license or a permit is required before a ridesharing company can legally operate in the respective country (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, Department of Motor Vehicles, 2017, Ministry of Road Transport and Highways, 2016, National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969, Road Transport and Highways Division, 2017). In the state of New York, a TNC operation license is required. Similarly, in China and Malaysia, Network Appointment Taxi Business License and Intermediation Business License are required (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, Department of Motor Vehicles, 2017). However, in Pakistan, any cab company has to seek a permit from provincial transport authority, before it can operate legally in the country (National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969).

Regarding the third dimension that is acts or ordinances to be followed by the TNCs, every country has its own act(s) which cab companies in Pakistan and ridesharing companies in other countries have to follow. In Bangladesh, ridesharing companies have to follow Ride Sharing Services Policy, 2017, Bangladesh Regional Transport Authority (Road Transport and Highways Division, 2017). In Pakistan, the list of governing acts to be followed by cab companies includes Motor Vehicle Ordinance, Motor Vehicle Rules, Motor Vehicle Act and National Highway Safety Ordinance (Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969, Road Transport and Highways Division, 2017). Adequate parking space is a necessary requirement in ridesharing regulations of Bangladesh, India, and China, State of the New York and in taxi regulations of Pakistan (China

Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Ministry of Road Transport and Highways, 2016, National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969, Road Transport and Highways Division, 2017). However, regulations of Malaysia impose no such restriction on TNCs (Conventus Law, 2017, Department of Motor Vehicles, 2017).

The fifth and sixth dimensions that is professional training of drivers and drivers' fitness check are compulsory in the regulatory framework of India, Malaysia, China and State of the New York. Bangladesh has no such policy for TNCs (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, Department of Motor Vehicles, 2017, Ministry of Road Transport and Highways, 2016, Road Transport and Highways Division, 2017). An important regulation that is fare calculation criteria varies from country to country. It is strictly regulated with the exception of China. In Bangladesh, India, and Malaysia, the TNCs are bound to calculate fare based on guidelines from relevant transport authorities (Conventus Law, 2017, Ministry of Road Transport and Highways, 2016, Road Transport and Highways Division, 2017). In China, ridesharing companies follow market-adjusted price as a fair criterion whereas, in the State of New York, TNCs are allowed to calculate fare based on self-introduced fare calculation criteria (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Department of Motor Vehicles, 2017). In Pakistan, cabs have to strictly follow fares as defined by provincial transport authority (National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969). The last regulation in comparison is of insurance policy for drivers, passengers, and vehicles. The legislation of the State of New York and Malaysia regulate TNCs for providing insurance

coverage for drivers, passengers, and ridesharing vehicles whereas China's regulatory framework imposes insurance coverage for drivers and passengers only (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, Department of Motor Vehicles, 2017). Ridesharing regulations of India and Bangladesh does not have any clause related to insurance policy (Conventus Law, 2017, Ministry of Road Transport and Highways, 2016).

6.0 COMPARISON OF REGULATIONS ON RIDESHARING VEHICLES

Following the regulations for TNCs, there were regulations for vehicles as well in all countries under consideration. Since there was no separate legislation or act for ridesharing in Pakistan so standard legislation related to the taxi industry of Pakistan, was used for comparison purpose. The results of the comparison are summed up in Table – 2. The comparison shows that in all the countries, there is a basic requirement of vehicle fitness certificate (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, Department of Motor Vehicles, 2017, Ministry of Road Transport and Highways, 2016, National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969, Road Transport and Highways Division, 2017). Based on the engine capacity of vehicles, only the Indian ridesharing policy specifies it as to be at least 750 cc (Ministry of Road Transport and Highways, 2016). The requirement for minimum seating capacity varies from country to country. The numbers for Pakistan, India, Malaysia, China and State of New York are five, seven, eleven, seven and seven respectively whereas there is no such requirement imposed by Bangladesh Ridesharing Services Policy 2017, as shown in Table - 2. The installation of fare meter is a compulsion, as specified by taxi regulations of Pakistan and ridesharing policies of India, China and State of the New York (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China

Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Ministry of Road Transport and Highways, 2016, National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969). In the same set of countries except for State of the New York, TNC vehicles are bound to display a “TAXI” sign whereas the ridesharing policy of Bangladesh and Malaysia does not specify such requirement (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, Department of Motor Vehicles, 2017, Ministry of Road Transport and Highways, 2016, National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969, Road Transport and Highways Division, 2017).

Pakistan’s Motor Vehicle Ordinance and Motor Vehicle Rules prohibit the advertisement of any kind on cabs and public service vehicles. India and China are only countries under consideration which allow ridesharing vehicles to advertise (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Ministry of Road Transport and Highways, 2016). State of New York also imposes a restriction of an advertisement on ridesharing vehicles. Presence of mobile radio or similar communication setup is mandatory in India, China and State of the New York (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Ministry of Road Transport and Highways, 2016). In vehicle-based regulations, the presence of first aid kit in the vehicles is standardized by India and China only. The requirement of vehicle age varies significantly among the countries in comparison, as shown by Table – 2, however, Pakistan’s legislation and policies specify no such vehicle age limit (National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police,

1969). Pakistan, India, and China make it essential for taxis and ridesharing vehicles to follow a standard livery, separating such vehicles from personal use vehicles (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Ministry of Road Transport and Highways, 2016, National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969). In the State of New York, ridesharing vehicles are required to display respective TNC decal or badge (Department of Motor Vehicles, 2017).

Panic button or emergency alert button is obligatory in ridesharing policy and legislation of Bangladesh, India, and China (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Ministry of Road Transport and Highways, 2016, Road Transport and Highways Division, 2017). In Malaysia and the State of the New York ridesharing regulations, it is compulsory for a TNC app to display an emergency alert function for the passenger (Conventus Law, 2017). The registration of ridesharing vehicle also varies for example in India and Malaysia, TNC vehicles are to be registered as public service vehicles and in China, such vehicles are to be registered in the state as network taxis (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, Ministry of Road Transport and Highways, 2016). India, China and State of the New York also make it essential for ridesharing vehicles to have a properly functioning GPS system. The regulations of other countries do not specify any such compulsion (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, Department of Motor Vehicles, 2017, Ministry of Road Transport and Highways, 2016, National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939,

Punjab Laws Online, 1965, Punjab Traffic Police, 1969, Road Transport and Highways Division, 2017). Except for Malaysia, the taxi regulations of Pakistan and ridesharing regulations of Bangladesh, India, China and State of the New York, imposed an area restriction on TNC vehicles (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, Department of Motor Vehicles, 2017, Ministry of Road Transport and Highways, 2016, National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969, Road Transport and Highways Division, 2017).

7.0 COMPARISON OF REGULATIONS ON RIDESHARING DRIVERS

Although the majority of the driver-related regulations in the context of ridesharing had already been covered in the aforementioned two comparisons, some of the common driver regulations for ridesharing were compared in this section. Table – 3 shows a summary of the comparative analysis of driver-based ridesharing regulations. Different driving license requirements are a part of cab and ridesharing regulations of every country/state under consideration. Pakistan’s governing taxi regulations state that a taxi driver must possess a “motor cab driving license” (National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969). Ridesharing policies and regulations of India imposes a condition that the driver working with TNC must possess a “commercial driving license” (Ministry of Road Transport and Highways, 2016). Regulations of Malaysia, China and State of the New York include a compulsion for TNC drivers to obtain public service vehicle license, network appointment taxi driver license and New York State Driver’s License along with TNC permit, prior to starting ridesharing (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, Department of

Motor Vehicles, 2017). The ridesharing policy of Bangladesh is silent on the driver's licensing requirement (Road Transport and Highways Division, 2017).

It is compulsory for the taxi drivers and TNC drivers to wear company uniform or follow the company's dress code, in taxi regulations of Pakistan and ridesharing regulations of India respectively (Ministry of Road Transport and Highways, 2016, National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969). Other countries and State of the New York do not contain any such restriction in respective ride sharing policies or legislation (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, Department of Motor Vehicles, 2017, Road Transport and Highways Division, 2017). Driver's criminal background check is the only regulations in comparison which is common in all the countries and state, taken into consideration in the comparative analysis (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, Department of Motor Vehicles, 2017, Ministry of Road Transport and Highways, 2016, National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969, Road Transport and Highways Division, 2017). The driver training program is not necessary as per taxi regulations of Pakistan and ridesharing policy of Bangladesh (National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969, Road Transport and Highways Division, 2017). State of New York suggests the TNCs educate and train drivers on their behalf but as such, there is no essential regulation which is to be followed by TNC drivers (Department of Motor Vehicles, 2017). However, the policy framework of India, Malaysia, and China have certain obligations when it comes to initial or repeated training of TNC drivers (China Ministry of Transport, 2016d,

China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Conventus Law, 2017, National Highway & Motorway Police, 2000).

The record of the driver's fingerprint is mandatory in China and the State of the New York ridesharing regulations (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a). Although TNCs do not impose a limitation on their drivers for providing ride sharing services in collaboration with competitor TNCs, still Bangladesh, India, and China restrict TNC drivers to provide services in collaboration with only one TNC (China Ministry of Transport, 2016d, China Ministry of Transport, 2016c, China Ministry of Transport, 2016b, China Ministry of Transport, 2016a, Ministry of Road Transport and Highways, 2016, Road Transport and Highways Division, 2017). The taxi regulations of Pakistan do not impose such a restriction on taxi drivers, nor the ridesharing regulations of Malaysia and the State of New York (Conventus Law, 2017, Department of Motor Vehicles, 2017, National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969).

8.0 RESULTS & DISCUSSION

Regulation of TNCs and the taxi industry, while keeping a level ground, has always been a challenging task for transport authorities. In order to enhance the transportation network, it can be achieved by specifying minimum vehicle standards, driver related regulations, insurance compulsions and maintenance of necessary service quality, for both TNCs and taxi industries (Schneider, 2015). Regulations concerning the taxi industry of Pakistan contain some basic rules which can be found in ridesharing regulations of other countries. The analysis of company regulations, as shown in figure table – 1, shows an in-depth analysis of TNCs regulatory frameworks. The requirement for TNC operational license acts as the entry ticket for TNCs which is not a part of the taxi regulations of Pakistan. Further, driver training and

driver fitness check are also not included in it. Although Pakistan's taxi regulation states the regulated fare calculation criteria, no TNC in Pakistan can be found following it. It can be inferred that not only developed but developing countries also have formulated a strong regulatory framework for ridesharing companies that is India.

It is evident from the table – 2 that Pakistan's current taxi regulations are not sufficient for regulating the modern TNCs as it does not comprise of essential ridesharing vehicular regulations found in ridesharing legislation of other countries. TNCs in Pakistan have been observed violating the existing taxi industry regulations of Pakistan. This statement is supported by the fact that no TNC vehicle in Pakistan follows minimum seating capacity restriction, has a fare meter installed in it or displays a "TAXI" sign on it. Ridesharing policies of India and China, are found to provide more detailed regulatory policies for a vehicle involved in ridesharing, as shown in Table – 2. The vehicular ridesharing regulations of Malaysia and Bangladesh are not very detailed as compared to that of China and India since these are recently introduced. Table – 3 is a clear indication of the fact that there are almost no driver related regulations for the taxi industry in Pakistan. As in the case of other regulations, India and China, lead the comparison by providing more detailed driver related regulations for ridesharing drivers, as shown in Table – 3. In the comparison, the State of New York's TNC regulatory framework, do not tend to lead any comparison since every city in the state has its own strict regulatory framework intact as well.

Taking benefit of today's modern information technology features, TNCs like Uber have become successful in providing ridesharing services to the riders which are easy to use. The instant connection between the driver and the passenger saves the time of both drivers and passengers (Hou Yuquan, 2015). Though the entry of TNCs in taxi industries across the world has provided numerous advantages in public transportation systems, however, there is no guarantee that the existing and conventional public transportation systems will continue to

work “perfectly” with the newly introduced ridesharing platforms. The formulation of monopolies, the absence of asymmetric information for choosing various services from and the introduction of external effects such as air and noise pollution, are some of the important factors which show the need for regulating TNCs (Rienstra et al., 2015).

In Pakistan, TNCs have been known to be working without the approval of local authorities. The traveling receipts obtained from TNCs, show that drivers are exempted from the income tax payments (Yaseen, 2017). Also, vehicles being used for TNCs, are not required to pay tax or fee for being used on roads for public service purposes. The absence of payments in the form of income tax from the drivers and registration or operational tax from TNC vehicles must have a massive impact on the revenue of the local transport departments.

In literature, broad categories of regulations on taxi industry comprise of price regulation, capacity regulation, and quality regulation. In a study carried out on ridesharing regulations of different States of America, the same regulation categories were highlighted that is entry based licensing of TNCs, the imposition of the driver and vehicle-related regulations ensuring the quality of services and chalking of responsibilities of TNCs such as insurance, etc. (Amin and Esmā, 2016). International Transport Forum also carried out a case-specific policy analysis for-hire passenger transport and identified a generic set of regulations for ridesharing platforms. It comprises of regulations based on economic, social and administrative factors (Forum, 2016).

As already discussed before, there are no existing taxi or cab regulations of Pakistan which may be imposed on ridesharing companies and vehicles as well (National Highway & Motorway Police, 2000, Punjab Code Government of the Punjab, 1939, Punjab Laws Online, 1965, Punjab Traffic Police, 1969). There are several acts and bylaws in general, which comprises of various clauses related to taxi or cab services. Keeping in view the literature and the comparative analysis of this paper, the proposed ridesharing regulations, as shown in Table

– 4, may help the policymakers in forming the basic regulatory framework for making the ridesharing policy of Pakistan.

The comparative analysis of ridesharing regulations in this paper shows that some of the taxi-related regulations found in the legislation of Pakistan are being used as ridesharing regulations in other countries such as driver criminal background check and the requirement for vehicle fitness certificate. The ridesharing regulations proposed in Table – 4 are formulated by considering the most commonly used ridesharing regulations among other countries included in the comparative analysis. The objective behind the proposed regulatory framework for ridesharing services is not to restrict or unwelcome the new ridesharing companies from operating in Pakistan, rather the aim is to ensure the better mobility, safety, and welfare of both the drivers and consumers by providing a sustainable transportation service. Regulators must also consider the fact that the introduction of newly developed mobile-based ridesharing apps is necessary for competing in the long-term race of integrated transportation system in the near future. A better approach would be to introduce common ridesharing legislation for both taxi industry and ridesharing companies operating in Pakistan so that not only coherent legislation is implemented for both conventional and modern transportation systems but the conflicts among these two, hindering the public services, can also be avoided.

9.0 CONCLUSIONS

Innovations in information technology have changed the way drivers and passengers in the taxi industry interact. This has been made possible due to the advent of various organizations that are providing services of pre-arranged trips using online portals and apps, known as Transport Network Companies TNCs. With the introduction of ridesharing companies in the existing taxi market, the need for their regulation also emerged. Different countries such as Bangladesh, India, China, Malaysia and states such as State of the New York, reacted by proposing some regulatory policies for newly introduced ridesharing companies.

In Pakistan, ridesharing companies made their debut in recent three years. TNCs like Uber and Careem were highly welcomed and liked in Pakistan based on their economical fares and prompt ridesharing services. At the government level, there was no policy or regulatory framework proposed for the regulation of TNCs. Although there were some notifications and letters published notifying the ban of these services, but no real-time action was taken. In this paper, an effort was done to compare the existing taxi regulations of Pakistan with the ridesharing regulations of different neighboring and developed countries to get a basic idea and later on formulate regulatory ridesharing policy which may assist policymakers in moving forward with the idea of developing proper ridesharing legislation for Pakistan. Since there was no ridesharing legislation of Pakistan so existing taxi regulations were included in this comparative study to propose ridesharing regulations.

The comparative analysis of ridesharing regulations of countries and taxi regulations of Pakistan presented that based on company regulations, Pakistan's legislation did not contain ridesharing regulations which are common in ridesharing policies and legislation of other countries that is the requirement for TNC operational license and compliance to an approved ridesharing act. As compared to other countries, the majority of the bylaws related to the vehicles are a part of Pakistan's legislation. These include vehicle fitness certificate requirements, seating capacity limitation and area restriction. However, some other necessary vehicle-based regulations that is panic buttons in vehicles and vehicle age limitation, are not a part of the taxi industry legislation of Pakistan. On the same comparison grounds, driver-based regulations of Pakistan do not contain any restriction for drivers to possess a special driving license, a professional TNC driver training, and a restriction to work for a single company at a time, as is the case with ridesharing regulations of other countries.

Keeping in view the most commonly used clauses of ridesharing policies of Bangladesh, India, China, Malaysia and State of the New York, and along with the generic

ridesharing regulations, as mentioned in the literature, a basic ridesharing regulatory framework for Pakistan have been proposed. The company-based regulations, to be considered in making ridesharing policy of Pakistan, comprise of requirement of a special TNC operation license, specification of appropriate fare criteria (to balance TNCs with taxi industry), imposition of discrete fare criteria for passengers traveling to or from airports and implementation of insurance coverage of vehicles, passengers and drivers involved in ridesharing.

The vehicle-based regulations include special registration of TNC vehicles, the restriction on vehicle minimum engine capacity, minimum seating capacity, and age. Area operational restriction proposed in vehicle-based regulations will assist in reducing congestion in cities' transportation network. The driver-based proposed regulations include but are not limited to, special driving license for TNCs, driver criminal background check, and a mandatory TNC driver training prior to initiating ridesharing for a single TNC company at a time.

10.0 FUTURE RESEARCH

This research was carried out based on the existing ridesharing regulations of neighboring countries and other developed countries/states. The comparative analysis showed the missing or deficient legislative areas in taxi and ridesharing industry of Pakistan; however, it did not include the impact of external factors directly affecting the utilization of TNCs in Pakistan for example, in the city of Lahore, prior to the introduction of ridesharing companies, there were no for-hire passenger taxis. Although buses and rickshaws existed but vehicles designated as "taxis" did not exist on roads. In the capital city of the same country that is Islamabad, since the start, conventional taxis had been operating as three-wheeled transportation vehicles were not allowed. In this scenario, it becomes important to know the opinion of the public as well as the existing taxi owners, before formulating legislation. Doing

so will ensure that the rights of rival transportation service providers are not violated in developing ridesharing legislation for Pakistan. Detailed interviews and surveys are recommended, for future research, to get an idea of the opinion of the general public for fine-tuning the proposed regulatory framework.

Since TNCs operate through mobile-based apps and drivers as well as passengers are required to provide detailed personal information to ridesharing companies before taking benefit of their services, data sharing in this format raises alarming concerns related to data privacy (Hallgren et al., 2017). It is recommended that along with the real-time ridesharing regulations, the information technology-based regulations involving the security and privacy of user data and its theft preventing, may also be derived after having a detailed overview of such regulations of other countries. For future research, it is recommended that a detailed analysis of taxi industry legislation, be carried out and legislation similar to the proposed ridesharing regulations, be eliminated, so as to eradicate the confusion for existing and newly introduced taxi and transport network companies.

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TABLE 1 Comparison of Company-Based Ridesharing Regulations

Sr #	Regulation/Guideline/ Advisory	Pakistan	Bangladesh	India	Malaysia	China	State of the New York
1	Minimum Fleet Size	✓	✓	✓	✗	✓	✓
2	Company Operation License Requirement	✓	✓	✓	✓	✓	✓
3	Legislations/Policies for Ridesharing	✗	✓	✓	✓	✓	✓
4	Adequate Parking Requirement	✓	✓	✓	✗	✓	✓
5	Drivers' Trainings	✗	✗	✓	✓	✓	✓
6	Drivers' Fitness Check	✗	✗	✓	✓	✓	✓
7	Regulated Fare Calculation Criteria	✓	✓	✓	✓	✗	✓
8	Insurance Coverage	✓	✗	✗	✓	✓	✓

TABLE 2 Comparison of Vehicle-Based Ridesharing Regulations

Sr #	Regulation/Guideline /Advisory	Pakistan	Bangladesh	India	Malaysia	China	State of the New York
1	Requirement for Vehicle Fitness Certificate	✓	✓	✓	✓	✓	✓
2	Minimum Engine Capacity	x	x	✓	x	x	x
3	Seating Capacity Limitation	✓	x	✓	✓	✓	✓
4	Fare Meter	✓	x	✓	x	✓	✓
5	"TAXI" sign on vehicle	✓	x	✓	x	✓	x
6	Advertisement Restriction	✓	x	✓	x	✓	✓
7	Mobile Radio or Communication Setup	x	x	✓	x	✓	✓
8	First Aid Box	x	x	✓	x	✓	x
9	Vehicle Age Limitation	x	✓	✓	✓	✓	✓
10	Display of Driver Identification	✓	x	✓	x	✓	✓
11	Standard Livery/Decal	✓	x	✓	x	✓	✓
12	Panic Button/Emergency Alert	x	✓	✓	✓	✓	✓
13	Special registration for vehicles	x	✓	x	x	✓	x
14	GPS System	x	x	✓	x	✓	✓
15	Area restriction	✓	✓	✓	x	✓	✓

TABLE 3 Comparison of Driver-Based Ridesharing Regulations

Sr #	Regulation/Guideline /Advisory	Pakistan	Bangladesh	India	Malaysia	China	State of the New York
1	Special Driving License Requirement	x	x	x	✓	✓	✓
2	Uniform/Dress Code Requirement	✓	x	✓	x	x	x
3	Driver Criminal Background Check	✓	✓	✓	✓	✓	✓
4	Compulsion for Driver Training	x	x	✓	✓	✓	✓
5	Driver Fingerprint Record	x	x	x	x	✓	✓
6	Restriction to work for single TNC	x	✓	✓	x	✓	x

TABLE 4 Proposed Ridesharing Regulatory Framework for Pakistan

Company-Based Regulations
<ul style="list-style-type: none"> ▪ Restriction on the total number of licensed operators ▪ Criteria for the qualification of company operational license ▪ Specification of driver/contractor rules ▪ Appropriate criteria for fare calculation ▪ Definition of maximum and minimum tariff limits ▪ Discrete fare criteria for airport passengers ▪ Application of labor laws/rules for limiting driver working hours ▪ System for getting feedback from passengers ▪ The compulsion for ridesharing vehicle stands, pick up and drop off points. ▪ Insurance regulations for drivers, passengers and vehicles.
Vehicle-Based Regulations
<ul style="list-style-type: none"> ▪ Special registration of ridesharing vehicles ▪ Vehicle fitness certificate ▪ Minimum engine and seating capacity ▪ First aid box ▪ Vehicle age restriction (based on mileage or years of use) ▪ Display of driver identification and TNC decal on the vehicle ▪ Emergency/panic button inside ridesharing vehicles ▪ Area restriction on TNC vehicles
Driver-Based regulations
<ul style="list-style-type: none"> ▪ Special driving license requirement ▪ Driver criminal background check ▪ Mandatory TNC driver training ▪ Restriction to work for single TNC at a time