Motorcycle E-Ride Hailing Services in Bangladesh by Analyzing Structural Equation Modelling Approach

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Abstract: Dhaka, the capital of Bangladesh, is the maximum densely populated town in the world. It is currently experiencing a lot of traffic problems. As a result, the insufficiency of public transportation and reliance on private vehicles have been cited as the two main causes of traffic congestion. In today's world, ride-hailing services are becoming increasingly popular in both developed and developing nations. As a result, academic researchers, businesspeople, innovators, policymakers, and innovators are more interested in this ride-sharing service and its effects on economies. In this paper, a study is conducted through a questionnaire in different locations in Dhaka city from 300 respondents. Half of the respondents were 25 to 34 years old and most of the users are male also highly educated people who use e-ride hailing of their rides. Based on the research, Pathao and Uber lead the e-ride hailing business in Bangladesh and 62% of respondents said they occasionally use e-ride hailing. The e-ride-hailing users' overall satisfaction was analyzed by a structural equation model towards user socio-demographics profile, user characteristics, quality of service, and limitation of e-ride hailing. Along with the stated preference, the effect of five latent variables driver, service, safety, economic, and management analyzed on service quality and limitations of e-ride haling Helmet quality are the most significant variables observed from the best model, developed by using SEM and without the economic unobserved variable, practically all values from the SEM are significant coefficients and have positive signs. It indicates that Dhaka city residents who use ride-hailing services on motorbikes are dissatisfied with the cost of the service. This study recommends that the helmet's quality be good and that the cost of a ride-hailing service should be reduced.

Keywords: Motorcycle, E-ride haling, Traffic problems, Dhaka, Bangladesh, Structural equation modeling

Nomenclature

Abbreviation	Expansion
BRTA	Bangladesh Road Transport Authority
SEA	Southeast Asia
MATSim	Multi-Agent Transport Simulation
DID	Difference-In-Differences
PSM	Propensity Score Matching
SEM	Structural Equation Modeling
SRW	Standardized Regression Weights
AVE	Average Variance Extracted
VIF	Variance Inflation Factor

1.Introduction

Dhaka, the capital of Bangladesh, is the maximum densely populated city in the complete international. Dhaka, positioned at 23.42N and 90.22E, Currently,the population of the city is 556,000 and has been increasing at a remarkable charge after gaining independence in 1971. In its 1,528 km² metropolitan place, around 10.2 million residents are there in 2022. The core area has a population density of virtually 45,000 people in line with rectangular kilometers, making it one of the maximum densely populated towns within the global [1].

One of the most important issues in Dhaka today is the transportation infrastructure. The metropolis is well known for its severe loss of visitors' safety and never-ending traffic jams. Like every other megacity within the bad International, Dhaka's transportation troubles are typical because of rapid urbanization, low earnings, and excessive inequality. The population is growing every day, and the

majority of Dhaka is being negatively impacted by severe visitor congestion. Lengthy-lasting visitor jams are caused by bad traffic signaling, a loss of a group of workers, congested roads, and motors' propensity for overtaking. A significant quantity of working hours ought to be lost to traffic jams, which has an oblique terrible effect on the financial system [2].

Dhaka is currently experiencing somesitevisitor issues. The insufficiency of public transportation and reliance on private automobiles, as a result, have been referred to as the 2 primary causes of visitor congestion. Presently, Dhaka's common site visitor's pace is only 6.4 kph (kilometers in step per hour). But if the automobile boom maintains the present-day pace without big investments in public transport, the common velocity may fall to 4.7 kph by 2035 almost as slow as on foot. To overcome this, a study is conducted with the aim as follows:

- To find out the current situation of motorcycle ride-hailing services.
- To evaluate the e-ride hailing service quality and limitations of motorcycle e-ride hailing services.
- To provide appropriate recommendations for future ride-hailing in Bangladesh.

In this paper, a questionnaire survey was conducted based on the service of e-ride haling. Then using the structural equation modeling approach the data is analyzed and analyzed the result based on the service, safety, cost, driver, and management. The result shows that the Dhaka people dislike motorcycle hailing service because of its high cost and poor-quality helmets.

The paper is organized as follows: Section 2 explains the background, Section 3 represents the literature review, Section 4 explains the details of automobiles in Dhaka, Section 5 explains the ride-hailing, Section 6 provides the methodology and data collection, section 7 mentions the study area, Section 8 explains the study location, Section 9 explains the structural equation modeling, Section 10 represent the advantage and disadvantage, Section 11 provides the result and discussion, section 12 explains the findings from data analysis. Section 13 concludes the paper, Section 14 explains the limitation of the study and Section 15 explains the recommendations for additional research.

2. Background

Consistent with [26], Uber's introduction in San Francisco, California, as a solution to the modern visitor's situation and client pride is supported by way of 3 generations of ride-hailing strategies advanced over 5 many years. The author claims that the primary era of the modern and destiny motorbike hailing provider become verified in 1965 in Amsterdam with limited centers and scope. The second era accompanied in 1991 in Copenhagen, Denmark, with a few technological advancements; and the 0.33 technology in diverse nations, inclusive of the United States, England, France, Taiwan, South Korea, China, Chile, Brazil, and New Zealand, in 1996 by improving the facilities and carrier satisfactory. In addition, [12] divided the improvement of experience-hailing in North US into five stages between 1942 – present, totally based on a concern organization of society, the energy disaster, institutionalization, dependability, and the emergence of an era.Moreover, trip-hailing services are rapidly increasing in severaeu, North American, Danish, and English cities [27]. In step with [28], the upward thrust of journey-hailing offerings like Lyft, Uber, and Sidecar in the one's areas coincided with the boom inside the gig financial system. In this regard, [8] confirmed in his take look at the way to correctly predict experience-hailing carrier call for and opposition with the aid of using the demand pattern of diverse user agencies. In addition, the truth is that progressive experience-hailing transportation offerings have an enormous superb effect on the lives of metropolis dwellers and society, requiring the cooperation of companies and the government. Similarly, experience-hailing services need to adhere to the identical price- and safety-associated guidelines and requirements that the authorities have set up for taxis in diverse cities [29].

SEA is not an exception. Home to 642.1 million people, or 8.5% of the sector population, SEA is a fast-growing location with a great GDP of US $2.8 trillion or 3.5% of the arena GDP [30]. Like many other nations in the worldwide South, most SEA international locations have skilled high populace increase, growing income, and urbanization in current decades.Those motorcycle-primarily based e-hailing services are one of a kind from the emerging micro-mobility services which include bicycle-proportion (bike-share) or e-scooter percentage [31] and more similar to experience-sourcing offerings since the bike is pushed using a motive force that includes a passenger for earning a fare. In some of those international locations, extensively Indonesia (cross-Jek) and Bangladesh (Pathao), the availability of motorbike e-hailing offerings turned into on occasion preceded by way of bike-primarily based courier offerings for small parcels. These motorcycle-based e-hailing services are different from the emerging micro-mobility services such as bicycle-share (bike-share) or e-scooter share [31] and more similar to ride-sourcing services since the motorcycle is driven by a driver who carries a passenger for earning a fare. In some of these countries, notably, Indonesia (Go-Jek) and Bangladesh (Pathao), the provision of

motorcycle e-hailing services was sometimes preceded by motorcycle-based courier services for small parcels.

3. Literature Review

In 2022, Ma *et al.* [32] have implemented CRide for online ride-hailing services. Initially, the city was divided into zones where a rider requests a ride query to the nearest driver. It was then matched. It contains three entities such as RS, drivers, and riders. Furthermore, the matching process protects the location and identification of riders and drivers. Finally, the match value was computed based on encrypted location coordinates of drivers and riders while not leaking plaintext. The theoretical analysis and experimental results suggest that CRide achieves high ride-matching accuracy and acceptable efficiency without leaking privacy.

In 2022, Zhang *et al.* [33] have executed a comprehensive matching function approach to analyze the ride-sourcing market with heterogeneous users. It is an origin-destination model. It explored the equilibrium market with profit for changes in different exogenous market variables. The non-equilibrium model was also used to understand the transition path and extensions of the single O-D market model to aggregate and disaggregate markets. The results showed the equilibrium market operation, equilibrium transitions, and nonequilibrium modeling to understand the transition path.

In 2023, Salman *et al.* [34] have used the MATSim model of the Birmingham metro area to evaluate the impact of ride-pooling services on traffic operations. Through simulating the transportation network under baseline conditions and ride-pooling availability with two types of ride-pooling services and three fleet sizes. The result was obtained and compared through selected performance measures, including trips by mode, VKT, detour distances, and mean passenger waitand in-vehicle travel time, among others. This method can reduce the Vehicle Kilometers Traveled.

In 2021, Wang *et al.* [35] have ensembled a dynamic pricing model for ridesharing platforms under network externalities with stochastic demand. Initially, a pricing model for ridesharing platforms was created, and analyzed the impact of network externalities on the dynamic pricing strategy and ridesharing platforms' revenue. Then dynamic pricing strategies for ridesharing platforms under a surge demand scenario and declining demand scenario to maximize revenue and social welfare. Then the values were verified and analyzed. The stimulated result reduced the delay and maximize the demand.

In 2020, Sun *et al.* [36] have developed uses optimal control theory to construct dynamic models based on the state change of supply and demand. Ride-hailing platforms match riders and drivers based on the supply and demand of ride services. It was an offline transportation service. Once the ride was complete, riders pay fares through third-party payment platforms and the drivers receive a corresponding commission from the ride-hailing platform. The result shows that the optimal dynamic price can improve the match of supply-demand in the ride-hailing market and enhance the revenue of the platform.

In 2020, Zhong *et al.* [37] have adopted the DID method to analyze the impact of ride-hailing services on the use of private cars in urban areas. It also employed the PSM method to select the experimental group and the control group with similar characteristics in all aspects of the observable variables. Finally, robustness tests were used to verify the preliminary results. Rational choice theory and prospect theory were used to analyze the reasons that citizens choose one mode of transportation over another. The empirical results showed that ride-hailing services harmed the use of private cars in urban areas.

In 2020, Naqvi *et al.* [38] have designed an Android-based carpooling application for taxi service in Pakistan. Initially, the user must registration details. Then from the destination the passenger is picked and the ride can be shared by multiple users going to the same destination at one time to reduce the ride cost.

In 2018, Setiyorini*et al.* [39] have used a quantitative research method. It involved two stages, in the first stage factor analysis was applied to find dimensions of people's behavior in using the e-ride-hailing transportation system. In the second stage, hypothesis testing on each dimension was formed from the factor analysis. Finally, a questionnaire was developed and distributed online to people through a purposive sampling technique via an online survey application. The result showed that app-interaction behavior and satisfaction had a significant influence on the behavior intention in using the apps for tourism.

3.1 Review

Author	Methodology	Advantage	Disadvantage
Ma *et al.* [32]	CRide	• Allowed distance computation between rider and driver across adjacent zones. • Protects the privacy of drivers and riders during the matching process. • Improved efficiency. • Achieved a high ride-matching accuracy and acceptable efficiency without leaking privacy. • Can find the nearest driver for riders in the whole zone.	• Limits to certain type of operation.
Zhang *et al.* [33]	Comprehensive matching function approach	• Filled the major gap in research. • Can be extended to aggregate and disaggregate markets. • Used to understand the operation and policy implications of the ride-sourcing market.	• Theoretical model may not fully capture the complexities of the real-world ride-sourcing market. • Specific to certain cities.
Salman *et al.* [34]	MATSim model	• Provided a quantitative assessment of the performance of ride-pooling services. • Provided insights into optimal ride-pooling. • Used to inform the development of policies and regulations related to ride-pooling services	• Didn't fully capture the complexity of real-world traffic operations. • The study focused on a specific region.
Wang *et al.* [35]	Dynamic pricing model	• helped ridesharing platforms to maximize their revenue and social welfare. • Reduce the delayed orders.	• This method was based on assumption. • Accuracy depends on assumption. • Required more computational resources to implement.
Sun *et al.* [36]	Optimal control theory to construct dynamic models	• Help ride-hailing platforms to make better pricing decisions and increase their profitability. • Examined the effects of key parameters on pricing decisions. • Can be applied to different ride-demand situations.	• Method is based on assumption. So, the results are not accurate. • Required data and computational resources.
Zhong *et al.* [37]	DID and PSM	• Helped to verify the robustness of the result. • Helped to analyze the impact of the ride-hailing service.	• This method uses annual data to analyze the impact of ride-hailing services on the use of private cars in urban areas, which makes the time dimension of the dynamic effect relatively short.
Naqvi *et al.* [38]	Android-based carpooling application	• Can create social networking from the vehicle. • Reduced riding cost. • Reduce traffic and pollution. • The application was easy to use. •	• No specific parameters to define the common interest have been identified as no empirical data was available. • No safety and security during travel. • To overcome the advanced complexity fuzzy logic was not used.
Setiyorini*et al.* [39]	Quantitative research method	• Provided a systematic approach. • Helped to classify people's behavior and understand the relationship between different dimensions of behavior. • Helpful for tourism.	• Relied on self-reported data. • Did not consider other factors. • The method was not generalized to all people.

3.2 Challenges

The challenges experienced during the motorcycle e-ride hailing services given as follows,

- In [33][34], the Comprehensive matching function approach and MATSim model are used to inform the development of policies and regulations related to ride-pooling services. However, these methods are theoretical models and are not practically implemented. So, it may not fully capture the complexities of the real-world ride-sourcing market. These methods are also limited to certain regions.
- When compared to other approaches, [32][39] produces good results through Android apps. It also protects the privacy of drivers and riders. Easy to register Moreover, it required a steady Internet connection and is limited to certain features.

Overall, motorcycle e-ride hailing services needs a reliable, cost-efficient, and easy-to-access service which protects the privacy, security, and safety of the drivers and the passengers.

4. Details of Automobiles in Dhaka

Vehicles became a part and parcel of our lives. Based on the distance, number of persons, and interest the useability of the vehicles varies for each individual. Table 1suggests the range of registered motor automobiles in Dhaka from the keeping of BRTA.

*Table 2:*Number of Registered Motor automobiles in Dhaka (supply: BRTA, 2021)

		NUMBER OF REGISTERED MOTOR VEHICLES IN DHAKA (YEAR WISE)									
SL No.	Type of Vehicles	Up to 2013	2014	2015	2016	2017	2018	2019	2020	Up to Feb/2021	Grand Total
1.	Ambulance	1716	253	355	284	399	456	548	599	92	4702
2.	Auto Rickshaw	6852	56	428	582	42	5637	6839	114	59	20609
3.	Mini Bus	8614	136	103	155	158	185	186	133	31	9701
4.	Bus	18701	1363	2219	3487	3294	2322	2951	1792	220	36349
5.	Motor Cycle	304724	32691	46758	53718	75251	104051	99252	78551	13993	809189
6.	Microbus	52391	3833	4563	5162	4926	3583	3241	2407	666	80772
7.	Truck	34044	5704	4334	4306	7010	8725	6228	3327	652	74330
8.	Private Car	189002	12972	18423	18013	19570	16318	15016	11150	2529	3029993
9.	Pick Up	35699	7185	7711	8370	10248	9598	8748	8024	1305	96888
10	Taxicab	29649	301	53	30	3	94	6	0	0	30136
11.	Covered Van	9704	2422	1940	2673	4068	4386	2529	1688	374	29784
12.	Cargo Van	4553	600	396	999	1286	1224	3	1	0	9062
13.	Human Hauler	2925	109	502	786	217	211	0	2	0	4752
14.	Delivery Van	13294	949	1531	1928	2207	1884	1292	967	200	24252
15.	Jeep	21885	1582	3110	4217	4712	4863	5038	4450	997	50854

The share of buses and minibuses remained the same, and private automobiles including vehicles and motorcycles nearly tripled. Public shipping consisting of buses and minibusseshas grown at an insignificant charge even though the demand for public delivery offerings is growing. Bikes and motors constitute around 54% and 26% of overall motorized cars respectively. These days, the transportation and verbal exchange device throughout the universe have got radical by way of using modern-day generations such as advanced motors, mobile communique networks, real-time responses, providers, and many others. Rapidly growing journey-hailing services have had a massive impact on converting Bangladesh's current transportation infrastructure. E-hailing transport offerings have been spearheading this quarter for the reason that 2015. Bangladesh has had fast financial growth in current years, and on the same time, the proportion of its populace in the usage of the net is rising (Kamal and Ahsan, 2018).

5. Ride-Hailing

Ride-hailing is when riders hire a private driver to take them to a vacation spot. Within the beyond, this used to be a taxi carrier. Now, there are numerous greater experience-hailing structures to be had, consisting of Uber, Pathao, Shohoz, and Lyft. Trip-hailing is simply the utilization of a degree to supply rides from a driving pool. Transportation agencies make use of an online-empowered or flexible cellular smartphone utility to interface vacationers with drivers who utilize their very personal automobiles. Lodging and low prices have empowered TNCs like Uber, to disillusion the transportation place. Likewise, in an evaluation that analyzed the impact of ride-obtaining at the taxi enterprise in Shenzhen, China, that, the taxi business simply encountered a massive misfortune in its ridership which may be unquestionably credited to the com-request from journey-obtaining. Anyways, the proof unequivocally endorsed even though the shock was moderately quick, that the deficiency of the taxi commercial enterprise had started to settle with taxis fit for contending more honestly with journey-obtaining in top intervals and areas with excessive population thickness. In California moreover considered that enormously taught and, more seasoned twenty- to thirty-yr-olds were bound to use on-request ride administrations than distinctive gatherings. Among distinct attitudinal variables that had been explored, human beings with more grounded support of nature, innovation embracing, and collection looking for perspectives have been likewise recommended to be greater disposed to make use of journey-hailing [25].

6. Methodology and Data Collection

This method initially collects all the data from the people of Dhaka. This investigation is divided into three steps. The first stage was the pre-survey process, where expert opinion gathering and questionnaire design survey forms were carried out. After conducting a test survey, the actual survey is launched. In the post-survey procedures, the data had been processed and subjected to analysis, representing the final stage. Finally, the data is analyzed and findings are obtained. This study signifies thecharacteristics of e-ride hailing. Here, four sections are made up of the survey: the socio-demographic profile, e-ride-hailing service user's characteristics, service quality, limitations of e-ride hailing, suggestions, and the reason behind using ride-hailing over the other modes of transport.

7. Study Area

The capital of Bangladesh, Dhaka City is in the country's center region. It serves as an example of a megacity in a developing nation because of its high population density, diverse income distribution, and centralized infrastructure that promotes migration. Therefore, Dhaka City is a good topic for this research on the process of analyzing motorcycle ride-hailing services using advanced statistical modeling in Bangladesh.

8. Survey Locations

Table 3 displayed the survey locations, which included Dhaka city.

Table3: *Locations of survey in Dhaka city (Physical Survey)*

Serial No.	Date	Location	Day	Collected Data	Day of the Week
1.	December 4, 2022	United International University &Natun Bazar.	Sunday	40	Working day
2.	December 5, 2022	Green Road & University of Asia Pacific.	Monday	42	Working day
3.	December 6, 2022	Dhanmondi Lake & Dhanmondi 32.	Tuesday	51	Working day
4.	December 7, 2022	Panthapath& Bashundhara Shopping Complex.	Wednesday	44	Working day
5.	December 8, 2022	Farmgate & Raja Bazar.	Thursday	52	Working day
6.	December 9, 2022	Uttara Sector 7, Sector 8 & Uttara House Building.	Friday	46	Holiday
7.	December 12, 2022	Mirpur 1, Mirpur 2 & Mirpur 10.	Monday	25	Working day

The scope of the survey should be as broad as possible. Locations from throughout the city of Dhaka were chosen to increase the variety of the location data. Some of the notable survey locations were-
- United International University &Natun Bazar.
- Green Road & University of Asia Pacific.
- Dhanmondi Lake & Dhanmondi 32.
- Panthapath&Bashudhara Shopping Complex.
- Farmgate & Raja Bazar.
- Uttara Sector 7, Sector 8 & Uttara House Building.
- Mirpur 1, Mirpur 2 & Mirpur 10.

9. Structural Equation Modelling

A method for expressing, estimating, and testing a network of relationships between variables is called SEM (measured variables and latent constructs). In addition to comparisons between "conventional statistical" and SEM analysis. Path analysis and regression, repeated measures analysis and modeling of the latent growth curve, and confirmatory factor analysis are some examples. Participants will get a foundational understanding of structural equation modeling. Structural equation modeling has gained increased popularity in the last decades. It has ejected in numerous logical sciences, such as in sociologies, psychometry, financial matters, tasks research, the board, operations, and store network the executives, as well as in the inherent sciences, designing, promoting research, instructive exploration, the travel industry, and so on. SEM is an extremely strong and high-level factual instrument, which equips the scientist with the extensive apparatus for the assessment and change of hypothetical models. It joins the corroborative element investigation and the various relapse examination (concurrent conditions models) into the thorough demonstrating structure. The CFA gives the necessary resources to

fabricate the estimation of a piece of the model (purported estimation model), where the relations between the noticed (estimated) factors (additionally called pointer or manifest factors) and the inert variables (unmeasured develop) can be examined. Running against the norm, the causal relations of the builds among themselves can be concentrated on in the underlying piece of the SEM model (supposed primary model). The relations between completely treated factors in both sub-models (estimation what's more, primary) can be assessed simultaneously if the full-data assessment strategies are given. Figure 1 represents the Graphical Presentation of motorcycle e-ride hailing services in Bangladesh by analyzing the structural equation modeling approach.
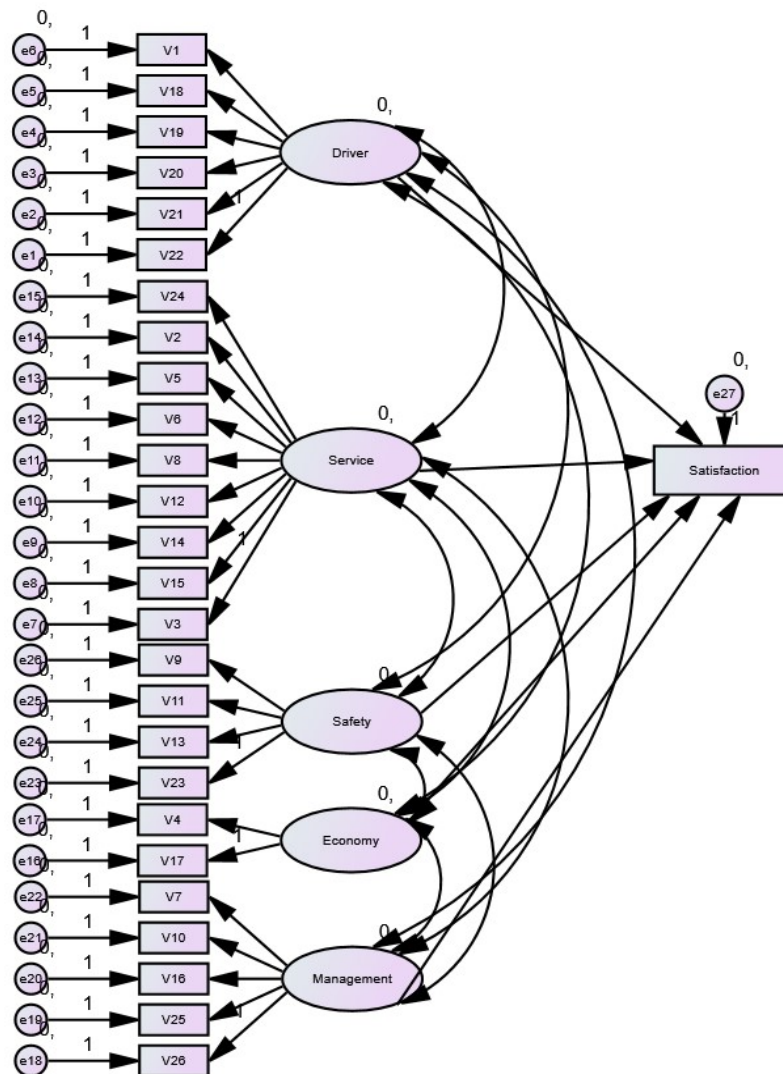
Fig.1. *Graphical Presentation **of** motorcycle e-ride hailing services in Bangladesh by analyzing structural equation modeling approach(By SPSS And Amos graphics)*

The unobserved factors in this SEM are the driver, service, safety, economy, and management. It affects the V1, V18, V19, V20, V21, and V24 in the driver. It influences the V2, V3, V5, V6, V8, V12, V14, V15 and V24 in the service. It has an impact on V9, V11, V13, and V23 safety. It affects V4 and V17 in the economy. The management is affected by V7, V10, V16, V25, and V26. Table 4 represents the SRW.

Table 4: *SRW: (Group number 1 - Default model)*

z		Latent Variable	Estimate	S.E.	C.R.	P	Label
V22	<---	Driver	1.000				
V21	<---	Driver	1.351	.252	5.359	000	par_1
V20	<---	Driver	1.302	.241	5.405	000	par_2
V19	<---	Driver	.742	.190	3.904	000	par_3
V18	<---	Driver	.722	.218	3.315	000	par_4
V1	<---	Driver	-.413	.117	-3.513	000	par_5
V3	<---	Service	1.000				
V15	<---	Service	1.358	.436	3.118	.002	par_6
V14	<---	Service	1.212	.423	2.867	.004	par_7
V12	<---	Service	1.959	.579	3.385	000	par_8
V8	<---	Service	2.741	.752	3.644	000	par_9
V6	<---	Service	1.243	.455	2.732	.006	par_10
V5	<---	Service	2.037	.579	3.518	000	par_11
V2	<---	Service	1.583	.485	3.262	.001	par_12
V24	<---	Service	-1.253	.476	-2.631	.009	par_13
V17	<---	Economy	1.000				
V4	<---	Economy	-.333	.257	-1.300	.0194	par_14
V26	<---	Management	1.000				
V25	<---	Management	.314	.131	2.387	.017	par_15
V16	<---	Management	-.579	.098	-5.886	000	par_16
V10	<---	Management	-.485	.130	-3.723	000	par_17
V7	<---	Management	-.538	.105	-5.102	000	par_18
V23	<---	Safety	1.000				
V13	<---	Safety	-.805	.160	-5.044	000	par_19
V11	<---	Safety	-.350	.139	-2.511	.012	par_20
V9	<---	Safety	-1.507	.242	-6.221	000	par_21
Satisfaction	<---	Driver	-.305	2.029	-.150	.881	par_22
Satisfaction	<---	Service	-.063	2.295	-.027	.978	par_23
Satisfaction	<---	Safety	-.885	1.591	-.556	.578	par_24
Satisfaction	<---	Economy	.666	2.391	.279	.781	par_25
Satisfaction	<---	Management	.290	2.341	.124	.901	par_26

It demonstrates that Driver, safety, management, economy, and service all have p values that are less than 0.05. As a result, we may say that, without the economic unobserved variable, almost all SEM coefficient values are significant and have positive signals. It suggests that the cost of the service is an issue for Dhaka city residents who utilize ride-hailing services on motorcycles. Table 5 represents the covariances of the group.

Table 5. *Covariances: (Group number 1 - Default model)*

			Estimate	S.E.	C.R.	P	Label
Driver	<-->	Service	-.038	.014	-2.650	.008	par_27
Safety	<-->	Driver	.164	.039	4.236	000	par_28
Driver	<-->	Economy	.115	.047	2.448	.14	par_29
Driver	<-->	Management	.211	.047	4.484	000	par_30
Safety	<-->	Service	-.088	.027	-3.226	.001	par_31
Service	<-->	Economy	-.010	.017	-.595	.0552	par_32
Service	<-->	Management	-.109	.033	-3.342	000	par_33
Safety	<-->	Economy	.066	.041	1.582	.114	par_34
Safety	<-->	Management	.263	.054	4.921	000	par_35
Economy	<-->	Management	.162	.061	2.652	.008	par_36

It indicates that the p values for the driver, safety, management, economy, and service are all less than 0.05. We can therefore conclude that without the economic unobserved variable, practically all values from the SEM are significant coefficients and have positive signs. It indicates that Dhaka city residents who use ride-hailing services on motorbikes are dissatisfied with the cost of the service.

10. Advantages and Disadvantages

Advantages
- This method helped researchers to test the complexity of the relationship between the variables.
- It helps policy makers and ride-hailing companies to improve their services.

Disadvantages
- The ride-hailing service is costly.
- This method is not generalized and suitable for only Dhaka city.
- It doesn't consider external factors such as weather conditions, peak times, emergencies etc.,

11. Result and Discussion

According to the table of regression weights, the p-values for the driver, safety, management, economy, and service are all less than 0.05. We can therefore conclude that without the economic unobserved variable, practically all values from the SEM are significant coefficients and have positive signs. It indicates that Dhaka city residents who use ride-hailing services on motorbikes are dissatisfied with the cost of the service. The estimated values for each variable are displayed in the SRW table. According to the Covariances tables, the p-value for the driver, safety, management, and service is less than 0.05. However, the economy's p-value is higher than 0.05. As a result, we can conclude that practically all values from the SEM are significant coefficients and have positive signals without the influence of the economy. As we can see from the frequency table, percent, valid percent, and cumulative percent are all good. There are 300 frequencies in total in this instance. Although it should be better than 0.6, the composite dependability is less than 0.08. Due to the poor service quality of ride-hailing services in Bangladesh, the composite reliability results fall short of expectations. According to the statistics table, there are no missing data points and all variable values are less than 5, which is significant. Using the SRW table: The AVE for the driver is 0.418, the AVE for service is 0.378, the AVE for the economy is 0.132, the AVE for management is 0.335, and the AVE for safety is 0.437 (Group number 1 - Default model). The congruent validity in this SEM is greater than 0.5, which is acceptable. The collinearity tolerance, in this case, is larger than 0.2, which is acceptable. For all of the variance in this model, the statistics VIF is less than 5, which is acceptable. The eigenvalue shouldn't be 0, as we are aware. The zero values in the eigenvalues in this SEM are noteworthy. The degrees of freedom are approximately 310, and the chi-square value is roughly 143.403. The fact that the degrees of freedom in this SEM are larger than the chi-square value makes this finding both meaningful and acceptable. The root mean square error of the approximation is approximately 0.05, although it should be less than 0.08 to take into account the property class and other parameters. CMIN/DF values are approximately 3.688, which is less than 5. Therefore, this model is valid and important. Estimates' variance-covariance matrix should be smaller than 1.96 for the default model. The variance-covariance matrix of the estimates (default model) in this SEM has a value of (.075 and.053), which is acceptable.

12. Findings from Data Analysis

The research topic attempts to investigate user attributes and categorize user profiles. To gather the information, 300 individuals were interviewed. 268 respondents were male and 32 respondents were female found. Respondents' age group 25-34 years are most in this research which is 50%. Most of the respondents came from joint families. The majority of the 303 respondents have advanced degrees, at the graduate level or higher. Most of the respondents use their primary transport as a Bus, which is 50%. The majority of respondents had monthly salaries ranging from 25,000 to 49,999 TK.

   According to our analysis, Patho and Uber lead the e-Ride hailing business in Bangladesh. 57% of respondents use Pathao for their rides which is the most.62% said they use occasionally e-ride hailing, which means people do use e-ride not frequently. The majority of people 55% said they use e-ride for 3-5 years, which indicates people are used to it in Bangladesh. From the data analysis, average trip cost people's responses mixed.

13. Conclusion

Ride-hailing has had a few impacts on Bangladesh's transportation area, especially among young tourists. The combination of those findings tested that the price of a tour is, in truth, a key factor in figuring out a human being's decision to apply experience-hailing offerings. This location suggests that young people can be adopting those offerings. 300 people had been questioned to get the statistics. 32

responders had been girls, compared to 268 male replies. On this take look, respondents who're 25 to 34 years antique makeup most of the people (50%). Most responders have been from blended households. The substantial majority of the three hundred responders hold graduate-degree or above degrees in their field. Buses are used as their primary mode of transportation with the aid of 50% of the respondents. The majority of respondents earned between 25,000 and 49,999 TK each month in their month-to-month revenue. In Bangladesh, Pathao and Uber are the market leaders in e-trip hailing. Maximum number of respondents 60% use Pathao for his or her rides. Sixty-two percent of respondents indicated they now and then used e-experience hailing, indicating that e-trip is used on occasion. Maximum humans, 55%, claimed to have used e-journey for three-five years, showing that Bangladeshis are aware of it. People's responses to the average trip cost were combined, in line with information analysis. These consequences honestly that the usage of ride-hailing can be similar to that of journey-hailing in other regions of the arena in phrases of the motive of trips, the times on which they are maximum in all likelihood to be utilized, and the underlying variables using their use.

14. The Limitations of The Study

There are some limitations in this study. A better result can be taken by minimizing the limitations of this study given below:
- Bangladeshi residents might not be interested in taking surveys since they don't feel like talking about themselves or expressing their ideas to strangers.
- Cultural boundaries are a challenge for survey data gathering in Bangladesh.
- Older adults and senior persons are less sociable and less eager to share their ride-hailing experiences.
- Additionally, female users can't be interested in what they think.

15. Recommendations for Additional Research

The ride-hailing industry is the subject of this study's preliminary inquiry. It might grow in the future in the following directions:
- In the city of Dhaka, ride-hailing is one of the most popular alternate modes of transportation. The cost of a ride-hailing service should be reduced in the city of Dhaka.
- The helmet's quality needs to be raised.
- There needs to be more professionalism in the ride-hailing industry.
- The driver needs to exercise caution when driving. They should abide by traffic laws and regulations.
- The monitoring authority of the ride-hailing service provider needs to be strengthened.

Compliance with Ethical Standards

Conflicts of interest: Authors declared that they have no conflict of interest.

Human participants: The conducted research follows the ethical standards and the authors ensured that they have not conducted any studies with human participants or animals.

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