

A Citizen Centered Perspective on Smart Mobility: Identifying Key Factors through the Technology Acceptance Model

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ABSTRACT

Smart cities are increasingly leveraging technology to improve urban living and meet the growing demands of their populations. The adoption of innovative technologies, such as mobile-based smart urban mobility services, plays a pivotal role in this transformation. This research aims to apply the Technology Acceptance Model (TAM) to examine the key factors influencing citizens' intentions to adopt mobile-based mobility service apps in Lahore, Pakistan. A paper-based survey was conducted across six neighborhoods representing high-, medium-, and low-income groups, yielding 500 responses. Structural Equation Modelling (SEM) via SmartPLS4 indicates that Perceived Usefulness, Perceived Ease of Use, Habit, and Perceived Security Risk collectively explain 74.7% ($R^2 = 0.747$) of user intention of citizens to adopt Smart Mobility Services (e.g., Mobile Application-based ride hailing) with all paths statistically significant ($p < 0.001$). Furthermore, the relationships among the variables have been explained using structural equation modelling (SEM). Based on these findings, this study provides valuable insights into the proposed approach to build smart citizens and increase well-being and quality of life. Findings provide useful insights for developing marketing strategies to improve the uptake of mobile-based mobility service applications among citizens.

1. Introduction

Pakistan has about 37.3 million registered vehicles, with road networks carrying more than 92% of passengers, which highlights the importance of mobility demands on an urban system [1]. In Lahore, specifically, due to rapid urbanization, millions of vehicles are registered, altering travel patterns and increasing congestion, requiring an immediate data-driven solution and smart mobility initiatives [2]. On the institutional side, "Smart City Lahore" pilot project explicitly includes mobility and transport infrastructure improvements through ICT enabled

solutions as one of the significant ICT-enabled aspects of the project [3].

In the context of global digital transformation, the concept of smart cities has evolved over the last few decades. Global smart city market is rapidly growing with approximately USD 4605.7 billion by 2033, growing at 20% rate annually and expected to generate USD 20 trillion economic value by 2026 as cities adopt digital solutions for transport, governance and services [4]. Also, Pakistan smart city market is emerging with projected revenues around USD 131.55 million in 2025 and a growth rate of 8% till 2030

indicating increase investment in major urban centers such as Lahore and Karachi [5]. The concept of smart cities has evolved from the early 1990's, shifting from -based, technology-driven approaches to socio-technical digital platforms, including mobile applications, that connect citizens, enhance service accessibility, and enable real-time urban management [6]. Smart cities involve multiple elements that integrate to improve the intelligence for urban systems and support authorities in making well-informed decisions. Among others, one significant aspect is the 'smart citizen,' which is associated with citizens' behavior, willingness, and attitudes towards technological solutions and affects the use of apps and the adoption of state-of-the-art technology. With the addition of technology and sensors, and the availability of Wi-Fi by the government, citizens tend to become "smart citizens" [7].

One of the primary focuses in urban planning is to improve the efficiency, safety, and comfort of transportation through the digital transformation of technology and management systems [8]. In today's rapidly advancing world, smart mobility services have become an integral part of our daily life routine. These services play a crucial role in ensuring convenience, efficiency, and sustainability in transportation [9]. However, the effectiveness of innovative mobility services depends heavily on the intelligent, citizen-centric approach adopted by governments and service providers. Active involvement of citizens can influence the mobility services, such as infrastructure, technology etc., which makes the smart transportation system successful [10].

The term "smart citizens" has been proposed by scholars to describe citizens who use technology to improve their cities and habitat. However, the lack of citizen involvement results in disappointment, which needs to be addressed [11]. The evolution of smart transportation services has revolutionized the way people move through city areas. This change has been principally driven by technological advancements and a growing need for a sustainable, effective transportation system [12]. The use of technology in smart cities has significantly changed travel behavior in urban mobility. Because of technological advancements, transport services have become increasingly dependent on these models, which are now widespread worldwide [11]. These technology-based transport services continuously need evaluation to meet public transport needs. The use of technology also helps to initiate, control, manage, and plan the

intelligent transport system. A technology-based transport model offers mobility-as-a-service, which is very common nowadays. This includes ride-sharing and ride-hailing services provided by mobility applications such as Uber, Careem, and InDrive [13].

A thorough study is necessary to expedite this study, particularly in the context of Pakistan. While global studies provide a strong base for the smart mobility services and the smart cities' theoretical and methodological foundation [14]. There is a clear gap in the understanding of local urban mobility, accessibility, and travel behavior in Pakistani cities such as Lahore. Existing studies primarily focused on the transport infrastructure issues, public transport challenges, and traffic congestion, with limited consideration of smart mobility apps and citizen-centric adoption of these apps [15]. Evidence has shown that informal public transport in Pakistan fulfills the needs of daily commuters, but it still lacks the safety and service quality issues [16,17]. Lahore BRT and Orange line projects have shown implementation shortfalls, and the limited area of operations makes it difficult for the citizens of Lahore to access the transport, which limits its effectiveness [18]. Lastly, one research link land use to travel behavior in Lahore finds that urban sprawl and infrastructure accessibility make it difficult to commute in Lahore, which is not a citizen-centered mobility solution [19].

This study aims to develop a TAM-based framework to identify key variables affecting technology adoption in Pakistan's transportation sector. By investigating user behavior in Lahore, considering PSR, and habit, the study extends its scale to mobile-based applications for smart city transportation acceptance. This is where the concept of a smart citizen-centric approach comes into play. Perceived usefulness is an individual's belief that a particular technology will help them achieve their goals. In the context of smart mobility services, this could include factors such as convenience, cost-effectiveness, and environmental sustainability. Conversely, perceived ease of use relates to how simple and user-friendly a person believes that a technology is to operate and understand. This could include factors such as user-friendliness, accessibility, and reliability [20].

This research contributes to the existing literature on the adoption of mobility service apps by the citizens of an urban area. For this, the TAM was focused on three parallel dimensions: the use of mobility service apps which help to travel easily; the usage of all

technologies while travelling in private vehicles, such as GPS tracking, Google maps, route information, etc. To apply the TAM model, a questionnaire-based survey was conducted to empirically analyze the use and familiarity with transportation apps among citizens.

2. Technology Acceptance Model

TAM suggests that perceived usefulness and perceived ease of use are the key determinants of user acceptance of technology. These two factors are influenced by external variables such as social influence, facilitating conditions, and personal innovativeness. Also, in recent studies, social influence and habit include the opinions of others and norms that affect an individual's decision to use a technology [21]. Additionally, Perceived Security Risks have been significantly influence the citizen adoption to smart mobility services especially in developing cities [22]. By implementing a smart citizen-centric approach and addressing key factors such as trust, transparency, and user empowerment, urban cities can create a more sustainable and efficient transportation network for all citizens [23].

TAM has gained worldwide importance due to its applicability across diverse cultures and contexts. The model's highlights on user acceptance and attitudes towards technology make it relevant for various users [24]. The Government of Pakistan is focusing on digital transformation, making TAM an essential framework for measuring the success of these initiatives. Mostly, PU and PEU are believed to be the main influencing factors for TAM, which directly influence user acceptance regarding the usage of the technology [25]. It highlights the significance of user-friendly interfaces and intuitive design in driving technology adoption. Whether in high-income countries or emerging markets like South Asia, the TAM has proven an effective tool for understanding technology adoption.

This paper aims to highlight the complex nature of the interactions among technology, citizens, and smart city development. Also, GPS technologies are catalysts for citizen-driven transformation rather than merely instruments. Urban planners, decision-makers, and technology creators can obtain insight into the prerequisites for the effective adoption of GPS-based smart transportation systems through the proposed framework. Although mobility apps are offered to empower citizens in smart city development, technology has enabled governments to collect real-time information from citizens using transport applications daily [25]. The primary concern arises when citizens' opinions are excluded from the

development of technology-oriented solutions, as this conflicts with smart city development concepts [26].

Based on the technology acceptance, smart cities, and citizens literature described above, we proposed a model based on the user intentions to use an application, and also tested it to explain the benefits of digital technology in terms of daily commuters [27], as shown in the Figure. 1 below. There is a need to assess the community's willingness and behavior towards the usage of technological solutions, which is described in Section 3, and incorporate the citizens' smartness into the smart cities [28]. Several case studies and academic publications have shown that the success of technology usage depends on the active participation of citizens [29].

Moreover, based on the TAM framework, here are the research questions we have built:

1. How do PU, PEU, Habit, and PSR influence citizens' intention to adopt smart mobility apps in Lahore?
2. What is the combined effect of key TAM factors on the adoption of smart mobility service apps by citizens in Lahore?
3. In what ways can TAM results improve the design, infrastructure, and effectiveness of smart mobility apps to enhance citizens' satisfaction with urban transport in Lahore?

2.1 Hypothesis

Figure 1 highlights the directional arrows representing the hypothesized relationships among constructs used to develop the TAM framework. The framework provides a base for understanding citizen behaviour in adopting mobile-based smart urban mobility systems.

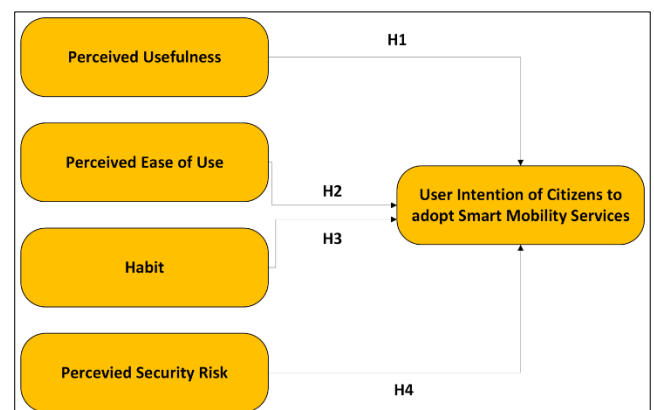


Fig. 1. TAM framework for Understanding Urban Citizen in adopting Smart Mobility Services

H1: Perceived usefulness is positively related to the user intention

H2: Perceived ease of use is positively associated with the user intention

H3: The habit of using urban mobility services is positively associated with the user intention

H4: Perceived security risk is associated with the usage of urban mobility services

3. Methodology

3.1 Study area

Lahore, the capital city of the province of Punjab, is a metropolitan city in Pakistan, as shown in the Figure. 2. The current population of Lahore is approximately 13.5 million. Lahore is a city with a disintegrated transport infrastructure due to urbanization trends seen in the last two decades [30].

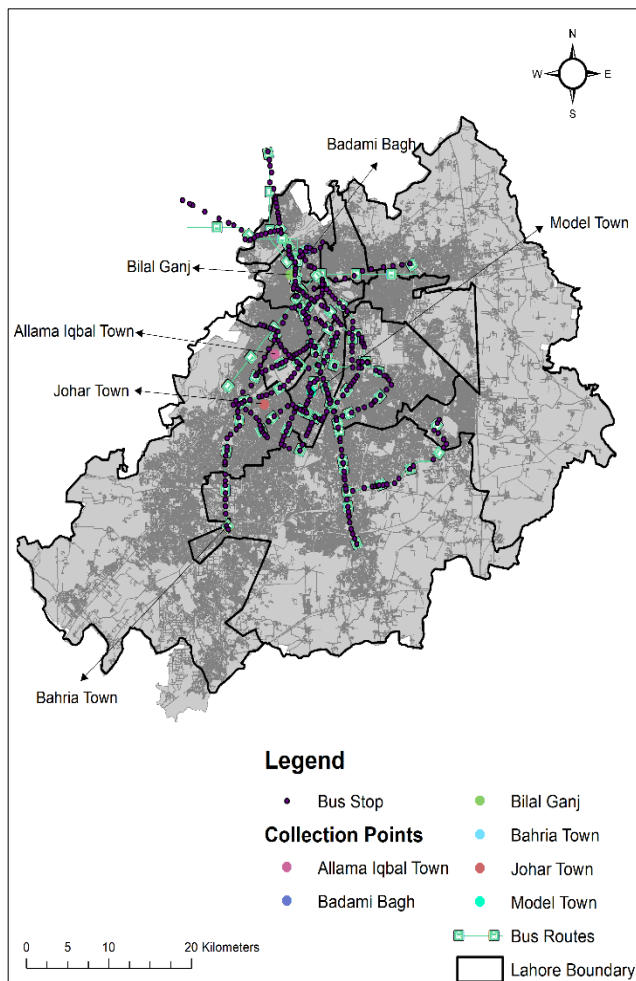


Fig. 2. Study Area Map

To assess this, TAM has been applied in Lahore, using a diverse economic classification to analyze how user behavior changes with the adoption of technology in the transportation sector. Six areas were selected: Model Town and Bahria Town, representing high-income areas; Johar Town and Allama Iqbal Town, representing middle-income areas; and Badami Bagh and Bilal Gunj, representing low-income areas. Considering the socio-economic conditions, study areas were chosen based on the study conducted by the Lahore School of Economics, which considered factors such as poverty, income disparity, and social development [31].

3.2 Sample Selection and Questionnaire

In this research, a stratified sampling approach was used to minimize biasness and ensure equal representation of all economic groups. This approach improves the reliability and validity of results by considering the complexities of Smart Mobility Services [32]. By systematically comparing responses across high-, middle-, and low-income groups, researchers identified key correlations, causal relationships, and patterns that influence the effectiveness of these Smart Mobility Services [33].

Table 1

TAM Constructs Affecting User Adoption of Smart Mobility and Their Definitions

Constructs	Definitions	Measuring Questions for Transport Apps
Perceived Usefulness	It defines a user's perspective on how much a specific technology, service, or other system provides him with maximum benefits [29].	PU1, PU2, PU3, PU4, PU5, PU6, PU7
Perceived Ease of Use	It is about the level of expectation that demands less effort when using that technology. This factor is also influenced by other external variables, such as accessibility, templates, awareness, familiarity with use, and expertise [26].	PEU1, PEU2, PEU3, PEU4
Habit	It is the behaviour that involves intentions to use the system and to repeat it frequently [21]. Habit may be affected by both external and internal factors within the system.	H1, H2, H3, H4
Perceived Security Risk	It indicates that the user can be affected during use by emotions such as anxiety, concern, discomfort, uncertainty, and cognitive dissonance [22].	PSR1, PSR2, PSR3, PSR4, PSR5

User Intention	It is the purpose of using the system or technology for the benefit of the user [29]. This also emphasizes pull factors that attract users to get an advantage.	UI1, UI2, UI3, UI4, UI5
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Five variables are evaluated on a Likert scale (1=strongly disagree to agree 5=strongly agree). The SmartPLS 4 software has been used for applying the TAM model. SmartPLS 4 is based on a graphical user interface to analyze the latent variables using partial least squares with the structural equation modelling method [13]. It is appropriate to analyze technology adoption models, such as TAM, especially when latent variables are involved. Also, it works well with a smaller sample size and a non-normal distribution dataset, making it suitable for examining the adoption of smart mobility apps in Lahore, Pakistan. The association among the variables (PEU, PU, PSR, H, and UI) is determined using TAM, as highlighted in Figure 1. A structural equation model was conducted to perform the loadings, reliability, validity, and hypothesis testing to indicate the relationship between the variables of the proposed model [34]. Moreover, Exogenous variables are those that are not affected by other factors while dependent on each other, such as PU, PEU, PSR, H, and UI, which are endogenous because they depend on the other four variables, as defined in the Table. 1. Also, Table. 1 contains definitions of the study constructs with their measuring items and question codes such as PU1, PU2 etc. Moreover, this study illustrates the smart mobility apps used by citizens in Lahore for travelling from one place to another. They are categorized as Careem, InDrive, and Women Safety App, which provide comfort and safety, as well as quick emergency response times. In contrast, others include Niazi Express, Daewoo, Faysal movers, Roadmasters, Careem, and InDrive, which are considered ride-hailing, Ridesharing, and Private bus services that provide e-ticketing and information. The last category included in the study is Carpooling, which is not as popular right now but is emerging as a ridesharing option.

3.5 Reliability and Validity Analysis

Cronbach's Alpha is a statistical test for the reliability of the variables and their collected data. Its value lies between 0 and 1, and 0.70 is considered satisfactory. Values below 0.6 indicate poor correlation and suggest the data may be coincidental. Also, internal consistency of the variables with TAM is measured based on the composite reliability (CR) and average variance extracted (AVE) [35].

3.6 Discriminant Validity

To evaluate discriminant validity, partial least squares – structural equation modelling (PLS-SEM) was used in SmartPLS 4, a method with high accuracy. In the cross-loading table. 4, a value of 0.7 or above is considered valid [26]. After model validation, structural equation modelling was applied to identify relationships among variables.

4. Results

The gender breakdown for the study is 46% male and 54% female. When examining the age, 78% of the sample size depicts a range from 15 to 25, and 17% for the age of 25 to 35. The transport apps included in the study show that 43% of respondents belong to educational institutes, 46% use these apps to travel from their homes, and 61% of respondents' destination spots are also educational. However, only 23% of respondents use these apps daily, while 18% use them weekly, as shown in the Table. 2. Moreover, private vehicles' travelling pattern shows 57% origin is from their homes while 64% destinations are educational institutes.

Table 2

Demographic Results of Transport Apps

Measure	Variables	Frequency	Percentage
Gender	Male	229.00	46%
	Female	271.00	54%
	Total	500.00	100%
Age	15-25	392.00	78%
	25-35	83.00	17%
	35-45	17.00	3%
	45 and above	8.00	2%
	Total	500.00	100%
Common origin for transport apps	Education	213.00	43%
	Home	229.00	46%
	Shopping	4.00	1%
	Business	8.00	2%
	Work	17.00	3%
	Any other	29.00	6%
	Total	500.00	100%
Common destination for transport apps	Education	304.00	61%
	Home	42.00	8%
	Shopping	21.00	4%
	Business	29.00	6%
	Work	50.00	10%
	Any other	54.00	11%
	Total	500.00	100%
	Daily	117.00	23%

Use	Twice a Week	54.00	11%
transport apps for travel on the basis of	Weekly	92.00	18%
	Monthly	33.00	7%
	Sometimes	204.00	41%
	Total	500.00	100%

The research that led to the conclusions in this section was conducted to better understand how people in Lahore use urban mobility services. The study included 500 volunteers from the upper, lower, and middle classes in an effort to produce findings that would be representative of the city's urban population, as indicated in the socio-economic context of the study [36].

4.1 Structural Equation Modelling

To test the hypothesis developed earlier in this study, structural equation modelling was used using SmartPLS4. All four independent exogenous variables (PU, PEU, H, PSR) and one dependent endogenous variable (UI) were taken together to construct the structural equation model [34]. After establishing the relationships among variables, path analysis is performed to estimate the standardized regression weights between the independent and dependent variables. PU has found a strong, significant relation with user intention for using transport apps ($\beta=0.218$ $p<0.001$), which supports H1. Similarly, PEU also has a strong positive relation ($\beta=0.393$ $p<0.001$), and H has a positive relation ($\beta=0.038$ $p<0.001$), and PSR is ($\beta=0.312$ $p<0.001$); all the standardized regression values are greater than the P-value, that is 0.001. Meanwhile, the figure. 3 below shows that all the exogenous variables undertaken in this model that are revealing 74.7% (R-squared = 0.747) of the user intention to use transport apps.

To measure the item's internal reliability, Cronbach's alpha value is calculated [29]. All values have a greater number of 0.6, which shows a satisfactory indicator of internal consistency in the Table .3 below show all the alpha values in which the user intention (UI) has the highest internal consistency 0.796 followed by the perceived usefulness (PU) has the value of 0.779, perceived security risk (PSR) 0.661, habit (H) 0.654 and perceived ease of use has the alpha value of 0.651. According to research [24] Alpha values below 0.6 are not reliable. On the other hand, composite reliability (CR) is 0.7 or higher for all variables, indicating strong relations among the items.

Table 3

Measure of Reliability Measures

Key of Variables	Factor loadings	Cron bach Alpha val.	CR
	Perceived Usefulness	0.779	0.838
PU1	0.702		
PU2	0.639		
PU3	0.563		
PU4	0.593		
PU5	0.760		
PU6	0.755		
PU7	0.603		
	Perceived Ease of Use	0.779	0.838
PEU1	0.676		
PEU2	0.682		
PEU3	0.689		
PEU4	0.747		
	Habit	0.654	0.796
H1	0.448		
H2	0.853		
H3	0.783		
H4	0.693		
	User Intention	0.796	0.860
UI1	0.713		
UI2	0.652		
UI3	0.764		
UI4	0.818		
UI5	0.757		
	Perceived Security Risk	0.661	0.770
PSR1	0.700		

PSR2	0.777
PSR3	0.615
PSR4	0.697
PSR5	0.631

Table 4

Discriminant Validity Analysis and Correlation Matrix

	AVE	PU	PEU	HABIT	PSR	UI
PU	0.530	1				
PEU	0.589	.692**	1			
HABIT	0.514	.465**	.625**	1		
PSR	0.594	.411**	.370**	.373**	1	
UI	0.505	.737**	.782**	.553**	.420**	1

Source Authors' work

Note: significant at $p < 0.05^{**}$, $p < 0.001^{***}$; N.A not applicable

The variables show a negligible relationship if the values of AVE are between 0.00 and 0.19, weak when they lie between 0.2 and 0.39, show moderately good when they lie between 0.4 and 0.69, and are strongly interconnected when they are 0.7 and above [37]. All variables have AVEs greater than 0.4, indicating good convergent validity. It is also essential to take a closer look at the correlation matrix, which shows the dependence of one variable on another; in other words, it shows how one variable influences another. There is a strong correlation between all the variables. High correlation was found between "H2" User Intention and Perceived Ease of Use and is evident in "H1" User Intention and Perceived Usefulness as well. However, all variables show a positive linear correlation, and the study demonstrates the high validity of the variables.

4.2 Testing of Hypothesis

The study aims to test the hypothesis that smart mobility services in Lahore provide convenience and flexibility to users, allowing them to navigate the city efficiently and effectively, as shown in Table .5. With the integration of advanced technologies such as GPS tracking and real-time monitoring, urban mobility services offer users a sense of security and peace of mind. The applicability of smart mobility services

cannot be denied. Users can plan their journeys hassle-free [37].

Table 5

Hypothesis Testing Results

Hypothesis		Standardized co-efficient	p-value	Result
H1.	PU relation with UI	0.218	<0.001	Accepted
H2.	PEU relation with UI	0.393	<0.001	Accepted
H3.	H relation with UI	0.038	<0.001	Accepted
H4.	PSR relation with UI	0.312	<0.001	Accepted

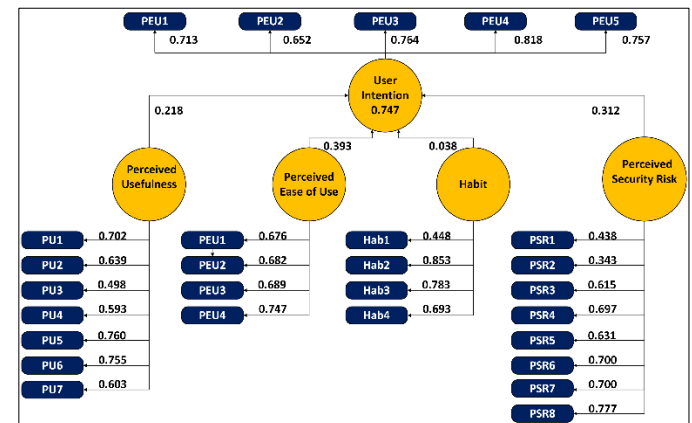


Fig. 3. Pictorial Representation of the Structural Equation Model

After the reliability and validity test, Figure. 3 shows the results from the structural equation modelling, which shows relationships between the variables, factor loadings between variables, path coefficients, and coefficient of determination for each independent variable [38]. The PLS-SEM approach is adopted to define the R2 values for all measurement variables in the proposed model, which is 0.747 (74%), indicating an acceptable level of use of transport apps among society's citizens.

5. Discussion

This research aims to understand the behavior of users influenced in adopting smart urban mobility services. These services transform traditional travel and make it more reliable through technology. Recent literature highlights the importance of these services. The results indicate that user acceptance is significantly affected

by the cost-effectiveness, real-time information and comfort, aligning with previous research [39].

While technological advancements are often connected with resistance, the results support research that citizens are more likely to adopt digital solutions when they are considered to be useful, accessible, and secure [40]. Also, this research considered women's perspectives as well to ensure equal participation from men and women [41]. This participatory approach allows the government to identify issues and improve citizen engagement. Furthermore, another benefit of smart mobility applications is their ability to provide real-time information about public transportation [42]. This transparency enhances trust, user comfort, reduces uncertainty, and advances more sustainable urban transport options [43].

This study aims to contribute to academic researchers as well as decision makers of a city, especially in the case of smart cities, and the role of citizens [44]. By exploring the adoption of urban mobility services in Lahore, Pakistan, the findings offer a valuable perspective on smart city development and user behavior. On the other hand, it is significant to consider the study limitations. While the study acknowledges the fundamental principles of the TAM model, the outcomes may not be directly applied to cities with differing cultural, economic, and infrastructural traits.

Future research should explore how these insights can be applied across different urban contexts, ensuring that digital mobility solutions are inclusive, efficient, and adaptable to evolving urban landscapes.

5.1. Research Contribution and Potential Impact

Local government authorities and policymakers can gain valuable insights from this research and ensure the proper integration of urban mobility services into existing transportation networks. As indicated in the TAM, perceived safety risk is a key factor for users when using mobility services. Hence, safety measures by authorities are necessary to build trust among citizens in public and private transport. The proposed TAM model realizes the importance of attributes such as technology and time for the adoption of urban mobility services. Also, the user perspective, in the context of socio-economic dynamics, can provide insights into gender needs across high-, medium-, and low-income groups for policymakers [45]. Moreover, the proposed TAM model highlights the importance of citizens' data for understanding people's daily urban mobility patterns.

Conclusion

Overall, this study has examined smart urban mobility from a citizen perspective by applying TAM in Lahore to understand how mobile-based apps shape citizen engagement with smart transportation services. The findings highlight that mobile applications are no longer tools; instead, they have become a core interface between citizens and urban mobility systems, enabling real-time information, ticketing and accessibility. These services are directly influenced by the PU and PSR, which, in turn, influence citizens' willingness to adopt and continue using smart mobility solutions. Also, the survey highlights the socio-economic demographics and how these parameters will help in the adoption of the TAM urban mobility model [46].

This research extracted the relevant results for urban mobility services and filled the gap in research by adopting the TAM model for building smart communities. The comfortable environment, both in the virtual and physical environments, also affects users' intentions, and this research has found a positive relationship between PSR and UI. This depicts that technology makes these platforms safer and more secure. Thus, the transport sector and urban planners should focus more on infrastructure and facilities that directly affect perceived usefulness. Also, these app-based mobility services are not integrated with public transport, which is used by the public. Thus, the authorities need to work on an interconnected model that links these private services to public transport to make public transport easier to access. Therefore, developing technology in the context of smart citizens is more important, considering the needs and demands of urban residents.

Lahore, as a dynamic urban center, presents challenges similar to those of other growing cities worldwide. For example, it faces rapid urban growth, traffic congestion, air pollution, and the need for sustainable urban infrastructure. By examining how citizens respond to urban mobility services, we can learn more about local preferences and discover worldwide trends that reflect the diverse demands of urban populations. The research finds that social and cultural factors affect the extent to which people adopt new technology. Moreover, traffic congestion, a lack of a proper transportation network, and limited transportation options are problems many urban cities around the world face. We uncover solutions adaptable to the mobility needs of other metropolises by analyzing how inhabitants respond to urban

mobility services in this setting. Moreover, the study emphasizes how innovative ecosystems and legislative frameworks shape consumer behavior. This knowledge can help city planners and officials in other places design environments that will encourage the use of technology for urban transportation to make citizens smart.

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Appendix

Key of Variables	Statements	References
	PU	
PU1	Apps provide me accurate travel time	[26]
PU2	Apps provide me the shortest and easy-to-use information	[15]
PU3	I find information from these apps help to avoid traffic jams	[26]
PU4	Using technology in transport gives me access to a lot of information. (Real-time information like E-services (e challan), fare, parking availability, route information, time consumptions, location services	[15]
PU5	Technology in the transport sector enables me to travel more effectively	[26]
PU6	Transport apps have improved mobility	[26]
PU7	The advantages of technology in transport outweigh the disadvantages	[26]
	PEU	
PEU1	I feel comfortable while using transport apps services	[1]
PEU2	Transport apps enable me to travel more quickly	[47]
PEU3	Learning would be easy of these transport mobility apps	[15]

PEU4	Selection of transport mode has been improved by these apps	[15]
	Habit	
H1	I frequently make my trips using transportation	[21]
H2	I use these transport mobility apps because travelling by these apps is more comfortable	[15]
H3	The usage of transport apps is become habit for me	[21]
H4	I am accustomed to use transport apps	[21]
	UI	
UI1	Technology apps in daily life save my time	[26]
UI2	Transport technology gives me greater control while travelling on public/private mode	[15]
UI3	Using apps for travel is a useful idea	[26]
UI4	The willingness of usage in the future of apps	[28]
UI5	I think positively about using apps for travelling	[26]
	PSR	
PSR1	I faced harassment or bullying while travelling by the service provider (driver)	[15]
PSR2	These issues were investigated by the service provider	[26]
PSR3	The behavior of app drivers is very professional	[15]
PSR4	I always feel safe while Riding with unfamiliar drivers	[22]
PSR5	Trust on the driver	[48]