

# **Understanding Ride-Sharing Behavior in Jordan's Regulatory Gray Zone**

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## **Abstract**

Ride-sharing systems offer a promising approach to addressing urban transportation challenges. They can help reduce traffic congestion, emissions, while optimizing vehicle utilization by shifting transportation from ownership models to an efficient service based system. By optimizing seat utilization and coordinating shared journeys, ride-sharing can reduce the pressure on public transportation, while offering convenient, cost-effective mobility for urban residents. Yet in many developing contexts, these platforms operate in a regulatory gray zone, raising questions about trust, risk, and adoption. This study investigates the ride-sharing adoption in Jordan's gray regulatory zone; a unique context where high user engagement exists despite a lack of formal legal authorization. Survey data from 306 users were analyzed using structural equation modeling. The results identify infrastructural quality as the primary predictor of perceived usefulness, while trust acted as alternative for formal regulations. In addition, safety concerns did not hinder behavioral intentions, showing that platform-mediated features like GPS tracking successfully mitigate perceived regulatory risks. These findings indicate that in regulatory gray zones, technical reliability and platform-mediated trust replace formal regulation, offering critical insight for policymakers and service providers.

Keywords: Ride Sharing; TAM model; Regulatory Gray Zones

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## **Introduction**

Jordan's ride-based mobility market demonstrates a dual structure. On one hand, traditional ride-hailing platforms including Uber, Careem, and Taxi-F operate with government authorization, providing on-demand transportation where individual passengers book professional drivers for rides. On the other hand, a parallel ecosystem of ride-sharing platforms has emerged, enabling multiple passengers to coordinate shared trips and split costs by matching strangers traveling similar routes. Unlike the authorized ride-hailing services, these ride-sharing platforms operate without official government approval, existing in what regulatory scholars term a "regulatory gray zone" services that function openly but lack formal legal authorization [1]. Regulatory gray zones create unique competitive dynamics [2]. Unauthorized ride-sharing platforms may achieve competitive advantages through regulatory arbitrage by operating without compliance costs incurred by authorized competitors like Uber [3].

This regulatory division creates a unique research context. While ride-hailing services benefit from regulatory clarity and consumer protection frameworks, ride sharing platforms operate under regulatory uncertainty. Users who adopt these platforms do so knowing services lack official authorization, potentially affecting their trust perceptions, risk assessments, and adoption decisions differently than in contexts where services operate within established legal frameworks. This situation is not unique to Jordan; many developing markets experience similar regulatory lags where technological innovation surpasses regulatory development [4, 5].

Understanding ride-sharing in Jordan's context addresses theoretical and practical questions related to social behavior, safety, and urban mobility[6]. Ride-sharing represents a unique socio-economic and technological model requiring user to balance between a trade-off between economic benefits such as cost savings, improved transportation affordability [7], and social factors such as comfort, trust, culture norms [8], safety concerns such as passengers and driver behavior, personal security with strangers [9], and usability challenges such as coordination complexity, flexibility in scheduling [10].

Although these platforms offer critical transit solutions, the lack of formal government authorization creates a significant gap in the literature. While the Technology Acceptance Model (TAM) is used to explain adoption, there is a limited understanding of how users navigate services that lack official legal standing. This research addresses this socio-legal tension by investigating the drivers of behavioral intention within an unregulated environment. Using an extended TAM framework, this study aims to examine whether trust-based legitimacy mechanisms can substitute for formal regulatory approval in driving technology adoption. Specifically, we test whether Trust, Infrastructure Quality, Safety Concerns, and Social Norms predict behavioral intention beyond traditional TAM variables (Perceived Usefulness and Ease of Use), thereby extending TAM theory to regulatory gray zone contexts. The remainder of this paper is structured as follows: Section 2 reviews the relevant literature. Section 3 outlines the Theoretical Foundation and Research Hypotheses. Section 4 presents the results of structural model analysis, and Section 5 concludes with a discussion of the findings, theoretical implications, and policy recommendation.

## Literature Review

The concept of ride-sharing has experienced a significant paradigm shift, evolving from localized social arrangements to globalized digital economy. Historically, ride sharing was traditionally constrained by high transaction cost and social barriers; typically restricted to family members, close friends, or long-distance journeys scheduled well in advance. However, the convergence of mobile computing, real-time Global Positioning Systems (GPS), and secure digital payment gateways, and online reputation systems have made on-demand short distance ride-sharing among strangers viable [11]. This technological transformation has disrupted traditional transportation markets worldwide, yet the regulatory response has varied dramatically across countries creating uncertainty about how users evaluate and adopt these platforms in different institutional contexts.

The literature identifies three primary regulatory strategies for ride-sharing platforms: self-regulation, market-based regulation, and government regulation [12]. Establishing markets have responded by creating new “transportation network companies” regulatory categories, with approaches ranging from full integration to outright restriction [13, 14]. Studies examining Canadian jurisdictions, EU27 and UK frameworks, China’s approach, and comparisons between Sao Paulo and Rio de Janeiro all analyze how platforms operate under regulation, not whether adoption occurs without it [12]. This regulatory focus reveals a critical theoretical gap; existing research implicitly assumes that some form of institutional framework governs platform operations, whether strong or weak. Yet this assumption may not hold in regulatory gray zones where platforms operate entirely without government authorization. When formal regulatory legitimacy is absent, the mechanisms driving user adoption remain poorly understood, as established regulations often fail to address identified public concerns in practice, suggesting that regulatory frameworks remain underdeveloped relative to service complexity [15].

Research on ride-sharing adoption in developing countries reveals that socio-economic factors play crucial roles beyond technological considerations. In Ghana, factors such as regulatory frameworks, culture norms, income levels, and digital infrastructure significantly influence behavioral intention, which in turn affects actual usage [16]. Generally, developing countries face distinct barriers including a lack of trust, cultural norms regarding ownership, inadequate technology, insufficient electronic payment systems, and inappropriate regulations [17]. However, these studies examine contexts where regulatory frameworks exist but are weak, underdeveloped and poorly enforced. Jordan’s ride sharing environment exemplifies this distinction: platforms maintain a high level of user engagement despite operating without legal approval where institutional regulatory framework exists.

Various researches have employed the Technology Acceptance Model (TAM) as the primary theoretical framework for understanding ride-sharing adoption. Pandita et. al., (2023) made a significant theoretical contribution by integrating TAM with the Expectancy confirmation Model (ECM), extending it with consumer trust and social norms. While this specific integration offered a deeper understanding of continuance intention, it also produced results where perceived ease of use was insignificant, thereby challenging core TAM assumptions [18]. Raza et al., (2021) have incorporated environmental triggers including environmental concerns, knowledge, and awareness alongside perceived risk as a moderating variable [19]. However, these extensions reveal critical limitations; they assume platforms operate within established institutional environments where regulatory legitimacy provides a foundational layer of trust. When this assumption is violated as in regulatory gray zones the determinants of adoption may shift dramatically, requiring theoretical extensions beyond traditional TAM constructs.

This study addresses a critical gap by exploring ride-sharing within gray regulatory zones, where platforms maintain high levels of user engagement despite operating in a legal environment. While existing literature identifies regulatory uncertainty as a barrier in developing countries, limited research investigates how users overcome the complete absence of institutional regulation. This study examines how Jordanians adopt ride-sharing platforms when formal regulatory legitimacy is entirely absent, extending Technology Acceptance Model (TAM) to include Trust, Infrastructure Quality, Safety, and Social Norms as potential regulatory substitutes. We propose that in regulatory gray zones platform-mediated reliability (Infrastructure Quality), informal legitimacy (Trust) and validation (Social Norms) as substitutes for official government approval. By testing these mechanisms

alongside traditional TAM construct (Perceived Usefulness and Ease of Use), this study demonstrates how informal legitimacy sources can outweigh perceived risks of using unauthorized services adding an important theoretical dimension to TAM. This contribution is relevant for understanding technology adoption in emerging markets where institutional frameworks lag technological innovation.

## Theoretical Foundation and Research Hypotheses

This study employed quantitative survey design to investigate the determinants of ride-sharing app adoption within the unique regulatory context of Jordan, where these platforms operate within a “regulatory gray zone” (lacking formal government approval). Data collection was conducted via a structured online questionnaire. Out of the initial responses gathered, one incomplete entry was excluded, resulting in a final sample of N=306 valid responses. This sample size exceeds the minimum requirements for robust statistical analysis in structural equation modeling (SEM) or path analysis commonly associated with TAM frameworks.

The demographic composition of the study’s participants aligns with the “early adopter” profile typically observed in mobile technology research within emerging markets. The gender distribution was relatively balanced, comprising 54% male and 44% female respondents. The sample was predominantly youth-driven, with 66% of participants aged between 18 and 34, representing the most tech-savvy segment of the Jordanian population.

This study extends the Technology acceptance model (TAM) to regulatory gray zone contexts by integrating constructs that substitute for formal regulatory legitimacy. We define our core constructs as follows: Trust involves the user's willingness to depend on platforms despite uncertainty [20]. Infrastructure Quality reflects the perceived reliability of technical systems including GPS, payment, and driver availability [21]. Social Norms represent peer influence and social validations [22]. Safety concerns capture perceptions of physical and data security risks [23]. Perceived usefulness (PU) measures beliefs that ride sharing enhance transportation [24]. Perceived Ease of Use (PEOU) examines interface simplicity [25], and Behavioral Intention (BI) represents willingness to use the service [26].

In the absence of formal legal protections, trust, social validation, safety, and infrastructure quality function as regulatory substitutes. Trust services as a proxy for government certification enabling users to perceive platforms as legitimate despite regulatory absence. Simultaneously, social norms act as a powerful motivator in Jordan’s collectivist culture, where peer recommendations can mitigate the perceived risks of using non-government approved services. Furthermore, infrastructure quality both digital and physical and safety concerns directly address the practical anxieties of using an informal transport sector. Based on this rationale, we propose:

Regulatory Substitute Hypothesis:

- H1: Trust positively affects Perceived Usefulness.
- H2: Trust positively affects Behavioral Intention.
- H3: Safety Concerns negatively affect Behavioral Intention.
- H4: Social Norms positively affect Behavioral Intention.
- H5: Infrastructure Quality positively affects Perceived Usefulness.
- H6: Infrastructure Quality positively affects Behavioral Intention.

The second group of hypotheses examines the classic TAM relationships, which remain the cognitive engine of the model. Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) measure the fundamental trade-off between the efforts required to use the app and the utility gained. In the context of Jordan’s high smartphone penetration, the simplicity of the interface (PEOU) is expected to not only drive intention directly but also enhance the perceived value (PU) of the service and adoption intention (BI). Core TAM Hypotheses:

- H7: Perceived Ease of Use positively affects Perceived Usefulness.
- H8: Perceived Ease of Use positively affects Behavioral Intention.
- H9: Perceived Usefulness positively affects Behavioral Intention.

## Data Analysis

The analysis was conducted in three sequential stages to ensure the robustness and validity of the findings. All statistical procedures were performed using standardized variables to allow for the comparison of effect size across different structures.

Descriptive statistics for all study variables are presented in Table 1. Mean scores indicate that respondent perceived ride-sharing apps as easy to use (PEOU: M=3.90, SD=0.96) and useful (PU: M=3.67, SD=0.97), with moderate behavioral intention to adopt (BI: M=3.57, SD=0.98). While Safety concerns were comparatively low

(M=2.50, SD=0.99, reverse-coded), Trust levels were moderate (M=3.42, SD =0.83). Infrastructure quality was favorable (M=3.81, SD=0.85), and social norms had moderate impact (M=3.44, SD=0.75).

Table 1: Descriptive Statistics.

Construct	Mean	S.Deviation
PEOU	3.9	0.96
PU	3.7	0.97
BI	3.6	0.98
Safety	3.4	0.99
Trust	3.4	0.83
Infrastructure Quality	2.5	0.85
Social norms	3.8	0.75

### Stage 1: Measurement Model Validation

Prior to examining the structural relationships, the measurement properties of the research scales were evaluated to ensure the integrity of the data. The assessment followed a two-step process focusing on both reliability and validity. First, internal consistency was confirmed through the calculation of Cronbach’s Alpha and Composite Reliability (CR), where all constructs met the established target threshold of >0.7 indicating high scale reliability across all measures as shown in Table 2.

Second, the validity of the measurement model was examined using convergent and discriminant assessments. Convergent validity was verified using the Average Variance Extracted (AVE), with results ensuring that all constructs capture more than 50% of the variance in their respective indicators (AVE>0.5), with the exception of Social Norms (SN), however, the lower AVE can be considered acceptable due to its robust reliability and alpha rating.

Table 2: Measurement model assessment.

Construct	Item	Cronbach α	CR	AVE
Trust	5	0.792	0.861	0.533
Social norms	5	0.616	0.77	0.401
Safety	4	0.630	0.844	0.73
Infrastructure Quality	5	0.869	0.903	0.607
PEOU	3	0.780	0.901	0.820
PU	3	0.824	0.895	0.740
BI	3	0.625	0.843	0.728

### Stage 2: Discriminant Validity Assessment

To determine discriminant validity for the measurement model, three specific criteria were evaluated: the Fornell-Lacker criterion, cross-loadings analysis, and Variance Inflation Factor (VIF) assessment. The Fornell-Lacker requirement was satisfied as square root of (AVE) for each construct (diagonal values) exceeded all the corresponding inter-construct correlations as shown in Table 3. Then, cross-loadings analysis was performed to ensure that survey questions matched its specific category. The results confirmed that all measurement items linked strongly to its intended topic rather than others. Finally, a collinearity assessment was conducted to check for overlap between the different factors. The results show that all scores were below the limit of 5.0.

Table 3: Correlations and for discriminant validity.

	Trust	Social norms	Safety	Infrastructure Quality	PEOU	PU	BI
Trust	0.744	0.583	-0.32	0.699	0.564	0.697	0.704
Social norms		0.633	-0.584	0.689	0.584	0.642	0.662

Safety	0.855	-0.459	-0.398	-0.411	-0.375
Infrastructure Quality		0.779	0.783	0.788	0.756
PEOU			0.906	0.725	0.699
PU				0.861	0.747
BI					0.853

### Stage 3: Hypothesis Testing

Table 4 summarized the results of the structural model analysis used to test the nine proposed hypotheses. The path coefficient ( $\beta$ ) represents the strength and direction of the relationship between variables, where higher positive value indicates a stronger impact. The P-value indicates statistical significance, where in this study, values below 0.05 are considered significant, meaning the relationship is unlikely to have occurred by chance. A result of “supported” signifies that the data statistically confirms the hypothesized relationship, whereas “Not Supported” indicates the relationship was too weak or statistically insignificant to be validated.

The analysis confirms that Trust significantly enhances both Perceived Usefulness (PU) ( $\beta=0.29$ ,  $P<.001$ ) and Behavioral Intention (BI) ( $\beta=0.244$ ,  $P<.001$ ), supporting H1 and H2. Trust emerged as the most significant direct indicator to adoption intention. While Safety Concerns (H3) did not significantly impact intention ( $\beta=0.05$ ,  $P=0.214$ ), Social Norms (H4) showed a positive influence on BI ( $\beta=0.187$ ,  $P<.001$ ). Infrastructural Quality emerged as a powerful driver, supporting H5 and H6 with strong effect on PU ( $\beta=0.4$ ,  $P<.001$ ) and BI ( $\beta=0.24$ ,  $P<.001$ ). Finally, the core TAM pathways were validated, as Perceived Ease of Use (PEOU) significantly influenced both PU ( $\beta=0.249$ ,  $P<.001$ ) supporting H7, but its direct effect on BI was not significant ( $\beta=0.095$ ,  $P=0.083$ ) leaving H8 not supported. However, Perceived Usefulness maintained a significant positive effect on intention ( $\beta=0.220$ ,  $P< 0.01$ ) supporting H9 and confirming the robustness of the model in Jordanian context.

Table 4: Structural model results and hypothesis testing.

H	Hypothesis	Path Coefficient	P-value	t-value	Result
H1	Trust → PU	0.290	<.001	6.786	Supported
H2	Trust → BI	0.244	<.001	5.096	Supported
H3	Safety → BI	0.050	.214	1.245	Not Supported
H4	Social Norms → BI	0.187	<.001	3.663	Supported
H5	Infrastructural Quality → PU	0.400	<.001	7.038	Supported
H6	Infrastructural Quality → BI	0.240	<.001	3.652	Supported
H7	PEOU → PU	0.249	<.001	4.864	Supported
H8	PEOU → BI	0.095	.083	1.740	Not Supported
H9	PU → BI	0.220	<.001	3.697	Supported

### Discussion and Conclusion

The results provide a strong validation for the extended Technology Acceptance Model (TAM), with seven out of nine hypotheses achieving statistical significance ( $P<.001$ ). Trust ( $\beta=0.249$ ) is a key factor in behavioral intention, indicating that in Jordan’s unregulated market, users rely on platform integrity as a replacement for formal government guarantees. Infrastructure Quality was shown to be the best predictor of Perceive Usefulness ( $\beta=0.33$ ), suggesting a performance of technological reliability and accessibility above traditional utility in this context.

These findings directly address our research objectives of examining how ride-sharing occurs in regulatory gray zones where formal government approval is absent. Our results demonstrated that trust-based legitimacy mechanisms, infrastructure quality perceptions, and social norms function as regulatory substitutes, supporting our proposition that informal legitimacy sources can compensate for institutional approval, with Trust emerging as the primary driver beyond traditional TAM variables. The study achieved its aim of identifying which factors enable adoption when institutional legitimacy is absent, validating our extended TAM framework for regulatory gray zone contexts.

The core TAM pathways are robust, though Perceived Ease of Use ( $\beta=0.244$ ) exerted a stronger direct impact on Perceived Usefulness than its marginal direct effect on intention ( $\beta=0.095$ ). This pattern suggests PEOU influences adoption primarily through PU rather than directly, as mobile app ease has become a baseline expectation in Jordan's high smartphone penetration environment.

The rejection of H3 (Safety  $\rightarrow$  BI) results in a "Safety Paradox". Despite the lack of official authorization, safety concerns did not inhibit adoption ( $\beta=0.050$ ,  $P=0.214$ ), potentially because users consider digital capabilities like GPS tracking to be preferable to traditional taxi services, or because convenience benefits outweigh perceived risks. An alternative explanation is that users resolve safety through trust; those who trust platforms assume adequate safety, making explicit safety evaluations redundant. Social norms also significantly influenced adoption ( $\beta=0.187$ ,  $P<0.001$ ), confirming that peer validation substitutes for regulatory approval in collectivist cultures.

In conclusion, this study demonstrates that in "Gray regulatory zones", adoption is driven by digital infrastructure, ease of use, and platform mediated trust. For service providers, the results indicate that technological reliability is more effective for market penetration than safety related marketing. Additionally, the significant influence of payment options highlights the necessity of integrating local digital wallets to target the young, tech-savvy demographic that dominates the Jordanian market.

For policymakers, the findings provide valuable insight: the Jordanian public has already self-regulated its adoption of ride-sharing based on the perceived reliability of the technology. The lack of impact from safety concerns suggests that a transition toward formal legalization would likely be met with high public compliance, provided that the digital benefits of the current informal systems are preserved in the new regulatory framework.

Future research will integrate predictive analytic and machine learning to expand upon these behavioral findings. By utilizing factors such as trust and infrastructure quality, these models can predict user adoption with higher precision.

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