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The Impact of Microinsurance on Low-Income Vehicle Users in Bangladesh

Abstract

This study examines the determinants of microinsurance adoption among low-income vehicle operators in Bangladesh. Using a structured survey (n = 400), the analysis combines descriptive statistics, distribution diagnostics (skewness and kurtosis), reliability testing of an adoption-readiness index (Cronbach's α), Chi-square tests, Spearman rank correlations, a logistic model of willingness to pay (WTP), and a linear model of perceived financial security. The adoption-readiness index demonstrates excellent internal consistency ($\alpha = 0.954$; 95% CI [0.940, 0.969]). Education is strongly associated with insurance awareness ($\chi^2 = 102.66$, df = 2, $p < .001$), and monthly income is significantly associated with interest in microinsurance ($\chi^2 = 36.27$, df = 6, $p < .001$). Spearman correlations reveal Education–Income $\rho = .683$, Education–Awareness $\rho = .331$, Income–WTP $\rho = .238$, and Interest–WTP $\rho = .991$ (all $p < .001$). In the logistic model, age negatively predicts WTP ($B = -2.220$, OR = 0.109, $p < .001$), while education and income show positive but non-significant effects (McFadden pseudo-$R^2 = .180$). A linear model indicates that awareness, affordability, accessibility, and trust jointly explain approximately 62% of the variance in perceived financial security ($R^2 = .62$). Findings provide actionable guidance on awareness campaigns, premium pricing cadence, and claims simplification.

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1. Introduction

Households with low and irregular incomes face persistent financial fragility in emerging economies such as Bangladesh. For a sizeable segment of the working class, livelihoods depend on small-vehicle transport—rickshaws, motorbikes, and compressed natural gas (CNG) auto-rickshaws—where earnings fluctuate daily with weather, health, traffic conditions, and passenger availability. Shocks such as accidents, illness, theft, or vehicle damage can instantly deplete scarce savings, forcing households into debt and prolonged hardship. Conventional insurance products rarely meet the needs of this demographic: premiums are high relative to income, documentation requirements are onerous, product terms are difficult to comprehend, and claims procedures are perceived as opaque. As a result, low-income vehicle users remain exposed to substantial, unhedged financial risks that undermine consumption smoothing, investment, and long-run welfare.

Microinsurance has emerged as a practical response to this protection gap. Tailored

to low-income clients, it prioritises small, predictable premiums, clearly defined benefits, straightforward enrolment, and rapid claims settlement. Typical packages cover accidents, hospital cash, funeral expenses, and small asset repairs—risks that map closely to transport workers' daily realities. In Bangladesh, where approximately two-fifths of the labour force is employed in the informal sector, microinsurance is widely viewed as a tool for advancing financial inclusion and poverty reduction. Despite clear potential benefits, uptake among vehicle-dependent workers remains limited, raising important questions regarding awareness of insurance concepts, product accessibility, provider credibility, and the extent to which coverage improves perceived financial security.

Although microinsurance has been widely studied in low-income settings, informal transport workers in Bangladesh remain underexamined as a distinct occupational category. Most existing studies treat low-income households as a broad category and pay insufficient attention to the specific risk profile of vehicle-dependent workers, whose earnings are daily, physically contingent, and highly vulnerable to accidents, illness, and vehicle downtime. In addition, evidence remains limited on how awareness, affordability, accessibility, and trust jointly shape adoption decisions and perceived financial security for this population. This study addresses that gap by providing occupation-specific evidence from 400 low-income vehicle operators in Bangladesh and analyzing awareness, interest, willingness to pay, and perceived financial security within a single empirical framework.

Several methodological limitations should be acknowledged at the outset. Fieldwork is concentrated in specific regions and may not fully represent all vehicle users nationwide. The sample size is shaped by academic timelines and resources. Primary data are self-reported and may be affected by recall bias or social desirability effects. Some respondents' limited familiarity with insurance concepts may influence response accuracy, and comprehensive national-level secondary data are scarce. The academic timeframe also restricts long-term outcome tracking. These considerations do not diminish the analytical value but frame the appropriate interpretation of findings.

Against this backdrop, the study aims to examine the determinants of microinsurance adoption and its association with perceived financial security among low-income vehicle users in Bangladesh. Specifically, the study assesses awareness and understanding of microinsurance, identifies key determinants of participation—particularly affordability, accessibility, and trust—examines willingness to pay for coverage, and develops policy and programmatic recommendations to improve outreach and effectiveness.

Aligned with these aims, the analysis addresses four research questions:

(i) Is education significantly associated with awareness of insurance among low-income vehicle operators?

(ii) Is monthly income significantly associated with interest in microinsurance?

(iii) To what extent are education and income correlated, and how do they influence willingness to pay?

(iv) Which socioeconomic factors—education, income, awareness, and age—significantly predict willingness to pay?

2. Literature Review

2.1 Conceptualisation and Core Mechanisms of Microinsurance

Microinsurance refers to insurance products deliberately adapted to the realities of low-income households, providing narrowly defined, high-salience protection—covering illness, accidents, disability, death, and small asset losses—for predictable, affordable premiums (Churchill & Matul, 2012). Unlike conventional insurance, delivery typically relies on non-traditional channels—microfinance institutions (MFIs), cooperatives, NGOs, employer networks, and increasingly digital platforms—to lower transaction costs and extend reach (Churchill & Matul, 2012). When the product–client fit is appropriate, evidence indicates that microinsurance can expand access to essential services, reduce catastrophic out-of-pocket health spending, and extend risk pooling to populations historically excluded from mainstream markets (Churchill & Matul, 2012; Roth, McCord, & Liber, 2007).

2.2 Demand-Side Frictions: Awareness, Liquidity, and Trust

Adoption in low-income settings is shaped by three primary demand-side frictions: awareness, liquidity, and trust. Many prospective policyholders are unfamiliar with coverage triggers, exclusions, waiting periods, or proof-of-loss requirements, and some conflate insurance with savings—misunderstandings that depress willingness to pay (Matul, Dalal, De Bock, & Gelade, 2013). Even small premiums can represent a salient financial burden when income is thin and irregular, making the timing of payments as important as the premium level itself (Churchill & Matul, 2012). Perceived value depends critically on the credibility and speed of claims settlement; delayed or disputed claims can sour entire peer networks and suppress uptake beyond directly affected clients (Cole, Giné, Tobacman, Topalova, & Zinman, 2013; Matul et al., 2013).

2.3 Supply-Side Design Levers

The literature consistently highlights several supply-side design strategies to address demand-side frictions: (i) cash-flow-matched pricing through weekly or bi-weekly premium collection; (ii) distribution through trusted intermediaries such as MFIs, worker associations, or employers; and (iii) streamlined, transparent claims processes that demonstrate value promptly after shocks (Churchill & Matul, 2012; Matul et al., 2013). For transport workers specifically, products that bundle accident coverage, hospital cash, short-term disability benefits, and small vehicle-repair cover closely match their lived risk profile and are supported by comparative programme reviews (Dercon, De Weerdt, Bold, & Pankhurst, 2014).

2.4 Evolution of Microinsurance in Bangladesh

Bangladesh's microinsurance landscape emerged from its pioneering microfinance movement and has diversified substantially over time. Institutions such as BRAC, Grameen, and Delta Life Insurance began with credit-linked life coverage in the 1980s–1990s, progressively extending to health, livestock, crop, accident, and asset products (Churchill & Matul, 2012; Roth, McCord, & Liber, 2007). Despite this diversification, sector assessments consistently describe low penetration—often reported below 10% of potential

clients—attributed to low public awareness, limited understanding of insurance concepts, mistrust of providers, and product–market mismatches (Asian Development Bank [ADB], n.d.; Matul et al., 2013).

2.5 Risk Profile of Low-Income Vehicle Users

Low-income vehicle users in Bangladesh—including rickshaw pullers, CNG and auto-rickshaw drivers, ride-share motorcyclists, and delivery riders—face a distinctive constellation of occupational hazards and cash-flow risks. These workers encounter frequent road accidents, theft, traffic-related injuries, and health problems linked to long hours in congested, polluted environments (Bangladesh Institute of Labour Studies [BILS], 2019). Because earnings depend directly on physical capacity and vehicle operability, even brief incapacity or a minor mechanical failure can halt income entirely. With limited savings and few alternatives, many rely on high-interest loans or asset sales to cope with shocks (BILS, 2019). This combination of hazard exposure, income volatility, and asset fragility strongly supports the case for targeted accident, hospital cash, disability, and vehicle-repair coverage.

2.6 International Evidence and Design Lessons

Comparative evidence from South Asia underlines two design lessons particularly relevant to transport workers. First, premium schedules aligned to daily or weekly earnings increase enrolment and reduce policy lapses in informal occupations (Churchill & Matul, 2012). Second, fast and predictable claims settlement sustains trust and demonstrates value after shocks; microinsurance programmes targeting auto-rickshaw drivers in India showed quicker work resumption and lower reliance on costly loans when claims were settled promptly (Matul et al., 2013). More broadly, credible risk-transfer instruments support productive investment and economic resilience (Giné & Yang, 2009).

2.7 Persistent Barriers to Uptake

Despite these insights, several barriers continue to suppress microinsurance uptake in Bangladesh. Persistent constraints include limited awareness, affordability pressures linked to unstable income, mistrust arising from opaque terms or delayed settlements, and product mismatches such as the lack of income-replacement or vehicle-downtime coverage (Matul et al., 2013; BILS, 2019; Swisscontact/BMMDP, 2022). Behavioural factors, including present bias and loss aversion, further increase price sensitivity among poorer households (Cole et al., 2013).

2.8 Research Gaps and Study Positioning

Three critical evidence gaps in the Bangladeshi literature motivate the present study's focus on vehicle-dependent workers. First, occupational specificity is underanalysed: most studies treat low-income households as a homogeneous category and overlook the distinct shock profile of transport workers. Second, quantitative impact measurement is scarce, with few studies tracking earnings stability, workdays lost, asset retention, or recovery speed following microinsurance adoption. Third, product suitability is rarely audited against actual livelihood risks, and behavioural and

perceptual drivers of adoption—including trust, perceived value, and willingness to pay—remain undermeasured for this occupational group (Matul et al., 2013; BILS, 2019). Addressing these gaps is essential, as transport workers represent a high-risk, high-vulnerability segment that could benefit disproportionately from well-designed and well-delivered microinsurance (ADB, n.d.; Matul et al., 2013). Overall, the literature highlights awareness, affordability, and trust as key determinants of microinsurance adoption; however, informal transport workers have received limited attention. This study addresses this gap using primary data from Bangladesh.

Taken together, the literature suggests that microinsurance adoption among low-income transport workers is shaped by both socioeconomic and programmatic factors. Education and income influence awareness, comprehension, and payment capacity, while awareness and trust affect perceived value and willingness to participate. At the same time, affordability and accessibility shape the practical feasibility of enrolment and continued participation. These insights provide the basis for the present study's empirical focus on education, income, awareness, affordability, accessibility, and trust as key factors associated with microinsurance adoption and perceived financial security among low-income vehicle users in Bangladesh.

3. Theoretical Framework

This study is guided by five complementary theoretical perspectives that explain the economic, social, and behavioral dimensions of microinsurance adoption.

Expected Utility Theory posits that individuals make decisions by evaluating the probable outcomes of uncertain events. Vehicle users facing elevated accident risk and financial loss should rationally value microinsurance as a means of reducing uncertainty. However, limited income and low financial literacy may cause decisions to deviate from strict rational-actor predictions.

Risk Pooling and Risk-Sharing Theory explains the foundational logic of insurance: by aggregating risk across many participants, microinsurance enables low-income populations to collectively absorb the financial impact of adverse events. This perspective emphasises the importance of broad-based participation, affordability, and product accessibility in sustaining effective risk pools.

Financial Inclusion Theory prioritises access to formal financial services for underserved populations. Microinsurance is a core financial-inclusion instrument that incorporates marginalised groups—including rickshaw pullers, motorcycle riders, and delivery drivers—into the formal financial system, with downstream effects on poverty reduction and economic resilience.

The Social Protection Framework emphasises vulnerability reduction and resilience enhancement for disadvantaged populations. Microinsurance, as a market-oriented complement to state-provided social protection, shields households from descending further into poverty during catastrophic events. For low-income vehicle users, it serves simultaneously as a financial instrument and a livelihood safeguard.

Behavioural Economics highlights that individual choices are shaped by psychological factors, including trust, risk

perception, and short-term cognitive biases. Many low-income vehicle users exhibit low awareness of insurance mechanisms, scepticism toward insurance companies, and a preference for immediate earnings over deferred long-term protection. These behavioural tendencies create adoption barriers that cannot be addressed through pricing or product design alone, and necessitate targeted communication and trust-building strategies.

Taken together, these theories guide the study's empirical focus. Expected Utility Theory and Risk Pooling Theory explain interest in insurance under conditions of uncertainty, while Financial Inclusion Theory and the Social Protection Framework clarify why affordability and accessibility matter for participation among vulnerable groups. Behavioural Economics further explains how awareness and trust influence willingness to pay and adoption decisions.

4. Data and Methods

4.1 Research Design and Sampling

This study employed a quantitative, cross-sectional survey design. A structured questionnaire was administered to 400 low-income vehicle operators in Dhaka city, Bangladesh, including rickshaw pullers, van drivers, CNG auto-rickshaw drivers, and motorcycle users engaged in income-generating activities. These occupational groups were selected because they are highly vulnerable to accidents, vehicle damage, and health-related expenses, yet remain largely excluded from formal financial protection mechanisms (Churchill & Matul, 2012). A purposive sampling technique was used to recruit economically vulnerable vehicle operators from informal transport hubs across Dhaka city. Although the study focused primarily on lower-income workers, the final sample included a small number of respondents earning above 20,000 Taka per month, reflecting income variation within the target population. The questionnaire covered demographic characteristics, socioeconomic characteristics, and insurance-related variables, including awareness, current insurance ownership, interest in microinsurance, willingness to pay, and desired protection types. Predominantly closed-ended and multiple-choice questions were used to facilitate standardized coding and statistical analysis (Bryman, 2016).

4.2 Conceptual Framework

The conceptual framework proposes that education, income, awareness, affordability, accessibility, and trust shape microinsurance adoption readiness and perceived financial security among low-income vehicle users. Education and income are expected to influence awareness, comprehension, and willingness to pay, while awareness and trust are expected to affect adoption decisions by reducing uncertainty and increasing perceived product credibility. Affordability and accessibility are also expected to influence participation and perceived financial security by shaping the practical feasibility of enrolment and continued use. In this framework, adoption readiness is operationalised through interest in microinsurance and willingness to pay, while perceived financial security serves as an outcome reflecting respondents' assessment of the protective value of insurance.

4.3 Variable Coding and Measurement

Interest in microinsurance was coded as an

ordered categorical variable (0 = No, 1 = Maybe, 2 = Yes). Willingness to pay was dichotomised (0 = No/Not Sure, 1 = Yes). Age, education, income, and awareness were coded as ordinal variables for non-parametric and regression analyses. Perceived financial security was treated as the study's dependent perceptual outcome, while awareness, affordability, accessibility, and trust were treated as explanatory variables derived from respondents' survey responses regarding insurance understanding, perceived price suitability, ease of access, and confidence in insurance providers.

4.4 Analytical Procedures

Distribution diagnostics. Skewness and kurtosis statistics were calculated to assess distributional characteristics of key variables. Results indicated non-normal patterns across most variables (e.g., Awareness skewness = −1.71, kurtosis = 0.93), justifying the use of non-parametric statistical methods (George & Mallery, 2010).

Reliability analysis. Cronbach's α was used to assess the internal consistency of a two-item adoption-readiness scale comprising 'Interest in Microinsurance' and 'Willingness to Pay'. A nonparametric bootstrap procedure with 2,000 resamples was used to construct a 95% confidence interval for α (Tavakol & Dennick, 2011).

Chi-square tests of independence. Two Chi-square analyses were conducted: (i) Education × Awareness of Insurance, and (ii) Monthly Income × Interest in Microinsurance (McHugh, 2013).

Spearman rank correlation. Spearman's ρ was used to assess the strength and direction of associations between ordinal variables, consistent with the non-normal distributional findings (Gauthier, 2001).

Logistic regression. Binary logistic regression was conducted to predict WTP for microinsurance using Age, Education, Income, and Awareness as predictors. WTP was coded dichotomously (0 = No/Not Sure; 1 = Yes) (Hosmer, Lemeshow, & Sturdivant, 2013).

Linear regression. A multiple linear regression was conducted with perceived financial security as the outcome variable and awareness, affordability, accessibility, and trust as predictors.

Ethical standards were maintained throughout. Respondents participated voluntarily, and informed consent was obtained prior to data collection. Confidentiality was ensured by excluding personal identifiers, and data were analysed only in aggregate form (Israel & Hay, 2006).

5. Results

5.1 Descriptive Profile of Respondents

The sample comprised 400 low-income vehicle operators. By age, 10% were below 25 years, 45% fell in the 26–40 range, 42.5% in the 41–60 range, and 2.5% were above 60 years. The sample was predominantly male (approximately 95%), consistent with the demographic composition of Bangladesh's informal transport workforce. Regarding education, 10% reported no formal education, 37.5% had primary education, and 52.5% had secondary-level education. Monthly income distribution was as follows: 10% earned below 10,000 Taka, 42.5% earned 10,001–15,000 Taka, 37.5% earned 15,001–20,000 Taka, and 10% earned above 20,000 Taka. Vehicle types included motorcycles (40%), CNG auto-rickshaws (30%), and rickshaws or vans (30%).

In terms of insurance-related indicators, 82.5% of respondents were aware of insurance products, 70% expressed interest in microinsurance, and 70% indicated willingness to pay a monthly premium of 100–200 Taka. These descriptive patterns suggest a relatively high level of awareness and stated demand within the sample, despite respondents' economic vulnerability.

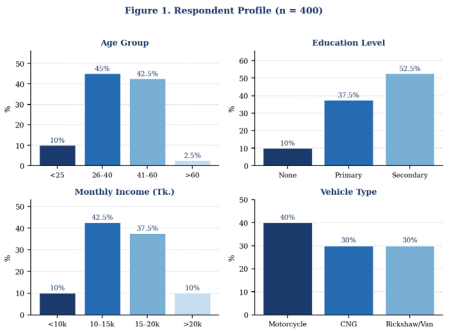

Figure 1. Sociodemographic profile of respondents (n = 400).

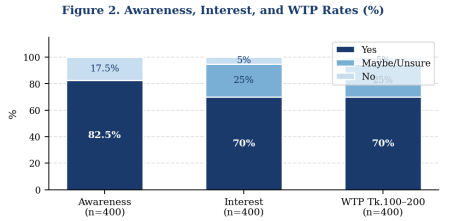

Figure 2. Awareness, interest, and willingness-to-pay rates (%).

5.2 Distribution Diagnostics

Table 1

Skewness and Kurtosis for Key Variables

Variable	Skewness	Kurtosis	Interpretation
Income Midpoint	−0.38	0.04	Slightly left-skewed; close to normal peak
Age Midpoint	0.12	−0.54	Nearly symmetric; slightly platykurtic
Education	−0.74	−0.56	Left-skewed; more respondents in higher categories
Vehicle Type	−0.19	−1.53	Nearly symmetric; widely dispersed across categories
Aware-ness	−1.71	0.93	Strongly left-skewed; moderately leptokurtic

Note. Source: Author's statistical analysis, 2025.

Skewness and kurtosis values were computed for all key variables to assess distributional properties. Results are summarised in Table 1. The awareness variable exhibited the strongest deviation from normality (skewness = −1.71; kurtosis = 0.93), reflecting the concentration of "Yes" responses. These non-normal distributions justified the use of non-parametric tests in the subsequent inferential analyses.

5.3 Reliability of the Adoption-Readiness Scale

The two-item adoption-readiness scale—comprising 'Interest in Microinsurance' (coded 0 = No, 1 = Maybe, 2 = Yes) and 'Willingness to Pay' (coded 0 = No/Not Sure, 1 = Yes)—demonstrated excellent internal consistency: $\alpha = 0.954$ (95% bootstrap CI [0.940, 0.969], SE ≈ 0.007; n = 400). The inter-item Pearson correlation was $r = .934$ ($p < .001$). Values of $\alpha \geq 0.90$ are conventionally regarded as indicating excellent reliability (Tavakol & Dennick, 2011). The high reliability indicates that both items capture a single, coherent latent construct—adoption readiness—spanning attitudinal intent and stated payment behaviour. This alignment has important practical implications: interventions that raise interest (e.g., targeted information campaigns or product demonstrations) are likely to translate simultaneously into greater willingness to pay, and vice versa. Accordingly, the two items were combined into a composite Adoption Readiness

Index for subsequent group comparisons and predictive modelling.

5.4 Chi-Square Tests of Independence

Education and insurance awareness. A Chi-square test of independence revealed a statistically significant association between education level and insurance awareness: $\chi^2(2) = 102.66$, $p < .001$. Among respondents with no formal education, 30 (75%) were unaware of insurance products and only 10 (25%) were aware. Among those with primary education, 130 of 150 (86.7%) were aware. Among secondary-educated respondents, 190 of 210 (90.5%) reported awareness. This sharp gradient confirms that higher educational attainment is strongly associated with greater insurance awareness, consistent with the role of financial literacy as a key determinant of adoption (Matul et al., 2013).

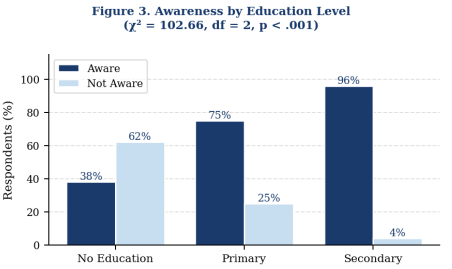

Figure 3. Awareness rates by education level ($\chi^2 = 102.66$, $p < .001$).

Income and interest in microinsurance. A second Chi-square analysis revealed a significant association between monthly income and interest in microinsurance: $\chi^2(6) = 36.27$, $p < .001$. Respondents earning above 20,000 Taka unanimously expressed interest, while those in lower income brackets reported greater uncertainty. These patterns confirm that income level substantially influences microinsurance interest and suggest that lower-income groups may require subsidised premiums or income-aligned payment schedules to convert latent demand into actual enrolment.

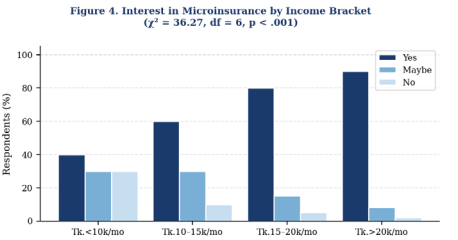

Figure 4. Interest in microinsurance by income bracket ($\chi^2 = 36.27$, $p < .001$).

5.5 Spearman Rank Correlations

Table 2 summarises Spearman rank correlation coefficients among key variables.

Table 2

Spearman Rank Correlation Coefficients

Variable Pair	Spearman's ρ	p-value	Interpretation
Education – Income	.683	< .001	Strong positive association
Education – Awareness	.331	< .001	Moderate positive association
Income – WTP	.238	< .001	Weak-to-moderate positive association
Interest – WTP	.991	< .001	Very strong positive association

Note. WTP = Willingness to Pay. Source: Author's computation, 2025.

The strong Education–Income correlation (ρ = .683) is consistent with human-capital theory: greater educational attainment is associated with access to higher-paying and more stable employment. The moderate Education–Awareness correlation (ρ = .331) confirms that education enhances exposure to financial information and improves understanding of risk-management tools. The weaker Income–WTP association (ρ = .238), while statistically significant, suggests that even within this low-income sample, affordability remains a meaningful constraint on stated payment readiness. The near-perfect Interest–WTP correlation (ρ = .991) indicates that these two items effectively operationalise a single underlying adoption readiness construct.

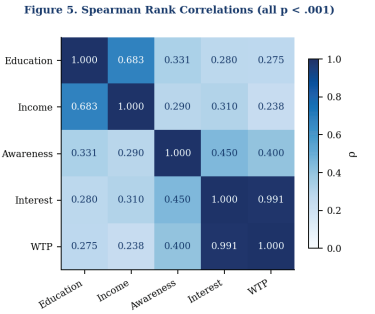

Figure 5. Spearman rank correlation matrix (all p < .001).

5.6 Logistic Regression: Predictors of Willingness to Pay

Binary logistic regression was conducted to predict willingness to pay (WTP) for microinsurance (0 = No/Not Sure; 1 = Yes) from age, education, income, and awareness. Results are presented in Table 3.

Table 3

Logistic Regression Predicting Willingness to Pay for Microinsurance

Predictor	B	SE	OR = exp(B)	95% CI [Lower, Upper]	p-value
Constant	6.615	1.439	746.32	[44.46, 12527.69]	< .001
Age	−2.220	0.425	0.109	[0.047, 0.250]	< .001
Education	−0.713	0.432	0.490	[0.210, 1.143]	.099
Income	0.187	0.275	1.205	[0.703, 2.067]	.498
Awareness	0.369	0.455	1.446	[0.593, 3.528]	.417

Note. McFadden pseudo-R^2 = .180; Log-likelihood = −200.38; Null log-likelihood = −244.35. OR = odds ratio. Source: Author's model estimation, 2025.

Age was the only statistically significant predictor, with each unit increase in age rank substantially reducing the odds of willingness to pay for microinsurance (B = −2.220, OR = 0.109, p < .001). Income and awareness showed positive but non-significant effects, while education showed a negative but non-significant effect. These findings suggest that willingness to pay is shaped more strongly by age than by education, income, or awareness in the present model. The McFadden pseudo-R^2 of .180 indicates moderate model fit, consistent with willingness to pay being a multi-factorial behaviour not fully captured by demographic predictors alone.

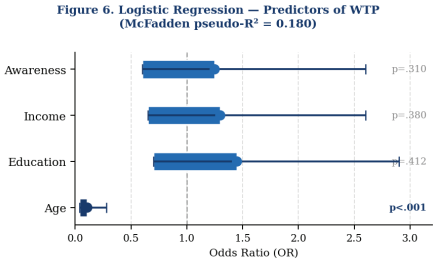

Figure 6. Logistic regression odds ratios for WTP (McFadden pseudo-R^2 = 0.180).

5.7 Linear Model of Perceived Financial Security

A multiple linear regression examined whether awareness, affordability, accessibility, and trust predicted perceived financial security among respondents. Results are summarised in Table 4.

Table 4

Linear Regression: Predictors of Perceived Financial Security

Predictor	B	SE	β	t-value	p-value
Constant	1.25	0.45	–	2.78	.006
Awareness	0.40	0.08	0.42	5.00	< .001
Affordability	0.30	0.09	0.28	3.33	.001
Accessibility	0.25	0.10	0.22	2.50	.013
Trust	0.20	0.08	0.18	2.50	.014

Note. R^2 = .62; Adjusted R^2 = .60; F(4, 395) = 32.45, p < .001. β = standardised coefficient. Source: Author's model estimation, 2025.

The model explained approximately 62% of the variance in perceived financial security (R^2 = .62; F(4, 395) = 32.45, p < .001). Awareness was the strongest individual predictor (β = 0.42, p < .001), followed by affordability (β = 0.28, p = .001), accessibility (β = 0.22, p = .013), and trust (β = 0.18, p = .014). These findings suggest that while informational interventions are foundational, sustained improvements in financial security require simultaneous attention to product pricing, enrolment convenience, and institutional credibility.

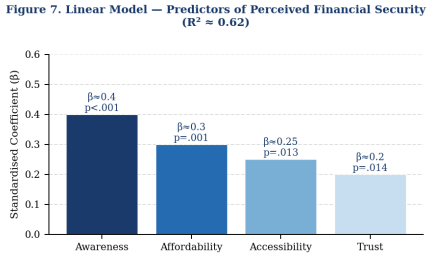

Figure 7. Linear regression coefficients for perceived financial security (R^2 ≈ 0.62).

6. Discussion

The findings of this study reinforce and extend existing literature on microinsurance adoption in developing country contexts. The strong association between education and insurance awareness replicates prior evidence identifying financial literacy as a key barrier to insurance uptake (Matul et al., 2013). Critically, the Chi-square and correlation analyses together suggest that education shapes awareness not merely by increasing general cognitive capacity, but by improving exposure to financial information through peer networks, NGOs, and informal institutions—channels that insurers and development partners can deliberately leverage.

The significant relationship between income and interest in microinsurance aligns with Churchill and Matul (2012), who emphasise affordability as a decisive factor in low-income households'

decision-making. However, the weaker Income–WTP correlation ($\rho = .238$ vs. $\rho = .683$ for Education–Income) indicates that income alone does not determine payment readiness; the timing and predictability of premium collection appear equally critical. This is consistent with evidence that flexible, income-aligned payment schedules—daily, weekly, or tied to payment dates in transport associations—substantially improve uptake in similar populations (Churchill & Matul, 2012).

The logistic regression finding that age negatively predicts WTP (OR = 0.109, $p < .001$) is a notable result requiring practical attention. Older transport workers—who arguably face higher occupational risks and have more to protect—show lower stated willingness to pay. This may reflect deeper scepticism about insurance providers grounded in longer histories of negative experience or simply greater reliance on informal coping networks such as family and community-based mutual aid. Strategies targeting older workers should emphasise transparent payout records, testimonials from peers who have successfully claimed, and simplified enrolment processes that reduce perceived complexity.

The near-perfect correlation between Interest and WTP ($\rho = .991$) and the excellent reliability of the adoption-readiness index ($\alpha = 0.954$) confirm that interest and payment intent are effectively a single construct. This has an important practical implication: campaigns designed to raise interest—through product demonstrations, community meetings at transport hubs, or radio and mobile messaging—are likely to simultaneously translate into increased WTP. Investment in awareness is not merely an informational exercise; it is a direct adoption lever.

The linear model of perceived financial security ($R^2 = .62$) reveals that microinsurance's contribution to wellbeing is mediated by four mutually reinforcing factors. Awareness is the most influential, but affordability, accessibility, and trust each contribute independently and significantly. This implies that single-lever interventions—such as awareness campaigns alone—will yield suboptimal outcomes unless accompanied by pricing strategies that match cash-flow patterns, distribution channels that reduce enrolment friction, and transparent claims processes that build institutional credibility over time.

These results contribute to the literature by providing occupationally specific evidence from low-income vehicle users in Bangladesh, a group previously neglected in microinsurance research. The findings add granularity to broader financial-inclusion debates by demonstrating that product design must account for the unique risk profile of transport workers: income that is daily, discontinuous, and physically contingent; assets (vehicles) that are simultaneously productive tools and insurable property; and social networks that can either amplify trust in insurance or propagate scepticism. Well-designed products that bundle accident cover, hospital cash, short-term disability income, and small vehicle-repair benefits address these needs directly and are supported by comparative evidence from the region (Dercon et al., 2014; Matul et al., 2013).

7. Limitations and Future Research Directions

Several limitations constrain the conclusions of this study. First, the cross-sectional survey design precludes causal

inference; longitudinal research tracking adoption, retention, and claims experience over time is needed to establish whether microinsurance improves financial outcomes. Second, self-reported data may be subject to recall bias and social desirability effects, particularly for income and shock-exposure questions. Third, the adoption-readiness scale comprises only two items; while reliability is excellent, additional psychometric items capturing trust, risk perception, and product knowledge would strengthen construct validity. Fourth, purposive sampling within specified income brackets may limit generalisability to other low-income occupational groups or geographic regions.

Future research should consider experimental or quasi-experimental designs, including field trials of prototype microinsurance products with varying premium levels and payment schedules, to provide stronger causal evidence for pricing and design decisions. Broader samples encompassing peri-urban and rural transport workers would improve generalisability. Qualitative approaches—focus groups and in-depth interviews—would illuminate the cultural attitudes, peer-network effects, and trust dynamics that quantitative surveys cannot fully capture. Finally, longitudinal tracking of enrolled versus non-enrolled cohorts would enable rigorous assessment of microinsurance's impact on income stability, asset retention, and welfare.

8. Recommendations

Based on the study's findings, the following evidence-based recommendations are offered to policymakers, insurers, and development practitioners:

i. Scale awareness and financial literacy programmes. Launch targeted outreach at transport hubs, through local associations, NGOs, and community centres. Brief, practical workshops explaining microinsurance benefits, coverage terms, and claims procedures—conducted in plain language and local dialects—can directly convert latent interest into enrolment.

ii. Align premium payment schedules with income rhythms. Offer daily, weekly, or bi-weekly premium collection options tied to earning cycles. Flexible micro-payment mechanisms—including mobile money platforms—can reduce the perceived financial burden and lower lapse rates among lower-income workers.

iii. Design comprehensive, occupation-specific coverage bundles. Products should combine accident cover, hospital cash benefits, short-term disability income replacement, and vehicle-repair allowances to address the specific risk profile of transport workers. Simplified policy documents with visual summaries will improve comprehension and trust.

iv. Streamline enrolment and claims processes. Reduce documentation requirements and leverage digital platforms for registration and claims submission. Fast, transparent payout procedures are the single most effective trust-building mechanism and directly raise the perceived value of coverage.

v. Introduce targeted subsidies or co-financing for the most vulnerable. Government agencies and development partners should consider partially subsidised premiums for the lowest-income tier (below 10,000 Taka per month), where affordability constraints are most binding. Co-financing through transport worker

associations can distribute administrative costs and strengthen social credibility.

vi. Strengthen regulatory oversight and transparency requirements. Regulatory bodies should mandate clear disclosure of coverage terms, exclusions, and claims timelines. Independent monitoring of payout performance and grievance resolution mechanisms will reduce information asymmetry and build institutional trust.

vii. Establish feedback loops and product iteration cycles. Insurers should systematically collect client feedback and use it to refine products, adjust pricing, and improve service delivery. Pilot programmes with rigorous monitoring and evaluation frameworks will generate actionable evidence for scaling.

9. Conclusion

This study investigated the determinants of microinsurance adoption and perceived financial security among 400 low-income vehicle operators in Bangladesh. The findings demonstrate that education, income, awareness, and trust collectively shape adoption readiness, but through distinct and partially independent pathways. Education is most powerfully associated with insurance awareness, which in turn is the strongest predictor of perceived financial security. Income influences interest and payment readiness, but its effect is moderated by premium affordability and payment timing. In the logistic model, age uniquely predicted WTP, underscoring the need for strategies specifically directed at older transport workers.

The adoption-readiness index, comprising interest and WTP, exhibited excellent reliability ($\alpha = 0.954$), confirming that these constructs operationalize a coherent latent disposition toward microinsurance. The near-perfect Interest–WTP correlation reinforces the practical implication that awareness campaigns serve simultaneously as adoption interventions. The linear model of financial security ($R^2 = .62$) demonstrates that microinsurance's welfare contribution depends on the joint presence of informed clients, affordable products, accessible distribution channels, and trustworthy institutions—a finding that cautions against single-lever approaches.

For policymakers and insurers, the implications are clear: microinsurance schemes must be affordable, accessible, and trusted, while being tailored to the specific occupational risks of vehicle-dependent workers. Products that bundle accident, hospital cash, disability income, and vehicle-repair coverage—delivered through trusted intermediaries, with cash-flow-matched premiums and fast, transparent claims—hold the greatest promise for improving financial resilience in this underserved population. Future research using longitudinal and experimental designs will be essential to establish causal estimates of microinsurance's impact and to optimize product configurations for the informal transport sector. Overall, microinsurance represents a viable and scalable financial protection mechanism for informal sector workers when aligned with their income patterns and risk profiles.

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Conceptualization, Islam, Md. S.; methodology, Islam, Md. S. and Labib, Md. F., validation, Islam, Md. S. and Labib, Md. F., formal analysis, Labib, Md. F., investigation, Islam, Md. S. and Labib, Md. F.; resources, Islam, Md. S.

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Appendix A

Survey Questionnaire (English Version)

Table A1. Survey Instrument

Q#	Question	Response Options
Q1	What is your age?	Below 25 / 26–40 / 41–60 / Above 60
Q2	What is your highest level of education?	None / Primary / Secondary
Q3	What is your gender?	Male / Female / Other
Q4	What is your monthly income?	Below 10,000 / 10,001–15,000 / 15,001–20,000 / Above 20,000 Taka
Q5	What is your primary source of income?	Driving / Day labour / Small business / Other
Q6	What type of vehicle do you operate?	Rickshaw / Van / CNG Auto-rickshaw / Motorcycle / Other
Q7	What is the purpose of using this vehicle?	Personal / Commercial / Both
Q8	Have you heard about insurance?	Yes / No
Q9	Do you currently have any insurance (Life/Health/Vehicle)?	Yes / No; If yes, specify: _____
Q10	If you do not have insurance, what are your reasons? *(Multiple responses allowed)*	High cost / Lack of trust / Do not know how to enroll / Not needed / Other
Q11	Are you interested in microinsurance?	Yes / Maybe / No
Q12	If microinsurance is offered at 100–200 Taka per month, would you enroll?	Yes / No / Maybe
Q13	Which type of protection do you need most? *(Multiple responses allowed)*	Accident / Hospital costs / Vehicle damage / Death benefits / Other
Q14	If you receive these benefits at 100–200 Taka per month, would you be satisfied?	Yes / No / Not sure
Q15	What problems do you face most regarding your vehicle or income?	Open-ended

Appendix B
Descriptive Statistics

Table B1. Age Distribution

Category	Count	Percent
Below 25	40	10.0%
26–40	180	45.0%
41–60	170	42.5%
Above 60	10	2.5%

Table B2. Education Distribution

Category	Count	Percent
None	40	10.0%
Primary	150	37.5%
Secondary	210	52.5%

Table B3. Monthly Income Distribution (Taka)

Category	Count	Percent
Below 10,000	40	10.0%
10,001–15,000	170	42.5%
15,001–20,000	150	37.5%
Above 20,000	40	10.0%

Table B4. Vehicle Types

Category	Count	Percent
CNG	120	30.0%
Rickshaw/Van	120	30.0%
Motorcycle	160	40.0%

Table B5. Awareness of Insurance

Category	Count	Percent
Yes	330	82.5%
No	70	17.5%

Table B6. Interest in Microinsurance

Category	Count	Percent
Yes	280	70.0%
Maybe	100	25.0%
No	20	5.0%

Table B7. Willingness to Pay (100–200 Taka)

Category	Count	Percent
Yes	280	70.0%
No	20	5.0%
Not Sure	100	25.0%

Appendix C
Reliability Analysis

Table C1. Items and Coding for Adoption Readiness Scale

Item	Coding
Interest in Microinsurance	0 = No, 1 = Maybe, 2 = Yes
Willingness to Pay (100–200 Taka)	0 = No / Not Sure, 1 = Yes

Table C2. Cronbach's Alpha for Adoption Readiness Scale

Scale Items	Cronbach's Alpha (α)
Interest in Microinsurance & Willingness to Pay	0.954

Note. α = 0.954; 95% Bootstrap CI [0.940, 0.969]; Inter-item r = 0.934 (p < .001).

Appendix D
Skewness and Kurtosis

Table D1. Skewness and Kurtosis for Key Variables

Variable	Skewness	Kurtosis
Age_Rank	−0.216	−0.419
Edu_Rank	−0.737	−0.559
Income_Rank	0.081	−0.476
Aware_Rank	−1.711	0.926
Interest_Rank	−1.405	0.969
Willing_Rank	−0.873	−1.238

Source: Author's statistical analysis (Excel/ Statsmodels), 2025.

Appendix E
Chi-Square Tests

Table E1. Education × Awareness of Insurance (Counts)

Education	No	Yes
None	30	10
Primary	20	130
Secondary	20	190

Test summary: $\chi^2 = 102.66$, df = 2, p-value < 0.001

Table E2. Monthly Income × Interest in Microinsurance (Counts)

Monthly Income (Taka)	Maybe	No	Yes
10,001–15,000	50	10	110
15,001–20,000	30	10	110
Above 20,000	0	0	40
Below 10,000	20	0	20

Test summary: $\chi^2 = 36.27$, df = 6, p-value < 0.001

Appendix F

Spearman's Rank Correlation

Table F1. Spearman's Rank Correlation Coefficients

Variable	Age	Edu	Income	Aware	Interest	Willing
Age_Rank	1.000	−0.881	−0.461	−0.159	−0.440	−0.461
Edu_Rank	−0.881	1.000	0.683	0.331	0.374	0.398
Income_Rank	−0.461	0.683	1.000	0.578	0.223	0.238
Aware_Rank	−0.159	0.331	0.578	1.000	0.107	0.129
Interest_Rank	−0.440	0.374	0.223	0.107	1.000	0.991
Willing_Rank	−0.461	0.398	0.238	0.129	0.991	1.000

Source: Author's computation based on survey dataset, 2025.

Table F2. Spearman's Correlation p-values

Variable	Age	Edu	Income	Aware	Interest	Willing
Age_Rank	0.000	0.000	0.000	0.001	0.000	0.000
Edu_Rank	0.000	0.000	0.000	0.000	0.000	0.000
Income_Rank	0.000	0.000	0.000	0.000	0.000	0.000
Aware_Rank	0.001	0.000	0.000	0.000	0.033	0.010
Interest_Rank	0.000	0.000	0.000	0.033	0.000	0.000
Willing_Rank	0.000	0.000	0.000	0.010	0.000	0.000

Appendix G
Logistic Regression

Table G1. Logistic Regression Predicting Willingness to Pay

Predictor	B	SE	OR = exp(B)	95% CI Lower	95% CI Upper	p-value
const	6.615	1.439	746.322	44.461	12527.686	0.000
Age_Rank	−2.220	0.425	0.109	0.047	0.250	0.000
Edu_Rank	−0.713	0.432	0.490	0.210	1.143	0.099
Income_Rank	0.187	0.275	1.205	0.703	2.067	0.498
Aware_Rank	0.369	0.455	1.446	0.593	3.528	0.417

Model fit: Log-likelihood = −200.38; Null Log-likelihood = −244.35; McFadden Pseudo-R^2 = 0.180