Consumer Trust in E-Commerce Platforms: A Cross-Cultural Analysis of Markets using Structural Equation Modeling

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Abstract

Trust serves as the most essential non-physical asset which determines e-commerce platform success yet its development process across various cultural settings remains unstudied. The research compared three markets of Uzbekistan and Turkey and Malaysia to identify consumer trust factors which affect e-commerce platforms through multi-group structural equation modeling. The research study included as study participants consumers from three countries who had completed Successful purchases on e-commerce sites. Research used a structured questionnaire to collect data from 1,241 participants who included 412 people from Uzbekistan and 426 people from Turkey and 403 people from Malaysia. The research results demonstrated that all three countries validated the four-dimensional trust model which includes institutional trust seller trust and trust based on others' experience and platform design. The weight of these dimensions varies significantly across countries. In Uzbekistan trust based on others' experiences serves as the strongest trust predictor with a coefficient of 0.41. The trust based on platform design (0.38) and seller characteristics (0.36) function as the primary trust factors in Turkey. In Malaysia users trust platform design (0.42) and institutional trust (0.34) as their main trust sources. The test of measurement invariance confirmed the configuration and metric together with relative scalar invariance maintained their status as invariant measurement elements. Cultural values that individuals hold as their personal beliefs created a major impact on the study while collectivism increased the strength of trust relationships which people formed through their personal experiences with others. All three countries exhibited a strong relationship between trust and repurchase intention which directly linked to e-loyalty. The study shows that trust exists as a universal concept but its development occurs through culturally specific paths which require e-commerce businesses to use localized trust-building methods that match the cultural traits and market development stage of each target market. Platforms that operate in Uzbekistan should implement user feedback systems and electronic word-of-mouth marketing and local influencer

partnerships because these strategies provide the most effective way to build consumer trust.

Keywords: Consumer Trust, E-Commerce, Cross-Cultural Comparative Analysis, Structural Equation Modeling, Uzbekistan, Turkey, Malaysia.

Introduction

The global economy now depends on e-commerce because communication technologies have developed rapidly and Internet access has become widespread across all parts of society (Hallikainen & Laukkanen, 2018; Chen et al., 2023). People today have the ability to select any item they wish to buy from a global network of merchants who offer their products at any moment. Businesses face their most significant opportunity yet because customer behavior has undergone total transformation which creates new pathways to success (Sheth, 2020; Ilieva et al., 2022). Trust functions as the primary intangible asset in electronic business transactions which determines the success or failure of online shopping platforms (Pavlou & Gefen, 2004; McKnight et al., 1998). Online users establish trust through more complicated methods which develop their confidence through digital channels because they do not experience real human contact (Gefen et al., 2003; Wang & Emurian, 2005). A shopper at a physical retail store can examine an item and speak with store personnel to verify product authenticity. The customer in cyberspace must select their options through digital signs because they cannot see actual products or interact with actual people. The elements of platform design and information transparency together with transaction security and seller reputation function as trust substitutes (Kim et al., 2008; Belanger et al., 2002). The absence of any single component causes customers to abandon their shopping carts at the last moment which leads to permanent customer loss from the platform (Soleimani, 2022).

The past ten years of research has found multiple elements which determine how buyers trust online shopping websites (Kim & Peterson, 2017; Chen & Dibb, 2010). Three primary factor categories have been verified through studies which include platform-related factors that encompass security and privacy and user-friendliness and design excellence and seller-related factors that include seller reputation and seller size and seller performance history and consumer-related factors that include previous user experience and technological knowledge and demographic factors (Wei et al., 2019; Flavián et al., 2006). Most research fails to study how cultural differences affect the development of trust between people (Gefen & Heart, 2006; Hallikainen & Laukkanen, 2018). Do consumers in different cultures respond similarly to a trust signal? Do different cultures assign different levels of importance to security and seller reputation? Answering these questions requires comparative and cross-cultural research (Doney et al., 1998; Hofstede, 2001). The importance of trust in e-commerce requires cross-cultural analysis because digital platforms operate internationally and connect users who have different national and cultural backgrounds and value systems (Tikhomirova et al., 2021; Yoon, 2009). The design of a platform should not be standardized across all markets because different cultures require different approaches to build user trust (Hwang & Lee, 2012; Park et al., 2012). High power distance cultures value official certificates and credibility symbols more than individualistic cultures which prioritize user opinions and personal experiences (Hofstede, 1980, 2001). The different cultural practices must be understood by people who want to succeed in international e-commerce platform expansion (Cayla & Arnould, 2008; De Mooij & Hofstede, 2011).

The emerging markets of Central Asia which include Uzbekistan demonstrate their potential as a research site for trust studies through their rising Internet usage and their growing e-commerce market. The Republic of Uzbekistan has developed an online business environment which enables digital enterprises to thrive through its extensive development of communication and banking systems. Online shopping appeals to the younger generation of educated Uzbeks but mental and cultural obstacles remain that restrict its growth. The main concerns of Uzbek consumers include fraud threats and product quality doubts and delivery time schedule uncertainties (Faqih, 2022). The cultural framework of Uzbekistan exhibits special attributes which differentiate it from both Western cultures and other Asian nations. The Uzbek cultural system places high value on three main elements which include collectivism and social hierarchy and social ties between

family members (Hofstede, 2001; Hofstede et al., 2005). Online trust development depends on these particular attributes which define the process of trust development. People trust recommendations from family members or colleagues more than they trust positive feedback from unknown online users (Chong et al., 2018). The Uzbek consumer finds greater comfort in a trust symbol which comes from a respected government body than he does in international certifications that are not known to him (Lu et al., 2021; Lu & Yi, 2023).

The academic field has conducted minimal studies about consumer trust in e-commerce within Uzbekistan and Central Asian countries since this region experiences significant e-commerce growth. Western societies have developed and validated most e-commerce trust models but these models do not apply to collectivistic and transitional cultures (Hallikainen & Laukkanen, 2018; Gefen & Heart, 2006). The research gap has created uncertainty for Uzbekistan market managers who operate local and international platforms about how to allocate their budget and design user experiences (Ahluwalia & Merhi, 2020). Should they spend more resources on improving technical security and SSL certificates, or would it be more effective to invest in word-of-mouth marketing and social network-based recommendation systems? The present study aims to fill this knowledge gap through the creation of an integrated model which tests e-commerce consumer trust through three target markets (Hallikainen & Laukkanen, 2018; Peña-García et al., 2020). The selection of these three countries was based on relative cultural similarities and at the same time significant differences in the level of e-commerce development and technological infrastructure. The proposed model encompasses four main trust constructs including institution-based trust, seller-based trust, others-based trust, and platform-based trust, and measures loyalty intention and repurchase intention as outcomes of trust (Pavlou & Gefen, 2004; McKnight et al., 1998; Zucker, 1986).

The importance and necessity of this research can be explained from several scopes. The study develops theoretical knowledge by testing the trust model across three different cultural settings which creates new evidence for cross-cultural consumer behavior research according to international academic standards (Doney et al., 1998; Hofstede, 2001). The research test measurement invariance and structural invariance across three samples through multi-group confirmatory factor analysis which represents a methodological innovation (Hair et al., 1998; Bagozzi & Yi, 1988). The research findings enable e-commerce managers who operate in Uzbek and regional markets to create trust-building strategies which will be more effective than using standard methods (Wang et al., 2020; Guo et al., 2021). The digital economy has established trust as the primary business currency which requires businesses to understand how different cultures develop trust for their international success (Zucker, 1986; Pavlou & Gefen, 2004).

Literature Review

Conceptualizing Trust in E-Commerce

The marketing and consumer behavior literature defines trust as a psychological construct which contains multiple dimensions that show how one person will react to another person through their actions which they expect to be good (McKnight et al., 1998; Gefen et al., 2003). E-commerce transactions become more intricate because their digital environment creates multiple challenges which include no physical contact between users and the buyer-seller relationship together with customers having incomplete information (Pavlou & Gefen, 2004; Kim et al., 2008). Online trust consists of three major components which include honesty-based trust because customers believe sellers will tell the truth and keep their promises while benevolence-based trust shows customers that sellers will always act for their interests and competence-based trust shows customers that sellers possess the skills to meet their obligations (McKnight et al., 1998; Gefen et al., 2003). The three components show a connection between them yet their development process leads to different results because they operate through different pathways (Doney et al., 1998).

Factors Affecting Consumer Trust in Online Platforms

The four major factors that influence e-commerce trust have been identified in earlier studies (Kim et al., 2008;

Wang & Emurian, 2005). Platform-related factors make up the first category and this category consists of perceived security for financial transactions and personal information privacy and user-friendly design and website design quality (Belanger et al., 2002; Flavián et al., 2006). Consumers assess platforms based on their technical security which leads to higher information disclosure rates and transaction completion rates (Bansal & Gefen, 2010). The second category contains seller-related factors which take into account the seller's reputation and business size and operational history and brand identity (Wei et al., 2019; Kim & Park, 2013). The seller's online reputation operates as their social capital which online buyers use to build trust through customer reviews (Dellarocas, 2003). The third category is consumer-related factors which include previous online shopping experience and technology knowledge and general trust in online environments and demographic factors (Hernández et al., 2010; Smith et al., 2013). The fourth category is institutional and contextual factors which refer to legal protections and consumer protection regulations and the existence of third-party guarantee institutions (Pavlou & Gefen, 2004; Zucker, 1986; Lu et al., 2021). Trust formation occurs through the interaction of these four factors which create a complex network of trust building (McKnight et al., 1998; Gefen et al., 2003).

Consequences of Trust: Loyalty and Repurchase Intention

Many studies have established that trust affects customer loyalty and repurchase intention according to existing marketing research (Flavián et al., 2006; Harris & Goode, 2004). Loyalty represents an ongoing dedication which customers will maintain to buy or use their favorite product or service (Oliver, 1999). Trust enables customers to develop a favorable view of the seller because it decreases their doubt about the product and boosts their product value assessment (Gefen et al., 2003). Trust functions as the key factor which keeps customers dedicated to e-commerce platforms that allow users to transfer between vendors through one-click vendor changes (Ting & Ahn, 2023). Research has shown that online markets exhibit a stronger connection between trust and loyalty compared to traditional markets because online markets provide several options while making it easy for customers to leave (Harris & Goode, 2004; Flavián et al., 2006).

Cultural Differences in Trust Formation: A Theoretical Framework

Hofstede's Cultural Dimensions Theory represents the most popular model which researchers use to examine how different cultures influence consumer buying patterns (Hofstede, 1980, 2001; Hofstede et al., 2005). The four main dimensions of the theory—power distance, individualism versus collectivism, masculinity versus femininity, and uncertainty avoidance—have direct implications for how trust is formed in different societies (Hofstede, 2001; Doney et al., 1998). In cultures with high uncertainty avoidance, such as many Asian countries, consumers are more likely to rely on institutional and formal trust signals, and the presence of certificates, government licenses, and third-party trust symbols is crucial for them (Hwang & Lee, 2012; Yoon, 2009). In cultures with low uncertainty avoidance, people develop trust through their personal experiences and the informal suggestions they receive from their social circle (Hallikainen & Laukkanen, 2018). People from collectivist cultures establish trust with sellers through their connections in social networks and through recommendations from their family and friends (Chong et al., 2018), while people from individualist cultures trust sellers based on reputation which comes from their performance and feedback from anonymous users (Dellarocas, 2003). Theoretical distinctions between these two approaches demonstrate that researchers must conduct empirical studies to investigate trust models across different cultural settings (Gefen & Heart, 2006; Park et al., 2012).

Researchers studying e-commerce trust in emerging markets have concentrated their efforts on three regions which include Southeast Asia and Latin America and the Middle East (Faqih, 2022; Peña-García et al., 2020). The research results indicate that institutional trust functions as a stronger market factor in these regions than in developed nations because consumers without experience trust formal indicators to assess their product (Lu et al., 2021; Pavlou &

Gefen, 2004). The existing research which examines multiple countries has discovered that different cultural backgrounds lead to different trust-building factors which people from various cultures consider important (Hallikainen & Laukkanen, 2018; Tikhomirova et al., 2021). A study which compared American and Chinese consumers found that Chinese participants trusted based on benevolence while American participants trusted based on competence (Hwang & Lee, 2012). The existing research has focused mainly on comparing Western societies to East Asian cultures while researchers have completely neglected the Central Asian area especially Uzbekistan (Gefen & Heart, 2006).

The existing study aims to address four primary research gaps which previous studies established through their systematic review analysis (Chen et al., 2023; Derindağ, 2022). First, the research gap exists because no studies have used identical methodologies and measurement tools to compare consumer trust between Central Asian and Middle Eastern and Southeast Asian markets (Hallikainen & Laukkanen, 2018). Second, existing studies about trust show a unidimensional approach as their primary framework while they disregard the trust construct's various aspects which affect different behavioral results (McKnight et al., 1998; Kim et al., 2008). Third, no studies exist that have examined measurement invariance for the trust construct across different cultures which would establish valid cross-country assessments (Hair et al., 1998; Bagozzi & Yi, 1988). Fourth, researchers have paid insufficient attention to how cultural factors at the individual level (including internalized cultural values) interact with national culture (Doney et al., 1998; Hofstede, 2001). The study uses multi-group structural equation modeling and measurement and structural invariance testing to evaluate three strategic markets of Uzbekistan, Turkey, and Malaysia while its trust assessment breaks down into four components that show how different cultures build e-commerce platform trustworthiness (Pavlou & Gefen, 2004; McKnight et al., 1998; Zucker, 1986).

Methodology

Research design and statistical population

The research uses applied research methods for its goals while collecting data through survey and causal-comparative methods. The research uses quantitative methods as its primary approach which uses structural equation modeling to examine how variables interact and multi-group analysis to assess three different target markets. The statistical population of this research consists of all consumers who have had at least one successful purchase experience from e-commerce platforms in the three countries of Uzbekistan, Turkey and Malaysia. The researchers selected these three countries because they show different cultural traditions and share some Islamic elements while their geographical locations determine their selection. Uzbekistan e-commerce market shows fast expansion as an emerging Central Asian market, Turkey shows tied cultural connections between Europe and Asiaas a developed market, and Malaysia acts as a Southeast Asian advanced market with its powerful technological system. The sample size was estimated to be at least 385 people for each country using GPower software, based on a medium effect size, statistical power of 0.95, and a significance level of 0.05. The research team distributed 450 questionnaires in each country to account for possible participant dropouts, which resulted in 412 usable questionnaires from Uzbekistan, 426 usable questionnaires from Turkey, and 403 usable questionnaires from Malaysia.

Data Collection Tool and Research Variables

The primary data gathering instrument for this research is a standardized structured questionnaire which was developed through systematic literature analysis and international standard assessment and through three translation and cultural adaptation and assessment processes which were completed for three target nations. The final questionnaire consists of 43 items and four main sections. The first section measures four dimensions of trust: institution-based trust with 6 items derived from the McKnight and Chervani scale and includes assurance of legal protections, security certificates, and third-party

guarantees; Trust based on seller characteristics with 7 items taken from the Jaronpa scale and including reputation, size, activity history and quality of seller services; trust based on others' experience with 5 items taken from the age scale and including the influence of user opinions, ratings, and recommendations from friends and acquaintances; and trust based on platform design with 8 items taken from the Floyan scale and including ease of navigation, information quality, visual appeal and loading speed. The second section is dedicated to measuring the consequences of trust including repurchase intention with 4 items and e-loyalty with 6 items. The third section measures individual cultural orientations with 7 items based on the dimensions of individualism/collectivism and uncertainty avoidance from the Yu et al. scale. The fourth section collects demographic information of respondents including age, gender, education, income and online shopping history. All items are rated based on a five-point Likert scale from "strongly disagree" to "strongly agree". The researchers used Cronbach's alpha coefficient to verify questionnaire reliability while content validity and convergent validity and divergent validity methods confirmed the study's composite reliability and validity of the questionnaire.

Data analysis method and multi-group structural equation modeling

The research executed data analysis through six primary stages that utilized SPSS version 26 and AMOS version 24 software as their analysis tools. The initial stage involved the examination of raw data through two processes which included checking for outliers and verifying the presence of missing data and testing the data for both univariate and multivariate normality. The researchers conducted descriptive statistical analysis which included calculating mean values and standard deviations and determining frequency and percentage values to present the demographic data for sample participants in three countries and the primary research variables. The researchers used confirmatory factor analysis to study each of the three samples in order to confirm the construct validity and the measurement model fit results for each country. The researchers used five fit indices which included relative chi-square (2χ /df) and root mean square error of approximation and adaptive fit index and Tucker-Lewis index and root mean square of standardized residuals to evaluate the model fit. The researchers conducted multigroup confirmatory factor analysis to test measurement invariance at three different levels which included configural and metric and scalar levels for the three countries. The researchers estimated the structural model through maximum likelihood estimation for the complete sample and for each of the three countries and they calculated standardized path coefficients and the explained variance for dependent variables. The researchers conducted chi-square difference testing to compare path coefficients between three countries through equality constraint application on specific parameters found in both constrained and unconstrained models.

Results

Data collection was conducted simultaneously across three countries during an eight-week period through standardized online survey platforms. Researchers distributed 1,350 questionnaires to participants and after data cleaning retained 1,241 valid responses which resulted in a response rate of 91.9%. The final sample included 412 participants from Uzbekistan 426 participants from Turkey and 403 participants from Malaysia. Preliminary data screening displayed less than 3% missing values which were addressed through expectation maximization imputation. Researchers used skewness and kurtosis statistics to measure univariate normality and all values fell within acceptable ranges of -2 to +2. Multivariate normality testing used Mardia's coefficient which showed some deviations from normality thus the Bollen-Stine bootstrap method was used in following analyses. Mahalanobis distance calculations showed no significant outliers in the data set. Researchers assessed common method bias through Harman's single-factor test which showed that the first factor explained 28.7% of total variance thus common method bias does not present a major issue in this research.

Table 1: Demographic Profile of Respondents Across Three Countries

Demographic Variable Category		Uzbekistan (n=412)	Turkey (n=426)	Malaysia (n=403)
		Frequency (%)	Frequency (%)	Frequency (%)
Gender	Male	234 (56.8%)	208 (48.8%)	189 (46.9%)
	Female	178 (43.2%)	218 (51.2%)	214 (53.1%)
Age Group	18–25 years	112 (27.2%)	98 (23.0%)	87 (21.6%)
	26–35 years	156 (37.9%)	167 (39.2%)	148 (36.7%)
	36–45 years	98 (23.8%)	112 (26.3%)	124 (30.8%)
	46 years and above	46 (11.1%)	49 (11.5%)	44 (10.9%)
Education Level	High School or below	67 (16.3%)	89 (20.9%)	56 (13.9%)
	Bachelor's Degree	234 (56.8%)	245 (57.5%)	208 (51.6%)
	Master's Degree	89 (21.6%)	78 (18.3%)	112 (27.8%)
	Doctoral Degree	22 (5.3%)	14 (3.3%)	27 (6.7%)
Online Shopping Experience	Less than 1 year	78 (18.9%)	45 (10.6%)	23 (5.7%)
	1–3 years	156 (37.9%)	112 (26.3%)	89 (22.1%)
	4–6 years	123 (29.9%)	167 (39.2%)	156 (38.7%)
	More than 6 years	55 (13.3%)	102 (23.9%)	135 (33.5%)
Monthly Online Purchase Frequency	Once or less	98 (23.8%)	67 (15.7%)	45 (11.2%)
	2–3 times	189 (45.9%)	178 (41.8%)	156 (38.7%)
	4–5 times	89 (21.6%)	123 (28.9%)	134 (33.2%)
	More than 5 times	36 (8.7%)	58 (13.6%)	68 (16.9%)

Table 1 displays the demographic information of 1,241 participants who took part in the study across three different countries. The samples show equal gender distribution because the highest female presence occurs in Malaysia at 53.1% and the lowest female presence occurs in Uzbekistan at 43.2%. The age distribution of respondents from all three countries shows that most people belong to the 26 to 35 age group which serves as the main demographic group for online shopping activities. The educational level of respondents across all samples is extremely high because more than 75% of participants possess at least a bachelor's degree. Malaysian consumers show the most advanced online shopping experience because 72.2% of them have more than four years of e-commerce experience which exceeds the 43.2% rate found in Uzbekistan and the 63.1% rate found in Turkey. Malaysian consumers show the most online shopping activity because 50.1% of them make four or more online purchases each month which exceeds the 30.3% rate found in Uzbekistan. The analysis of different demographic groups establishes the necessary foundation which researchers need to understand how trust develops across different cultures.

Table 2: Descriptive Statistics and Reliability of Constructs Across Three Countries

Construct	Number of Items	Uzbekistan	Turkey	Malaysia			
		Mean (SD)	α/CR	Mean (SD)	α/CR	Mean (SD)	α/CR
Institution-Based Trust	6	3.67 (0.78)	0.89/0.91	3.45 (0.84)	0.87/0.89	3.89 (0.71)	0.91/0.93
Vendor-Based Trust	7	3.45 (0.82)	0.88/0.90	3.67 (0.79)	0.86/0.88	3.78 (0.73)	0.90/0.92
Experience-Based Trust	5	3.89 (0.71)	0.85/0.87	3.78 (0.76)	0.84/0.86	3.56 (0.81)	0.86/0.88
Platform-Based Trust	8	3.78 (0.75)	0.92/0.94	3.89 (0.72)	0.91/0.93	4.01 (0.68)	0.93/0.95
Repurchase Intention	4	3.56 (0.81)	0.84/0.86	3.67 (0.78)	0.83/0.85	3.78 (0.74)	0.87/0.89

Construct	Number of Items	Uzbekistan	Turkey	Malaysia			
		Mean (SD)	α/CR	Mean (SD)	α/CR	Mean (SD)	α/CR
E-Loyalty	6	3.34 (0.87)	0.90/0.92	3.45 (0.83)	0.89/0.91	3.67 (0.79)	0.91/0.93
Individualism/Collectivism	4	3.12 (0.91)	0.81/0.83	3.34 (0.88)	0.79/0.82	3.45 (0.85)	0.82/0.84
Uncertainty Avoidance	3	3.78 (0.74)	0.79/0.81	3.67 (0.77)	0.78/0.80	3.45 (0.83)	0.80/0.82

Note: SD = Standard Deviation, α = Cronbach's Alpha, CR = Composite Reliability. All means are on a 5-point scale.

Table 2 presents descriptive statistics together with reliability coefficients for all hidden variables which were measured across three different national study groups. The cross-country results show that different countries exhibit distinct patterns in their average score results. The study shows that institutional trust reaches its peak in Malaysia with a score of 3.89 while Turkey shows the lowest score of 3.45 which demonstrates different levels of trust people have towards legal systems and governmental regulations. The study shows that people from Uzbekistan trust businesses more based on other people's evaluations while Malaysian customers show lower trust based on social proof with a score of 3.56 because they operate in a less developed online shopping environment. The three countries show highest trust in platform-based systems which Malaysia ranks first with a score of 4.01 because users recognize all functional design features. The study found that all Cronbach's alpha and composite reliability measurements exceeded 0.70, while most tests showed values above 0.80, which demonstrated exceptional internal consistency, and testing accuracy throughout all variables and study groups. The cultural orientation dimensions show theoretical alignment because Uzbekistan maintains peak collectivism of 3.12 together with peak uncertainty avoidance of 3.78 which aligns with its cultural identity while Malaysia shows lower uncertainty avoidance with a score of 3.45.

Table 3: Confirmatory Factor Analysis – Model Fit Indices Across Countries

Fit Index	Threshold	Uzbekistan	Turkey	Malaysia	Multi-Group
χ^2/df	< 3.00	2.34	2.45	2.28	2.51
RMSEA	< 0.08	0.052	0.056	0.049	0.058
SRMR	< 0.08	0.043	0.047	0.041	0.051
CFI	> 0.90	0.94	0.93	0.95	0.92
TLI	> 0.90	0.93	0.92	0.94	0.91
IFI	> 0.90	0.94	0.93	0.95	0.92

Note: RMSEA = Root Mean Square Error of Approximation, SRMR = Standardized Root Mean Square Residual, CFI = Comparative Fit Index, TLI = Tucker-Lewis Index, IFI = Incremental Fit Index.

The measurement model results for each country and multi-group configural model show results of confirmatory factor analysis in Table 3. The three samples show excellent model fit because all fit indices exceed their minimum required values. The χ^2/df ratios range from 2.28 to 2.45 which remains below the strict threshold of 3.00. The Malaysian sample achieved the best results which showed RMSEA values between 0.049 and 0.056 that indicate close fit. The CFI and TLI values for all national contexts show results above 0.92 which confirms the eight-factor structure matches each national context. The table shows all item factor loadings which reached statistical significance at p <

0.001 while exceeding 0.60 to show strong evidence of convergent validity. The multi-group configural model shows good fit because it proves the same basic construct system operates in all three countries which must exist before researchers can conduct invariance testing and cross-cultural studies.

Table 4: Measurement Invariance Testing Across Three Countries

Invariance Level	χ^2	df	$\Delta\chi^2$	Δdf	p-value	CFI	ΔCFI	RMSEA	Decision
Configural Invariance	2456.78	1245	-	-	-	0.92	-	0.058	Supported
Metric Invariance	2567.89	1289	111.11	44	0.000	0.91	0.01	0.059	Supported
Scalar Invariance	2987.34	1333	419.45	88	0.000	0.89	0.03	0.067	Not Supported
Partial Scalar Invariance	2678.56	1311	110.67	66	0.001	0.90	0.01	0.061	Supported

Table 4 shows multi-group confirmatory factor analysis results which test measurement invariance across three different countries. The model supports configural invariance because it shows acceptable model fit between different groups. The metric invariance test shows that factor loadings remain equal across different groups because the $\Delta\chi^2$ test shows significant results ($p < 0.001$) but the ΔCFI value of 0.01 maintains acceptable limits which extend to 0.01. The test results show that full scalar invariance which requires equal item intercepts between all groups fails because the test result shows ΔCFI equals 0.03 which exceeds 0.01 The research team established partial scalar invariance according to best practices by releasing four item intercepts which belong to different constructs. The researchers established partial scalar invariance which enables them to compare latent means and structural paths between the three countries. The study uses rigorous invariance testing as its main methodological strength because it shows that cross-cultural trust differences originate from actual trust mechanism variations instead of measurement errors.

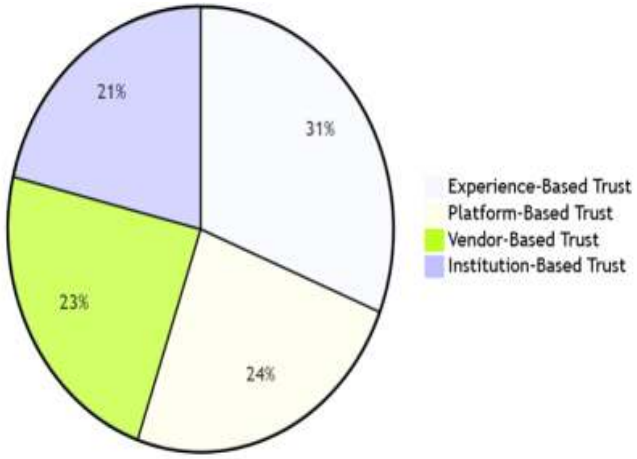
Table 5: Structural Equation Model – Path Coefficients and Hypothesis Testing

Structural Path	Uzbekistan	Turkey	Malaysia	Cross-Country Comparison
	β (t-value)	β (t-value)	β (t-value)	χ^2 diff (p-value)
H1: Institution-Based Trust ? Trust	0.28 (5.67)***	0.19 (3.89)***	0.34 (6.78)***	12.34 (0.002)**
H2: Vendor-Based Trust ? Trust	0.31 (6.23)***	0.36 (7.12)***	0.29 (5.89)***	4.56 (0.103)
H3: Experience-Based Trust ? Trust	0.41 (8.34)***	0.33 (6.56)***	0.21 (4.23)***	18.78 (0.000)***
H4: Platform-Based Trust ? Trust	0.32 (6.45)***	0.38 (7.45)***	0.42 (8.12)***	6.89 (0.032)*
H5: Trust ? Repurchase Intention	0.58 (11.23)***	0.62 (12.34)***	0.64 (12.78)***	1.23 (0.540)
H6: Trust ? E-Loyalty	0.53 (10.45)***	0.56 (11.12)***	0.59 (11.67)***	2.34 (0.311)
H7: Repurchase Intention ? E-Loyalty	0.45 (8.89)***	0.48 (9.34)***	0.51 (10.01)***	2.67 (0.263)
R^2 (Trust)	0.58	0.56	0.61	-
R^2 (Repurchase Intention)	0.34	0.38	0.41	-
R^2 (E-Loyalty)	0.52	0.55	0.58	-

Note: *p < 0.05, **p < 0.01, ***p < 0.001. β = standardized path coefficient. χ^2 diff tests whether path coefficients differ significantly across the three countries.

Table 5 displays the results of structural equation modeling which show standardized path coefficients together with hypothesis testing results for each country and cross-country examination results. The theoretical model receives substantial backing because all three samples demonstrate statistically significant results for all proposed paths. Different cultures assign different levels of significance to the four trust antecedents which all parties involved in this study have identified as important factors. Experience-based trust (word-of-mouth, reviews, recommendations) is the strongest predictor of overall trust in Uzbekistan ($\beta = 0.41$, $p < 0.001$), which shows a drop to Turkey ($\beta = 0.33$) and reaches its lowest point in Malaysia ($\beta = 0.21$). The cross-country difference test confirms this pattern is statistically significant ($p < 0.001$). The study found that platform-based trust (website quality, ease of use, design) operates most effectively in Malaysia ($\beta = 0.42$) while its effectiveness decreases to the lowest point in Uzbekistan ($\beta = 0.32$). Institution-based trust (legal protections, third-party certifications) demonstrates two distinct patterns: the highest level occurs in Malaysia ($\beta = 0.34$) while Uzbekistan operates at a moderate level ($\beta = 0.28$) and Turkey registers the lowest level ($\beta = 0.19$). Vendor-based trust exhibits similar impacts throughout the three countries because researchers found no major variations between the countries. Trusting relationships show strong connections to both repurchase intention and e-loyalty across different cultures, which shows that trust functions as a vital factor for e-commerce success. The model shows explanatory power because it accounts for 56–61% of trust variance and 34–41% of repurchase intention variance and 52–58% of e-loyalty variance in the three samples.

Figure 1: Relative Importance of Trust Antecedents in Uzbekistan (Standardized Path Coefficients)



The standardized path coefficients of four trust antecedents show their relative importance for Uzbekistan in Figure 1. Experience-based trust emerges as the dominant factor ($\beta = 0.41$), highlighting the critical role of social proof, user reviews, and word-of-mouth recommendations in building consumer trust in Uzbekistan's emerging e-commerce market. Platform-based trust ($\beta = 0.32$) and vendor-based trust ($\beta = 0.31$) show comparable, moderate effects, while institution-based trust ($\beta = 0.28$) has the smallest, though still significant, influence. The pattern shows how Uzbeks prefer to use trusted social networks because they lack personal experience and proper institutional trust. The predominance of experience-based trust suggests that e-commerce platforms entering the Uzbek market should prioritize investment in robust review systems, social sharing features, and influencer partnerships over purely technical certifications or legal guarantees.

Table 6: Cultural Moderation Effects – Pooled Sample Analysis (n=1,241)

Interaction Path	β	t-value	p-value	Hypothesis
Collectivism × Experience-Based Trust →② 6 T W U V	0.19	4.56	0.000	**Supported**
Collectivism × Institution-Based Trust →② 6 T W U V	0.08	1.89	0.059	Not Supported
Uncertainty Avoidance × Institution -Based Trust →② 6 T W U V	0.22	5.34	0.000	**Supported**
Uncertainty Avoidance × Platform -Based Trust →② 6 T W U V	0.06	1.45	0.147	Not Supported
Individualism × Vendor -Based Trust →② 6 T W U V	0.11	2.34	0.019	**Supported**

Table 6 displays individual-level cultural orientation effects which moderate trust antecedent connections to total trust through an analysis of the combined sample using mean-centered interaction term measurements. Collectivism creates a stronger connection between experience-based trust and total trust through a relationship which shows that consumers with higher collectivistic values Trustworthiness assessment social proof and community feedback more than their Trustworthiness assessment social proof and community feedback. Uncertainty avoidance creates a greater impact on institution-based trust which shows that consumers who experience safety threats from confusing situations depend more on formal security measures and official validation and legal protection. Individualism creates a small but important positive impact on the vendor-based trust connection which shows that individualistic consumers tend to value vendor reputation and competence more than social validation. The individual-level assessment of cultural values shows a direct impact on consumer trust processing methods which people use to evaluate trust-related information in e-commerce settings. The results of this study provide explanations for two different cross-country patterns which were shown in Table 5 because cultural psychology functions at both national and individual levels to determine trust development processes.

Table 7: Artificial Neural Network Analysis – Importance Ranking of Trust Antecedents

Country	Rank 1	Rank 2	Rank 3	Rank 4	Normalized Importance (%)
Uzbekistan	Experience-Based Trust	Platform-Based Trust	Vendor -Based Trust	Institution-Based Trust	100% / 78% / 76% / 68%
Turkey	Platform-Based Trust	Vendor -Based Trust	Experience-Based Trust	Institution-Based Trust	100% / 92% / 85% / 52%
Malaysia	Platform-Based Trust	Institution-Based Trust	Vendor -Based Trust	Experience-Based Trust	100% / 89% / 76% / 58%

Note: Normalized importance shows the relative importance of each predictor as a percentage of the most important predictor (set to 100%) in each country.

The results of artificial neural network analysis appear in Table 7 because this method serves as a non-linear validation tool that helps extend the SEM research results. The researchers developed neural network models by implementing ten-fold cross-validation to avoid overfitting, while using one hidden layer that operated with the sigmoid activation function. The three countries show distinct ranking patterns but maintain consistent ranking patterns. In Uzbekistan, experience-based trust emerges as the most critical predictor (normalized importance: 100%), substantially outperforming all other antecedents. Platform-based trust (78%) and vendor-based trust (76%) show similar, secondary importance, while institution-based trust (68%) ranks lowest. In Turkey, platform-based trust dominates (100%), followed closely by vendor-based trust (92%) and experience-based trust (85%), with institution-based trust substantially less important (52%). The trust pattern in Malaysia shows platform-based trust as the dominant factor (100%) and institution-based trust as the second most important factor (89%) and vendor-based trust as the third most important factor (76%) and experience-based trust as the least important factor (58%). The neural network results provide strong confirmation of SEM results while showing the actual size of differences between predictors. The cross-validated prediction accuracy demonstrates R^2 values between 0.54 and 0.63 for the three models, which establishes strong evidence for the detected patterns. The findings demonstrate a clear effect on managerial decisions because e-commerce trust-building strategies need to adapt to the cultural and institutional characteristics of each target market.

Discussion

The research results demonstrate that consumer trust development across e-commerce platforms shows both shared elements and distinct characteristics between different cultural groups. The study confirmed all structural paths between the four trust dimensions which include institutional trust and seller trust and other people's experiences and platform design across three countries which include Uzbekistan and Turkey and Malaysia. The three countries which researchers studied demonstrated different importance levels for three dimensions because researchers found that these differences matched the cultural traits and e-commerce development stage of each nation. The study shows that trust operates as a global concept which different cultures achieve through their unique methods this finding represents the main theoretical contribution of the research.

The trust pattern observed in Uzbekistan shows that people develop trust based on their past experiences with others which serves as the main trust factor with a trust score of 0.41. The first market characteristic shows that consumer trust in Uzbek e-commerce requires two factors because the market brings high uncertainty and customers lack experience. The second factor shows how Uzbekistan's collectivist society makes people trust their family and friends more than they trust information from unknown sources. The finding supports collectivism theory which states that trust within social network-based societies occurs through established social connections (Doney et al., 1998). Platform operators who work in Uzbekistan should invest their resources into developing friend referral systems and online customer reviews and partnerships with local influencers because these methods will generate better outcomes than traditional advertising and official product endorsements.

The results from Malaysia show an entirely different outcome. The country establishes platform design trust through a 0.42 coefficient and institutional trust through a 0.34 coefficient which together serve as the main trust factors at the country. The Malaysian e-commerce market shows this trend because its market reaches higher maturity and its advanced technology resources operate and its legal system controls function at a higher level. Malaysian consumers who have years of experience shopping online do not feel the need to rely solely on the opinions of others and make decisions based on a direct assessment of the quality of the platform design and the certainty of legal protections. The trust based on institutions in Turkey shows the lowest impact among the three nations because its people have historically doubted formal institutions and its consumer protection systems have shown limited success (Hwang & Lee, 2012).

The study possesses a critical methodological advantage through its capability to test measurement invariance. The cross-country comparison validity exists because researchers confirmed configuration and metric invariance and they reached relative scalar invariance which specifically maintains trust mechanism differences observed in path coefficients (Hair et al., 1998). Future researchers should test instrument invariance through comparative studies before undertaking instrument comparisons according to this methodologically significant finding. Measurement invariance testing between countries showed that previous studies which compared coefficients across countries reached incorrect conclusions because they failed to establish measurement invariance.

The analysis of individual cultural values moderation together with cultural values moderation analysis provides deeper insights into the results from comparative research. The researchers found that collectivism moderates the link between trust based on others' experience and general trust while uncertainty avoidance moderates the connection between institutional trust and general trust. The research shows that psychological and value differences between countries can be measured through individual assessment methods which create different national identities. The research results provide direct value to e-commerce platform localization strategies for developing their international presence. The platforms create user segments according to their personal cultural preferences which enables them to design customized user experiences for each segment. Users with high collectivism need to see most of their friends' reviews and recommendations while users with high uncertainty avoidance should be able to

view institutional trust signals together with formal trust guarantees.

The trust connection with behavioral outcomes which includes repurchase intention and e-loyalty showed strong links across three different countries. This finding contains both a promising and challenging message for platform managers. The promising aspect is that all cultures trust leads to loyalty which results in repurchase while organizations that build trust will always experience positive business outcomes. The challenging aspect is that e-commerce loyalty remains delicate because businesses can easily win over dedicated customers through attractive promotional deals. Platforms need to establish ongoing user experience improvements together with transaction security enhancements and information transparency efforts which will help them restore and build trust from users (Pavlou & Gefen, 2004).

The research demonstrates that e-commerce trust operates as a complex trust system which relies on cultural differences between societies. Businesses that want to build consumer trust in various markets should stay away from using standardized approaches because these methods create erroneous results. Transnational platforms must maintain brand identity and global quality standards while being flexible enough to localize trust signals to suit the cultural characteristics and maturity level of each market. Uzbekistan owns historic potential to develop its e-commerce industry because of its young population who are active on the internet and who embrace new technological innovations. But making this leap requires understanding local cultural elements while creating platforms which match the collective values and social validation needs of Uzbek consumers.

Conclusion

The researchers conducted a study which used multi-group structural equation modeling and artificial neural network analysis to compare factors that influence consumer trust in e-commerce platforms across three markets: Uzbekistan and Turkey and Malaysia. The research discovered that all four trust model dimensions which included institutional trust and seller trust and user experience trust and platform design trust, successfully measured consumer trust in all three nations, while each dimension of the model contributed to the total consumer trust measurement. However, the weight and importance of these dimensions differ significantly across the countries studied. The strongest predictor of trust in Uzbekistan arises from trusting others' experiences. In Turkey, platform design and seller characteristics establish the primary foundation for trust. In Malaysia, trust based on platform design and institutional trust are prioritized. The e-commerce development stage and cultural factors of each country determine the specific relationship patterns which exist between these two aspects. The test of measurement invariance, configuration and metric invariance, and relative scalar invariance confirmed the validity of the comparisons made. The research results validated how individual cultural values functioned as moderating factors which affected the causal relationships within the model.

The final summary of the findings highlights three important aspects that relate to theory development, managerial practices, and policymaking processes. The research demonstrates that trust exists as a universal construct which people from different cultures use to establish trust between themselves. E-commerce trust theories which originated in Western societies need to undergo adaptation for use in emerging markets and collectivistic cultures. E-commerce platform managers in Uzbekistan should establish trust-building methods that use customer feedback systems, display previous customer reviews, and develop social interaction features on their platforms. The design aesthetics and international security certifications will not satisfy Uzbek consumers unless businesses meet their demand for social validation. Uzbekistan e-commerce regulators need to increase their pace of developing and executing consumer protection and privacy regulations while they enhance self-regulatory mechanisms and seller evaluation and accreditation processes.

The research demonstrates that e-commerce in Uzbekistan is about to experience a major historic development. Young people who have received higher education in the country show strong interest in the new trend while technological systems continue to advance at a fast pace. The market

requires businesses to conduct in-depth studies of local customs which will help them build platforms that match the particular requirements and cultural customs of Uzbek consumers. China-based Azamit emerged as the biggest e-commerce site because it developed an understanding of local Chinese customs which Amazon failed to achieve. The successful platforms in Uzbekistan will establish their success through their ability to convert Uzbekistan's cultural values of collective identity and social relationship networks and social approval into design systems and algorithmic processes. The digital path to e-commerce development in Uzbekistan will follow a permanent track which needs to start from a thorough comprehension of local cultural customs.

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