

Algorithmic Trust Formation in E-Commerce: A Comparative Conceptual Framework of AI, Brand Trust, and Consumer Loyalty in Russia, Bangladesh, and Afghanistan

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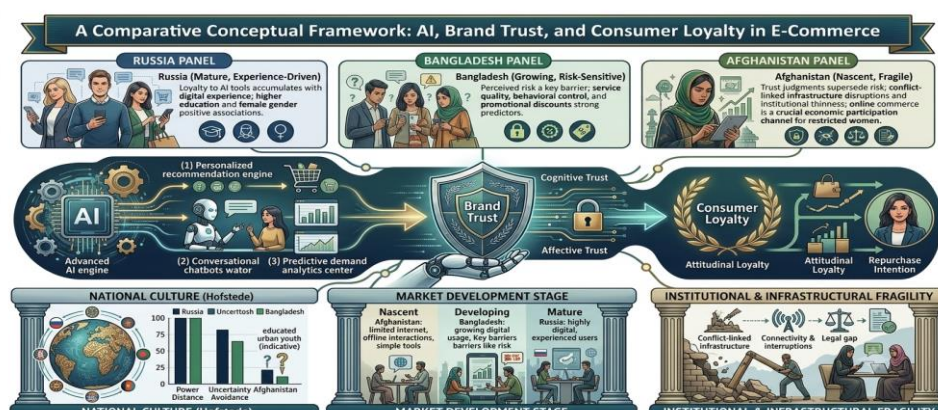
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Abstract: Artificial intelligence (AI) has become a defining infrastructure of contemporary e-commerce, reshaping how platforms personalize offers, converse with shoppers, and predict demand. Research linking AI-enabled personalization, chatbot interactivity, and recommendation accuracy to brand trust and loyalty remains concentrated in single- or two-country studies, leaving a gap in markets that differ in digital maturity and institutional stability. This paper develops a conceptual framework examining how AI shapes brand trust and loyalty across three e-commerce environments: Russia (digitally mature, AI-intensive), Bangladesh (fast-growing, young), and Afghanistan (fragile, conflict-affected, nascent digital commerce). Drawing on Commitment-Trust Theory, the Technology Acceptance Model, Expectation-Confirmation Theory, Mayer et al.'s model of organizational trust, and Hofstede's cultural-dimensions framework, the study synthesizes DOI-indexed literature into a moderated model in which AI capability shapes brand trust, which drives loyalty, with national culture, market-development stage, and (newly introduced) institutional and infrastructural fragility as boundary conditions. Evidence indicates Russian trust accrues with digital experience, education, and gender; Bangladeshi trust is shaped by perceived risk, service quality, and promotional cues; and Afghan trust, governed by standard technology-acceptance constructs, is further constrained by conflict-linked infrastructure disruption, thin legal protections, and post-2021 restrictions on women's offline economic participation that have made online channels a coping mechanism. The paper concludes with revised propositions, a three-country survey methodology, and managerial and policy implications for platforms and development actors.

Keywords: Afghanistan; artificial intelligence; Bangladesh; brand trust; comparative study; consumer loyalty; cultural dimensions; e-commerce; fragile markets; Russia.

Graphical Abstract:



I. INTRODUCTION

Artificial intelligence has moved from a peripheral experiment to a core operating capability of e-commerce platforms, spanning machine-learning-based recommendation engines, natural-language chatbots, and predictive systems that now touch nearly every stage of the online purchase journey. Because online exchanges lack the physical cues that anchor trust in offline retail, trust has long been treated as the central mediating construct of relationship marketing, determining whether a single transaction becomes a durable brand relationship [1].

Despite the expanding volume of AI-marketing scholarship, comparative evidence across markets that differ in both digital maturity and institutional stability remains scarce; most large-scale surveys are still country-specific, which limits the field's ability to separate universal trust-building mechanisms from ones that are culturally, developmentally, or institutionally contingent. Russia, Bangladesh, and Afghanistan together offer a theoretically productive triad for such a comparison because they occupy three distinct positions on the market-development and institutional-stability continuum. Russia's e-commerce sector is technologically mature and AI-intensive: a large-scale 2023 survey of 425 Russian online shoppers, the first study of its kind conducted at this scale in Russia, found them to be active e-commerce users, with more than half reporting loyalty to AI-based shopping tools, and with education, gender, and prior online-shopping experience all shaping how favorably AI tools were evaluated [2]. Bangladesh is a fast-growing but comparatively young digital market: research on 384 online shoppers in Rajshahi City Corporation found that a meaningful share of Bangladeshi consumers still favor offline shopping, and that promotional discounts, perceived benefits, and perceived behavioral control were the strongest predictors of attitudes toward AI-driven online shopping [3]. Afghanistan represents a third and qualitatively distinct case: its e-commerce sector was ranked 136th out of 151 economies on the 2018 UNCTAD B2C E-commerce Index [5], and the empirical literature that does exist is concentrated less on AI-specific features than on the underlying trust and risk judgments that any digitally mediated transaction requires. For example, a technology-acceptance study of 384 Afghan women found perceived trust, perceived risk, perceived web quality, and electronic word-of-mouth all significantly associated with online-shopping decisions [4]. Adding Afghanistan to the comparison tests whether the trust-formation mechanisms identified in mature and fast-growing markets generalize to a fragile, conflict-affected market, or whether an additional boundary condition is required to explain how trust forms when infrastructure, regulation, and physical safety cannot be taken for granted.

This paper pursues four objectives. First, it synthesizes DOI-indexed literature on AI applications in e-commerce and their documented links to brand trust and consumer loyalty. Second, it characterizes the distinct trajectories of AI-enabled and AI-adjacent e-commerce trust formation in Russia, Bangladesh, and Afghanistan using peer-reviewed empirical evidence. Third, it introduces institutional and infrastructural fragility as an explicit boundary condition alongside national culture and market-development stage, grounded in Afghanistan's evidence base. Fourth, it proposes an integrative, three-way moderated conceptual model together with research propositions and a cross-national methodology suitable for future empirical validation, most immediately as a foundation for the author's ongoing graduate research at the Russian State University for the Humanities. The remainder of the paper is organized as follows: Section II reviews the literature and theoretical framework; Sections III, IV, and V examine the Russian, Bangladeshi, and Afghan contexts in turn; Section VI presents the comparative analysis; Section VII develops the conceptual model and propositions; Section VIII outlines a proposed methodology; Sections IX and X discuss implications and limitations; and Section XI concludes.

II. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

A. AI Applications in E-Commerce

AI-powered personalized-recommendation technology has been shown to directly increase click-through behavior on e-commerce platforms, indicating that algorithmically tailored exposure changes not only what consumers see but what they act on [6]. Conversational AI is a second major application area: a time-lagged study of 343 Chinese e-commerce users found that both the interactivity of a chatbot and its perceived humanness significantly increased trust toward the chatbot, which in turn mediated the relationship between these design features and consumers' intention to adopt the chatbot for shopping, with perceived enjoyment further moderating that relationship [7]. Building on this, a study of 301 Chinese consumers of luxury fashion brands found that AI-chatbot service quality significantly influenced e-brand loyalty through the mediating roles of user trust, user experience, and electronic word-of-mouth [8]. In premium retail contexts specifically, AI-powered digital assistance and multisensory cues have been shown to shape customers' luxury-brand online shopping

experience through pathways consistent with the Stimulus-Organism-Response and Technology Readiness and Acceptance frameworks [9]. Across developing economies more broadly, an integrated UTAUT-based model estimated from 796 respondents found that trust in e-commerce, perceived risk, ease of use, curiosity, and awareness of e-commerce benefits jointly predicted adoption intentions, with ease of use and awareness the strongest levers, a pattern that anticipates the trust-and-risk-centered findings reported later in this paper for Bangladesh and Afghanistan [10].

B. Brand Trust in the AI-Enabled E-Commerce Context

A structural equation model of the Saudi Arabian e-commerce market found that AI-related social media exposure and product-recommendation features significantly strengthened purchase intention and brand preference, which together predicted e-customer loyalty, with all six hypothesized paths in the model supported [11]. A subsequent meta-analysis pooling ten studies drawn from MDPI, IEEE Xplore, and ABI/INFORM databases found a strong positive correlation ($r = 0.761$) between AI use and customer loyalty in e-commerce, providing convergent, cross-study evidence that AI adoption is systematically associated with loyalty outcomes rather than being an artifact of any single study design [12]. At the mechanism level, a study of AI-driven e-commerce users found that trust exerted a significant positive influence on both satisfaction and loyalty, and that personalized recommendations moderated the strength of the trust-satisfaction-loyalty relationship, meaning the same level of trust translated into different loyalty outcomes depending on how well personalization was implemented [13]. Expectation-Confirmation Theory, which models how the confirmation or disconfirmation of pre-purchase expectations shapes post-purchase attitudes, has proven a useful lens for this dynamic, since it explains why chatbot interactions that meet or exceed a user's anticipated level of interactivity and humanness generate trust, while interactions that fall short do not [14].

C. Consumer Loyalty Determinants

Across this literature, trust functions as the pivotal mediating variable between relationship-marketing inputs and loyalty outputs, consistent with Commitment-Trust Theory's original claim that trust and commitment are the key mediating variables of successful relationship marketing [1]. Personalization, service quality, and perceived risk repeatedly emerge as the proximate levers that platforms can adjust: personalization moderates the trust-satisfaction-loyalty chain [13], and chatbot service quality operates on loyalty through trust, experience, and electronic word-of-mouth [8].

D. Theoretical Framework

This study draws on four complementary theoretical traditions plus one comparative lens. Commitment-Trust Theory holds that trust is a necessary precondition for repeat business and brand loyalty, modeling relationship commitment and trust as key mediating variables between relational inputs and cooperative outcomes [1]. The Technology Acceptance Model explains adoption through perceived usefulness and perceived ease of use [15]; in the Bangladeshi context, an extended TAM incorporating perceived trust and service quality has been used specifically to explain behavioral intention to use AI-based online shopping platforms, with both added constructs shown to shape consumer attitude [16]. Expectation-Confirmation Theory contributes a post-adoption lens, modeling how the confirmation of pre-purchase expectations translates into satisfaction and, subsequently, loyalty or continued use [14]. A complementary integrative model of organizational trust treats trust as jointly determined by perceived ability, benevolence, and integrity of the trusted party, providing a cognitive basis for evaluating AI systems as quasi-relational actors [17]. Finally, Hofstede's cultural-dimensions framework supplies a comparative lens for this study, positing that national culture systematically shapes how consumers form dispositional trust toward unfamiliar institutions, including AI-enabled platforms, along measurable dimensions such as power distance and uncertainty avoidance [18].

The Russia-Bangladesh comparison that anchored earlier versions of this framework treated national culture and market-development stage as the two boundary conditions governing AI-enabled trust formation. Incorporating Afghanistan requires a third: institutional and infrastructural fragility, understood as the degree to which conflict, weak regulatory capacity, and unreliable connectivity independently constrain trust formation over and above a market's general stage of digital development. This boundary condition is introduced provisionally here and grounded empirically in Section V, where evidence on Afghan e-government adoption, mobile connectivity under conflict conditions, and post-2021 disruptions to women's economic participation is synthesized.

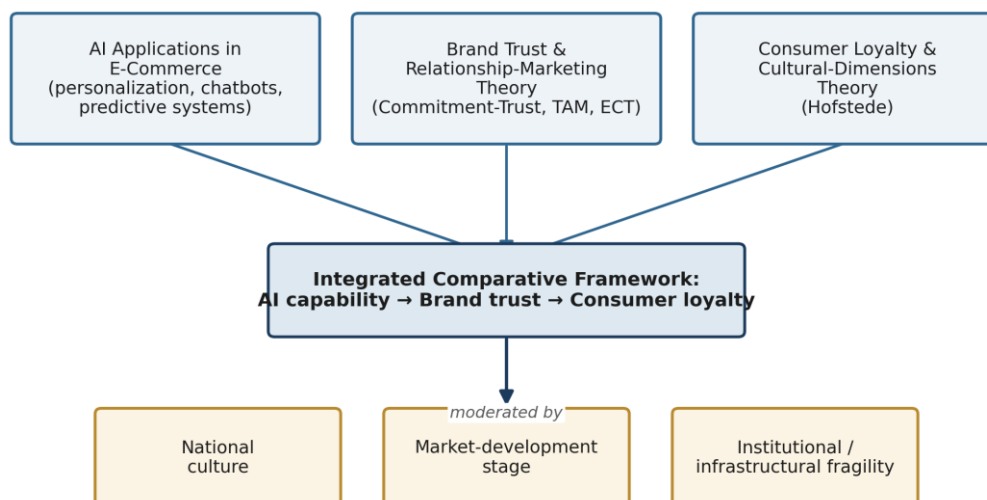


Fig. 1. Three literature streams, plus a fragility-sensitive comparative lens, synthesized into the study's integrated three-country framework.

III. AI ADOPTION AND E-COMMERCE TRUST IN RUSSIA

The most direct evidence on this question comes from a large-scale 2023 survey of 425 Russian online shoppers, the first study of its kind conducted at this scale in Russia, which examined consumers' attitudes toward AI tools in online shopping using descriptive and nonparametric statistics [2]. The study found that Russian shoppers are active e-commerce users and that more than half of respondents reported loyalty to AI-based shopping tools, although such tools were not perceived as a necessity. Three moderating patterns emerged, illustrated in Fig. 2: consumers with higher education levels rated the ease and value of AI-based tools more positively; women responded more positively to AI use than men; and consumers with more online-shopping experience tended to be both more loyal to and more satisfied with AI tools, suggesting that trust in AI-enabled retail in Russia accrues cumulatively with digital experience rather than being granted immediately [2].

Correlates of AI-tool loyalty among Russian online shoppers

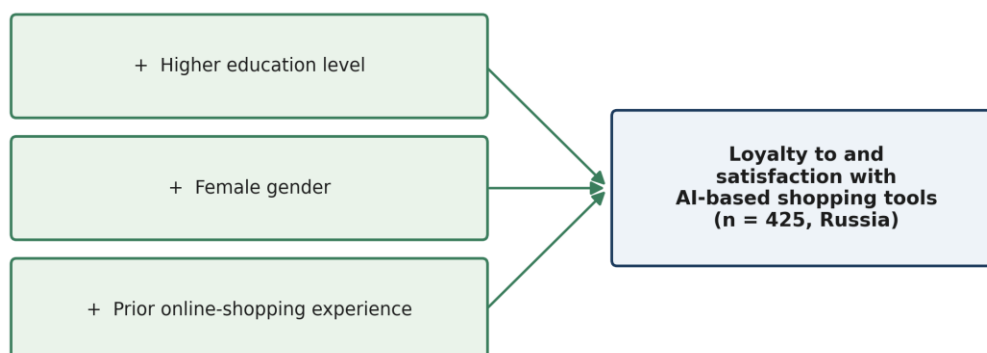


Fig. 2. Factors positively associated with AI-tool loyalty among Russian online shoppers, n = 425.

This individual-level evidence sits within a broader organizational trend toward embedding AI in Russian e-commerce operations. Research on the humanization of e-commerce jobs found that firms which combine high technology in the AI economy with a more human-centered, socially responsible approach to labor tend to achieve stronger revenue outcomes than firms pursuing AI adoption without a comparable investment in workforce humanization, based on data from major global and Russian e-commerce businesses [19]. Culturally, Russia is characterized by Hofstede's framework as a high-power-distance, high-uncertainty-avoidance society (see Fig. 5 in Section VI), which is consistent with the pattern in the 2023 survey: consumers who had already built up experience and confidence with online shopping platforms extended that trust to AI features more readily than newer users, a pattern typical of societies that seek to reduce ambiguity through repeated, predictable interaction before extending trust to a new technology [18], [2].

TABLE: I Key Russian Studies Cited in Section III

Study	Sample	Method	Key Finding
Ratner et al. [2]	n = 425 online shoppers	Descriptive / nonparametric survey, 2023	Majority loyal to AI tools; education, gender, and experience moderate attitudes
Zavyalova et al. [19]	Top global and Russian e-commerce firms	Econometric modeling, 2020–2021 data	Humanized AI-economy jobs raise e-commerce revenue more than AI alone

IV. AI ADOPTION AND E-COMMERCE TRUST IN BANGLADESH

Bangladesh's evidence base is built primarily around technology-acceptance and planned-behavior frameworks applied to specific consumer segments, summarized in Fig. 3. A study of 384 online shoppers in Rajshahi City Corporation, using an extended Theory of Planned Behavior model tested with structural equation modeling, found that perceived behavioral control and promotional discounts significantly shaped consumers' attitudes toward AI-driven online shopping, while perceived benefits and promotional discounts most strongly predicted purchase intention; the study also noted that many Bangladeshi consumers continue to favor offline shopping despite the availability of AI-enabled platforms [3]. A separate Technology Acceptance Model study extended with perceived trust and service-quality constructs found that both variables shape consumer attitude toward AI-based online shopping platforms in Bangladesh, and that attitude in turn predicts behavioral intention to use such platforms, indicating that trust and service quality function as necessary precursors to adoption rather than optional enhancements [16]. A third TAM-based study of 322 online consumers in Dhaka found a significant association between purchase intention and perceived usefulness, perceived ease of use, perceived enjoyment, and subjective norms, reinforcing that both functional and social factors drive online shopping intention in this market [20].

Significant predictors of AI-driven e-commerce attitude and intention

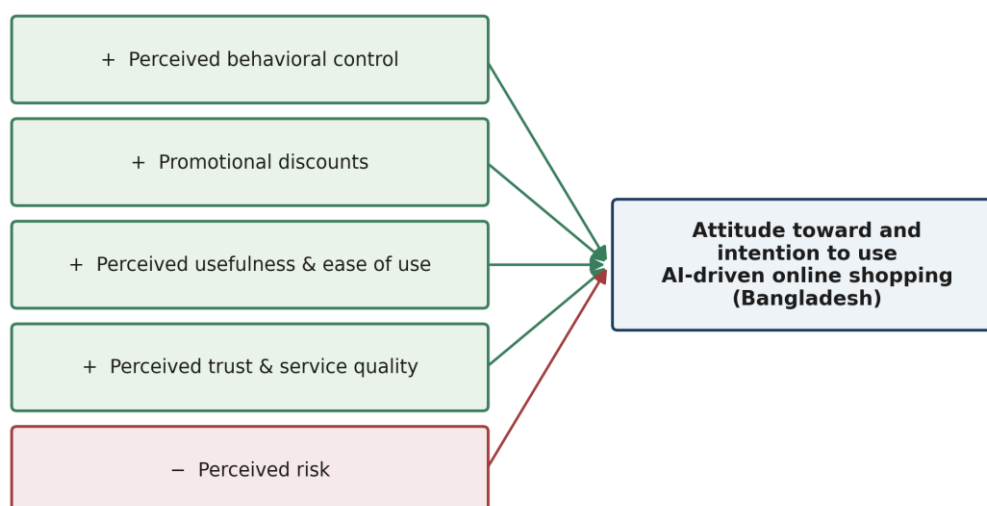


Fig. 3. Significant predictors of AI-driven e-commerce attitude and intention across three Bangladeshi samples.

Evidence from the adjacent banking sector reinforces the theme of risk-sensitivity: a study of AI-based conversational assistants in Bangladeshi banking, surveying 181 users about account-balance checks, payments, and financial-asset management, found that perceived ease of use, perceived enjoyment, and perceived trust were significant drivers of adoption intention, while perceived risk acted as a barrier, and perceived usefulness had no significant effect, suggesting that Bangladeshi consumers may not yet fully recognize the practical benefits of conversational AI even when they find it easy and enjoyable to use [21]. Together, these findings indicate that Bangladeshi consumer trust in AI-enabled commerce is built incrementally through demonstrated ease of use, service quality, and explicit risk mitigation, rather than through the novelty of the technology itself.

TABLE: II Key Bangladeshi Studies Cited in Section IV

Study	Sample	Method	Key Finding
Iqbal et al. [3]	Rajshahi, n = 384	Extended TPB, SEM	Perceived behavioral control and discounts drive attitude and intention
Hossain & Biswas [16]	Bangladesh, purposive sample	Extended TAM	Perceived trust and service quality shape attitude and intention
Islam et al. [20]	Dhaka, n = 322	TAM, (SmartPLS)	SEM Usefulness, ease of use, enjoyment, and norms predict purchase intention
Hasan et al. [21]	Banking users, n = 181	TAM, PLS-SEM	Perceived risk is a barrier; usefulness not significant

V. AI ADOPTION AND E-COMMERCE TRUST IN AFGHANISTAN

Afghanistan's digital-commerce evidence base differs from those of Russia and Bangladesh in both size and character. Rather than a cluster of AI-specific consumer-trust surveys, the literature is distributed across mobile telephony, general online shopping, mobile banking, and e-government adoption, domains that share a common analytical core (perceived trust, perceived risk, and technology-acceptance constructs) but that were not designed as a coordinated AI-commerce research program. This section synthesizes that literature and treats it as a proxy for the trust-formation mechanisms that a more AI-specific literature would likely also document, while flagging the gap explicitly in Section X. As of 2018, Afghanistan ranked 136th of 151 economies on UNCTAD's B2C E-commerce Index, and a subsequent UNCTAD eTrade readiness assessment identified a young, IT-capable population as a latent asset for e-commerce growth, constrained by security conditions, weak digital infrastructure, and an underdeveloped regulatory environment for electronic transactions [5].

The earliest relevant empirical study examined mobile-device adoption directly through the lens of e-commerce and technology-adoption theory: a large-scale survey of mobile-phone users in southern Afghanistan modeled trust and risk as predictors of mobile-use benefits and found that, despite operating in one of the highest-risk environments studied in the technology-adoption literature, users judged the informational and connectivity benefits of mobile devices worthwhile enough to outweigh substantial perceived risk [22]. This early finding foreshadows a pattern that recurs throughout the more recent Afghan literature: trust judgments appear to be formed less against an assumed baseline of institutional safety, as in Russia or Bangladesh, and more through an explicit, ongoing weighing of tangible benefit against acknowledged risk.

At the consumer level, a Technology Acceptance Model study of 384 Afghan women's online-shopping decisions (a sample size that, coincidentally, matches the Bangladeshi Rajshahi study almost exactly) found that perceived trust, perceived risk, perceived web quality, and electronic word-of-mouth were all significantly and positively associated with the decision to shop online, with perceived trust among the strongest predictors [4]. In the adjacent financial-services domain, a 2026 study of 377 commercial-bank customers in Kabul, using an extended TAM, found that perceived trust, perceived ease of use, perceived usefulness, and income significantly and positively predicted mobile-banking adoption intention, while service awareness, resource availability, education, and (notably) perceived risk were not significant predictors [27]. This last finding contrasts with the Bangladeshi banking-sector result, where perceived risk functioned as a significant barrier to adopting conversational banking assistants [21]. Read together, the Afghan evidence suggests that in a fragile-market setting, perceived trust may function less as one construct alongside perceived risk and more as a construct that absorbs or supersedes it: once a threshold of trust in a specific provider is established, residual risk appears not to independently deter adoption in the way it does in a more institutionally stable market such as Bangladesh.

Significant correlates of digital-commerce trust and adoption in Afghanistan

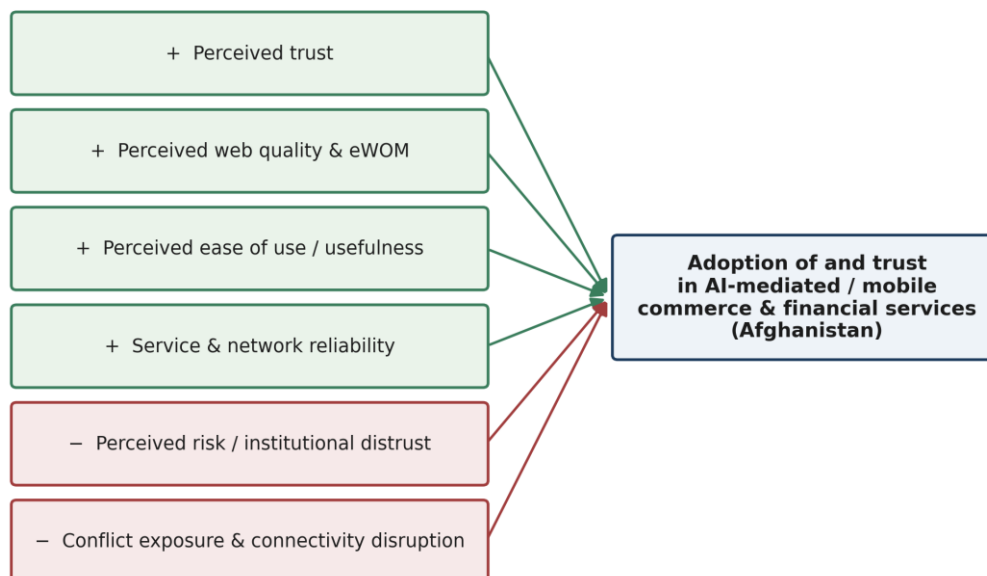


Fig. 4. Significant correlates of digital-commerce trust and adoption reported across the Afghan mobile-technology, online-shopping, and mobile-banking literature.

A parallel body of e-government literature, while not commercial in focus, documents the institutional layer within which any Afghan digital transaction (public or private) takes place. A government-to-citizen evaluation model found that citizen satisfaction with e-government services was shaped by service availability across channels, information and transaction security, and the digital divide between socially and technically advantaged and disadvantaged citizens [23]. A related study modeling e-government website adoption from the citizens' perspective found that website-quality and trust factors significantly shaped intention to use, reinforcing that the trust deficits documented in commercial contexts generalize to public digital institutions as well [24]. Most directly relevant to the fragility argument developed in this paper, a study of 360 Afghan citizens found that both the access divide and the social divide significantly predicted intention to use e-government services, and that the perceived intensity of civil conflict moderated several of these predictors: conflict itself, independent of infrastructure or culture, changed how digital-trust judgments were formed [25]. A 2022 survey of 387 government employees similarly found that the absence of clear implementation guidance, comprehensive legal frameworks, and consistent security policy were rated as significant barriers to digital-service delivery [26].

Since August 2021, Afghanistan's digital-commerce environment has been further reshaped by the return of Taliban governance. A qualitative study of 29 women-owned companies, conducted across the COVID-19 period and the initial months of Taliban rule, documented compounding external challenges (movement restriction, market-access constraints, and new regulation of women's economic activity) alongside internal financial and production pressures, concluding that these conditions risked precipitating business closure or owner emigration [28]. Subsequent reporting indicates that online commerce has become one of the few channels through which Afghan women can continue income-generating work under expanded restrictions on in-person employment, even as intermittent connectivity and, since 2025, regional restrictions on fixed-line internet access have introduced a further, distinctly Afghan source of platform-level volatility that has no equivalent in either Russia or Bangladesh [29]. These developments are recent and continue to evolve, and should be read as current context rather than as settled, peer-reviewed findings; they are noted here because they plausibly bear on any future primary data collection in this market.

Afghanistan is not part of Hofstede's original 76-country dataset. The closest available estimate comes from a Values Survey Module (VSM-94) study of educated, urban Afghan youth, which reported a Power Distance Index of 21 and an Uncertainty Avoidance Index of 50 [30]. Because this sample is neither nationally representative nor collected under the same protocol as Hofstede's original country scores, it is presented in Section VI as an indicative rather than an official value, and the comparison should be interpreted with this caveat throughout.

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Synthesizing this section, Afghan trust in digital commerce is early-stage and organized around the same core constructs (trust, risk, ease of use, usefulness) documented in Russia and Bangladesh, but it is layered under conditions of institutional and infrastructural volatility that make trust more fragile and more easily reversed than in either comparison market. This is the empirical basis for treating institutional and infrastructural fragility as a boundary condition distinct from market-development stage in the conceptual model developed in Section VII.

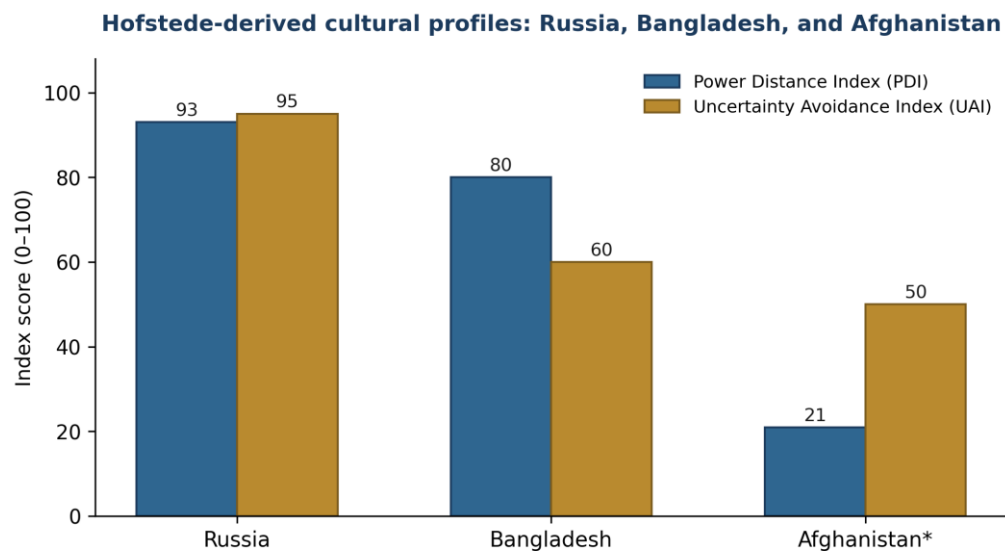
TABLE: III Key Afghan Studies Cited in Section V

Study	Sample	Method	Key Finding
Marett et al. [22]	Mobile-phone users, southern Afghanistan	Survey; trust/risk adoption model	Perceived benefits of mobile connectivity outweighed perceived risk despite a high-conflict setting
Osmani et al. [4]	Online shoppers, n = 384 (women)	TAM, survey (Kabul)	Perceived trust, risk, web quality, and eWOM all significantly shape online-shopping decisions
Sadat et al. [27]	Bank customers, n = 377 (Kabul)	Extended TAM, PLS-SEM	Trust, ease of use, usefulness, and income predict mobile-banking adoption; risk not significant
Anwer et al. [23]	Citizens (mixed methods)	G2C evaluation model	Citizen satisfaction shaped by service availability, security, and digital divide
Khan et al. [25]	Citizens, n = 360	PLS; digital-divide / conflict model	Access and social divide predict e-service use intention; civil-conflict intensity moderates predictors
Ismail et al. [26]	Government employees, n = 387	Descriptive / statistical survey	Strategy, policy, and legal gaps are significant barriers to digital-service implementation
Hashemy et al. [28]	Women-owned firms, 29 interviews	Qualitative, thematic analysis	COVID-19 and post-2021 Taliban governance imposed compounding external and internal business challenges

VI. COMPARATIVE ANALYSIS: RUSSIA, BANGLADESH, AND AFGHANISTAN

Read together, the Russian, Bangladeshi, and Afghan evidence bases point to three distinct dominant mechanisms of digital-commerce trust formation, summarized in Table IV. In Russia, where e-commerce is already a mainstream channel, the 2023 national survey suggests that trust in AI features is primarily a function of accumulated digital experience and demographic factors such as education and gender, rather than of the novelty of the AI feature itself [2]; organizational evidence further suggests that firms which pair AI adoption with humanized service delivery outperform those relying on automation alone [19]. In Bangladesh, where a substantial share of consumers have not yet fully transitioned from offline to online shopping, trust formation appears more front-loaded on functional and risk-related factors: perceived behavioral control, promotional value, perceived usefulness and ease of use, and explicit risk mitigation all recur as significant predictors across three independent studies [3], [16], [20], and the banking-sector evidence shows that perceived risk functions as an active barrier even when ease of use and enjoyment are rated favorably [21]. In Afghanistan, the same core constructs (trust, risk, ease of use, usefulness) recur, but perceived trust appears to play an outsized, risk-absorbing role [4], [27], while an additional institutional layer (legal, regulatory, and conflict-related) shapes both public and commercial digital trust in ways that have no direct parallel in the other two markets [23], [25], [26].

Hofstede's cultural-dimensions framework offers a partial explanation for the divergence between Russia and Bangladesh, and a more tentative one for Afghanistan (Fig. 5). Russia scores substantially higher than Bangladesh on Uncertainty Avoidance and is somewhat higher on Power Distance, indicating that Russian consumers may rely more heavily on structured, rule-based signals of reliability, such as accumulated platform experience, while Bangladeshi consumers, operating in a market with comparatively lower uncertainty avoidance but very high power distance, may weigh promotional and behavioral-control cues more heavily when platform-level track records are still being established [18]. Afghanistan's indicative PDI of 21 and UAI of 50 sit well below both comparison countries, but because this estimate comes from an educated, urban youth sample rather than a Hofstede-standard national survey, it should be read as suggestive of a distinct cultural starting point rather than as a robust basis for prediction [30]; the institutional-fragility explanation developed in this paper is offered as a complement to, not a replacement for, a cultural account of the Afghan case.



*Afghanistan is not part of Hofstede's original 76-country dataset. Values shown are estimates from a VSM-94 survey of educated, urban Afghan youth and should be read as indicative, not as an official Hofstede country score.

Fig. 5. Hofstede-derived Power Distance and Uncertainty Avoidance scores for Russia, Bangladesh, and (indicatively) Afghanistan.

TABLE: IV Comparative Summary of AI-Enabled and AI-Adjacent E-Commerce Trust Formation

Dimension	Russia	Bangladesh	Afghanistan
Market stage	Mainstream, digitally experienced e-commerce user base [2]	Fast-growing market; sizable offline-preferring segment [3]	Nascent, unevenly distributed; ranked 136/151 on UNCTAD B2C index [5]
Dominant trust driver	Accumulated digital experience, education, gender [2]	Perceived behavioral control, service quality, perceived risk [3], [16], [21]	Perceived trust (appears to subsume perceived risk) [4], [27]
Institutional / organizational pattern	AI adoption paired with humanized service outperforms automation alone [19]	Trust built incrementally through demonstrated ease of use and risk mitigation [21]	Institutional trust deficits and legal/regulatory gaps span public and commercial digital services [23], [25], [26]
Hofstede profile	PDI 93, UAI 95 (high on both) [18]	PDI 80, UAI 60 (high PDI, moderate UAI) [18]	PDI 21, UAI 50 (indicative estimate; educated urban youth sample, not an official Hofstede score) [30]

Dimension	Russia	Bangladesh	Afghanistan
Distinctive volatility factor	Macroeconomic and regulatory conditions subject to change [2]	Persistent offline-shopping preference among a large consumer segment [3]	Conflict-linked infrastructure disruption; post-2021 restrictions on women's offline economic participation [25], [28], [29]
Key managerial / policy lever	Reward repeat digital engagement; combine AI with human touch [2], [19]	Reduce perceived risk; demonstrate service quality and usefulness explicitly [16], [21]	Build demonstrable transactional reliability; provide offline/hybrid fallback channels; support women-led online micro-enterprise [27], [28]

VII. CONCEPTUAL MODEL AND RESEARCH PROPOSITIONS

Synthesizing Sections II–VI, this paper proposes a moderated conceptual model (Fig. 6) in which three dimensions of AI capability (personalization accuracy, chatbot interactivity/humanness, and predictive AI accuracy) jointly predict brand trust (a composite of cognitive and affective trust), which in turn predicts consumer loyalty (attitudinal loyalty and repurchase intention). National culture, market-development stage, and institutional/infrastructural fragility are proposed as moderators of both pathways. Table V lists eight resulting propositions for future empirical testing; P7 and P8 are new to this three-country extension and are grounded specifically in the Afghan evidence reviewed in Section V.

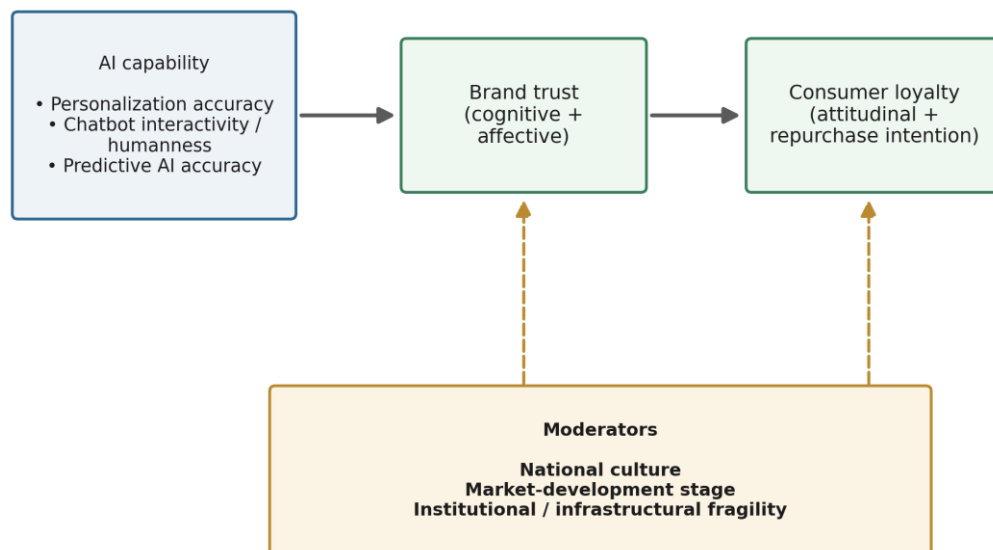


Fig. 6. Conceptual model of AI capability, brand trust, and consumer loyalty, moderated by national culture, market-development stage, and institutional/infrastructural fragility.

TABLE: V Research Propositions Derived From the Conceptual Model

No.	Proposition
P1	AI-enabled personalization is positively associated with brand trust across all three markets, but the association weakens where privacy or automation-fatigue concerns are salient; the Afghan evidence for this proposition is presently indirect, drawn from adjacent mobile- and financial-technology studies rather than AI-commerce-specific ones [6], [13], [4].
P2	Chatbot interactivity and perceived humanness are more strongly associated with trust in Bangladesh and Afghanistan than in Russia, reflecting both countries' comparatively higher reliance on service-quality and behavioral-control cues [7], [16], [3].

No.	Proposition
P3	Accumulated digital-platform experience is more strongly associated with AI trust in Russia than in Bangladesh, and more strongly in Bangladesh than in Afghanistan, tracking each market's relative digital maturity [2].
P4	Brand trust mediates the relationship between AI capability and consumer loyalty in all three markets, consistent with Commitment-Trust Theory [1], [13].
P5	Perceived risk negatively moderates the AI-capability-to-trust pathway more strongly in Bangladesh than in Russia; in Afghanistan, perceived trust appears to subsume rather than compete with perceived risk as the dominant gatekeeping construct, a pattern that requires direct empirical testing rather than inference from adjacent-domain studies [21], [27].
P6	Education and gender moderate the strength of the trust-loyalty relationship in Russia; promotional value and perceived behavioral control play an analogous moderating role in Bangladesh [2], [3].
P7	Institutional and infrastructural fragility (operationalized as exposure to conflict, connectivity disruption, and regulatory uncertainty) negatively moderates the AI-capability-to-trust pathway in Afghanistan, independent of and in addition to market-development stage [25], [26], [23].
P8	Restrictions on women's offline economic participation positively moderate Afghan women's reliance on online and AI-mediated commerce as a channel of economic participation, a pattern without a direct parallel in Russia or Bangladesh [28], [29].

VIII. PROPOSED METHODOLOGY FOR EMPIRICAL VALIDATION

The present paper is conceptual and comparative, synthesizing DOI-indexed secondary evidence rather than reporting new primary data; the propositions above are offered as a foundation for subsequent empirical work. A cross-national quantitative design is proposed to test the model across all three markets (Fig. 7). Structured, self-administered questionnaires would operationalize AI capability, brand trust, and consumer loyalty using validated multi-item scales adapted from the Technology Acceptance Model, Expectation-Confirmation Theory, and organizational-trust literature [15], [14], [17], supplemented by a short Hofstede-derived cultural-values module [18] and a new institutional/infrastructural-fragility module operationalizing conflict exposure, connectivity disruption, and regulatory uncertainty. Table VI lists the constructs proposed for the survey instrument and their theoretical sources.

TABLE: VI Proposed Constructs and Their Theoretical Sources

Construct	Theoretical Source	Example Focus
Perceived usefulness / ease of use	Technology Acceptance Model [15]	Functional evaluation of AI shopping features
Expectation confirmation	Expectation-Confirmation Theory [14]	Post-use satisfaction with AI interactions
Cognitive & affective trust	Integrative Trust Model [17]	Ability, benevolence, and integrity of the AI system or platform
Relationship commitment	Commitment-Trust Theory [1]	Willingness to sustain the platform relationship
Cultural orientation	Hofstede's cultural dimensions [18]	Power distance and uncertainty avoidance
Institutional / infrastructural fragility	Introduced in this paper, Section II.D	Exposure to conflict, connectivity disruption, and regulatory uncertainty

Stratified sampling would target active online shoppers, and where relevant mobile-banking users, in major metropolitan hubs in each country, following the precedent of prior national and sub-national surveys that achieved samples of 425 respondents in Russia [2], 384 respondents in Bangladesh [3], and 384 and 377 respondents, respectively, in two

independent Afghan studies [4], [27]. A minimum of approximately 350–400 respondents per country is therefore recommended to support structural equation modeling with adequate statistical power, with the Afghan sample explicitly planned around a mixed-mode design (combining online recruitment in better-connected urban centers with in-person, offline-fallback data collection elsewhere), given the connectivity volatility documented in Section V. Given the mobility and gender-segregation constraints reported in the recent Afghan literature [28], data collection in Afghanistan would additionally require female enumerators and gender-disaggregated protocols, together with a context-appropriate ethical and safety review; these are treated as design requirements rather than optional refinements.

Data would be analyzed using partial least squares structural equation modeling (PLS-SEM) with multi-group analysis to test the moderating role of national culture, market stage, and institutional/infrastructural fragility, with convergent and discriminant validity assessed following standard criteria for reflective measurement models [31]. Measurement invariance testing across the three national samples would be a necessary precondition for any substantive cross-country comparison of path coefficients (Fig. 7), and would need to be interpreted cautiously for Afghanistan given the country's more limited base of psychometrically validated instruments relative to Russia and Bangladesh.

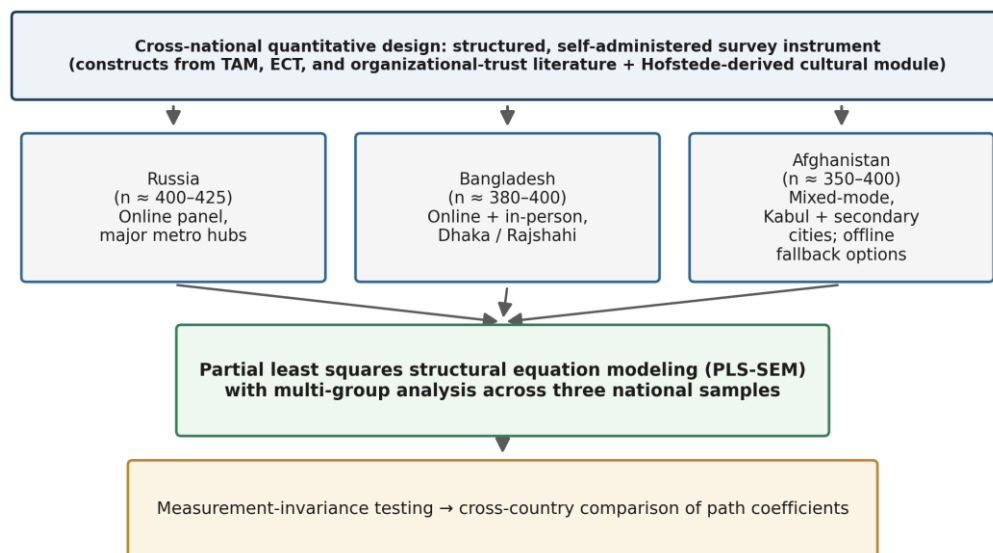


Fig. 7. Proposed cross-national methodology for empirical validation of the conceptual model across Russia, Bangladesh, and Afghanistan.

IX. DISCUSSION AND MANAGERIAL IMPLICATIONS

The comparative synthesis carries distinct implications for platform managers and, in Afghanistan's case, for development and donor actors as well. In Russia, where trust in AI tools appears to build cumulatively with digital experience, managers are likely to benefit from strategies that reward and extend repeat engagement: loyalty programs tied to platform tenure, progressive disclosure of AI features to newer users, and continued investment in pairing AI with human-supported service, consistent with evidence that humanized AI-economy jobs are associated with stronger e-commerce revenue outcomes than automation pursued alone [19], [2]. In Bangladesh, where a meaningful share of consumers remain unconvinced by online and AI-mediated retail, the more productive investment is in demonstrable, risk-reducing service quality: clearly communicating the practical usefulness of AI features (given evidence that usefulness is not automatically assumed), reducing perceived risk explicitly, and using promotional and behavioral-control cues to support the transition from offline to online engagement [16], [21], [3].

In Afghanistan, the managerial and policy calculus is different again. Because perceived trust appears to function as the dominant gatekeeping construct (with perceived risk not emerging as a significant independent barrier once trust is established [27]), platforms and financial-service providers likely gain more from investments that build demonstrable, provider-level reliability (transparent transaction records, responsive customer service, visible dispute-resolution mechanisms) than from generic risk-communication campaigns. Given documented connectivity volatility, including intermittent and, since 2025, regionally restricted fixed-line internet access [29], platforms serving this market would benefit

from offline or hybrid fallback channels, such as SMS-based ordering or local agent networks, that do not depend on continuous connectivity. Finally, because online commerce has become one of the few remaining channels through which Afghan women can sustain income-generating work under current restrictions on in-person employment [28], donor and platform strategies that specifically support women-led online micro-enterprise (digital-literacy training, access to capital, and simplified onboarding) are likely to have outsized welfare effects relative to their cost, independent of any purely commercial rationale.

Across all three markets, chatbot design that combines interactivity with perceived humanness is a comparatively low-cost, high-leverage lever for building initial trust, particularly where a platform's track record is still being established [7]. Theoretically, the study contributes by extending Commitment-Trust Theory and the Technology Acceptance Model into a jointly transitional-, developing-, and fragile-economy comparative frame, and by proposing institutional and infrastructural fragility as a boundary condition distinct from market-development stage, a distinction that the Afghan evidence, considered alongside Russia and Bangladesh, suggests is empirically warranted rather than merely conceptually convenient.

X. LIMITATIONS AND FUTURE RESEARCH

This paper is conceptual and literature-based; its propositions have not yet been tested against primary comparative data collected concurrently in all three countries, and the underlying studies used different constructs, scales, and sample frames, which limits direct numerical comparison across Sections III, IV, and V. This limitation is most acute for Afghanistan, where the literature synthesized in Section V is drawn from adjacent domains (mobile telephony, general online shopping, mobile banking, and e-government) rather than from a mature, AI-commerce-specific research program; propositions P1, P2, and P5, in particular, extend to Afghanistan by inference from these adjacent domains and should be treated as more provisional than their Russian and Bangladeshi counterparts until tested directly. The Afghan Hofstede-type cultural estimate used in Section VI is drawn from a non-representative sample of educated urban youth rather than an official, Hofstede-standard national survey, and should be treated as indicative only [30].

The Russian e-commerce environment is also subject to macroeconomic and regulatory conditions that can change quickly, so the generalizability of the 2023 survey findings should be periodically reassessed. Afghanistan's political, security, and connectivity conditions are considerably more volatile still, and have continued to evolve during the preparation of this manuscript; any primary data collection modeled on the methodology proposed in Section VIII would need to be timed and scoped with this volatility explicitly in mind, and findings would carry a shorter shelf life than comparable findings from Russia or Bangladesh. Gender-differentiated data collection in Afghanistan, while methodologically necessary given the evidence reviewed in Section V, may also be difficult or unsafe to conduct under current conditions in some provinces, which is as much an ethical constraint on the proposed empirical validation as a methodological one.

Future research should prioritize the primary, multi-group PLS-SEM study outlined in Section VIII, ideally complemented by qualitative work capturing how Russian, Bangladeshi, and Afghan consumers narrate their own trust judgments about AI-enabled and AI-adjacent digital commerce. Longitudinal designs would help distinguish transitional effects tied to each country's current conditions from more stable cultural and institutional patterns, and the comparative framework could usefully be extended to additional transitional, developing, and fragile markets to test the generalizability of the three proposed moderators, including institutional and infrastructural fragility.

XI. CONCLUSIONS

This paper has examined how artificial intelligence, and the trust-relevant technology-acceptance constructs adjacent to it, shape brand trust and consumer loyalty in e-commerce, extending a two-country comparison of Russia and Bangladesh to a three-country comparison that also incorporates Afghanistan. The DOI-indexed literature converges on the view that AI capability, and digital-commerce capability more broadly, supports trust and loyalty when it is matched to consumer readiness: in Russia, trust in AI-enabled retail appears to accumulate with digital experience and to benefit from pairing automation with humanized service; in Bangladesh, trust is built more incrementally through demonstrated usefulness, service quality, and explicit risk reduction; and in Afghanistan, trust and adoption are shaped by the same core constructs found elsewhere but are additionally, and distinctively, constrained by institutional and infrastructural fragility (conflict exposure, connectivity disruption, and regulatory uncertainty) and shaped by the post-2021 expansion of online channels as a means of economic participation for women excluded from in-person work. Hofstede's cultural-dimensions framework

offers a coherent partial explanation for the divergence between Russia and Bangladesh, and a more tentative one for Afghanistan given the absence of an official Hofstede country score. The resulting three-way conceptual model, comparative tables, and eight propositions are offered as a basis for future empirical validation and as a contribution toward a more genuinely comparative, cross-cultural understanding of AI's role in digital brand relationships, one that extends beyond digitally mature and fast-growing markets to markets where institutional stability itself cannot be assumed.

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Informed Consent Statement. Not applicable.

Data Availability Statement. All data supporting the findings of this study are included within the article and are available from the cited published literature. No new datasets were generated or analyzed during the current study.

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