Perceived Procedural Fairness in University Social Media Communication and Its Impact on Institutional Reputation: Evidence from Public Universities in Azerbaijan

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ARTICLE INFO	Abstract
	Objective: The analysis here investigates the link between perceived procedural fairness of university social media communication and public perceptions of institutional reputation among Azeri state universities. It extends procedural justice theory to higher education digital branding and tests the extent to which stakeholder perceptions of fairness-based online communication processes drive reputation, through engagement quality and institutional trust. **Approach/Methodology/Design**: This was a quantitative cross-sectional study conducted through an in-depth survey of 300 key informants across ten public universities in Azerbaijan. Data were analyzed employing Partial Least Squares Structural Equation Modelling (PLS-SEM). These elements were standardized in the literature to define procedural fairness with transparency, voice opportunity, consistency, and adequacy of explanation dimensions making up the definition. **Results**: Perceived procedural fairness significantly predicted the quality of engagement ($\beta = 0.547$, $p < .001$), which sequentially mediated the link to institutional trust ($\beta = 0.483$, $p < .001$) and legitimacy ($\beta = 0.461$, $p < .001$). The quality of ICT infrastructure moderated the fairness–engagement relationship ($\beta = 0.19$, $p < .01$), and geography moderated the trust–reputation conversion ($\Delta\beta = 0.14$, $p < .05$). **Implications**: Through trust, universities that engage in procedural fairness–transparent processes, voice for stakeholders and explanations of the reasons are better able to maintain a reputation. The quality of infrastructure conditions the efficacy of above practices which is more important for digital strategy as "Azerbaijan 2030".

Introduction

Public universities exist because of a social contract which binds them to serve stakeholders in an equitable and transparent manner (Rawls, 1971). Given that social media has become the default interface through which stakeholders engage with institutional governance—admissions decisions, fee structures, scholarship allocations and policy changes—it is not surprising that the perceived equity of these communicative processes (Greenberg et al., 2021) has emerged as an important if underreported driver of reputational capital (Colquitt, 2001).

Although previous scholarship on marketing in higher education has investigated social media for marketization, interaction and equity development (Dwivedi et al., 2021; Ibrahim, Jibril, Ozuem & Olatunji, 2025), little attention towards the justice aspect of a digital communication engagement is available.

According to procedural justice theory, people assess the fairness of processes independent of outcomes (Thibaut & Walker, 1975; Leventhal, 1980). Procedural fairness has been continuously correlated with trust, satisfaction and legitimacy in organizational settings (Colquitt, Conlon, Wesson, Porter, & Ng 2001). In the higher education social media context, perceived procedural fairness includes stakeholder perceptions concerning whether an institution's digital communications are transparent, consistent, open to voice and explanation. And that perceived procedural unfairness — and the consequent erosion of trust, regardless of the substantive merits of a new policy — comes as little surprise when a university announces a policy change on social media without any reasoning or where it responds selectively to enquiries.

In showcasing engagement quality and institutional trust, this study presents procedural fairness in social media communication as a new distinct antecedent of institutional reputation. While social media practices are aligned with strategic interest in achieving some objectives for the brand (Al-Adaini & Rustamov, in press), procedural fairness addresses justice, not as to what institutions communicate but how fairly they communicate. This distinction is theoretically supported by process-based justice literature that shows that perceptions of fairness in processes are often more important to stakeholders than favorable outcomes (Brockner & Wiesenfeld, 1996).

In the Azerbaijani public higher education setting, procedural fairness becomes even more salient. Azerbaijan 2030 national strategy (President of the Republic of Azerbaijan, 2021) creates increasing pressure on universities to show accountability and inclusive governance. The urban–non-urban digital divide (World Bank, 2024) effectively leads to heterogeneous communication environments in which procedural fairness may play out differently relative to the quality of infrastructure and geographic location. Stakeholders outside urban areas with less access to digital could be especially vulnerable to procedural unfairness when voice and participation are restricted by narrowband limitations.

However, this theoretical gap is further complicated by the lack of validated measures to capture justice perceptions elicited in institutional digital communication. Existing scales in higher education marketing literature—such as those assessing social media practices (Al-Adaini & Rustamov, in press), brand credibility (Erdem & Swait, 2004), and engagement quality (Ibrahim et al., 2025)—do not measure whether stakeholders' perceptions of the underlying communication processes are fair. This is a notable gap as procedural fairness has been shown to independently affect trust and cooperation across a range of organizational contexts, often accounting for variance not explained by outcome-based or strategic-alignment-based predictors (Colquitt et al., 2001). This study introduces a justice lens into the higher education digital branding discourse, offering an important complementary perspective that enriches the theoretical architecture of this domain and presents practitioners with an actionable diagnostic framework.

Furthermore, the question of procedural fairness in university–stakeholder engagement is newly urgent in the post-pandemic context where models of digital communication have become standard operating procedure. Universities globally on COVID-19, shifted all significant communications such as admission results, examination policies and financial help decisions to social media platforms (Ibrahim et al., 2025). This change forced stakeholders to adapt to institutional communication channels which previously passed through in-person meetings, snail mails or phone calls. Digital life exposes the procedural aspects of communication—speed, transparency, consistency and depth of explanation—in immediately visible and publicly evaluable forms. Public and delayed (or unclear) response to a negative social media post on the university's Facebook page is seen not only by the affected stakeholder but also by the whole community of followers furthering procedural fairness (or unfairness) impressions through mechanisms like social proof. This visibility dynamic renders procedural fairness in social media communication a much stronger reputational lever than its offline analogue.

This motivation for the current study is essentially augmented by practical observation from the Azerbaijani higher education sector. Initial conversations with university public relations officers identified persistent complaints from stakeholders about selective responsiveness, intimations of arbitrary policy changes, and little agreement in communication standards across institutional social media accounts—all expressions of procedural inequity. These observations suggest that procedural fairness is not a theoretical abstraction but rather a literal affair of the day as stakeholder interactions with university brands reflect upon their institutional identities. This paper offers theoretical advancement as well as diagnostic value, by harnessing the development and testing of a theory-based model of procedural fairness within this context.

1.1 Research Objectives

This research serves three goals: (a) to conceptualize and operationalize perceived procedural fairness in university social media communication; (b) to test a sequential mediation model whereby procedural fairness leads to institutional reputation through engagement quality and institutional trust; and (c) to investigate the moderating effects of ICT infrastructure quality and geographical location on this process.

Literature Review

2.1 Procedural Justice Theory and the Digital Communication

Procedural justice theory originated in the field of legal psychology (Thibaut & Walker, 1975) and was later applied to organizational contexts by Leventhal (1980), who proposed six characteristics of procedural fairness: consistency, bias suppression, accuracy, correctability, representativeness, and ethicality. This was followed by a later confirmation into a 4dimensional model encompassing procedural, distributive, interpersonal and informational justice (Colquitt, 2001). In these digital communication contexts then, procedural fairness is reflected when institutions use consistent rules and procedures (eg, provide voice), supply feedback opportunities across interaction experiences (provide voice), tell about information-

sharing rationales across situations (transparent explanations) and ensure that these institutional behaviors are independent of person's social groupings or characteristics (treatment bias; Ambrose & Schminke, 2009).

Details about the use of justice theory in higher education social media are still being developed. While showing that social media practices (informativeness, interactivity, responsiveness, consistency and transparency) lead to brand equity via sequential mediation (after their path 1 of the seed models), Al-Adaini and Rustamov framework is abductively rooted in nominal orderings enforcing strategic alignment than justice perceptions. The current study extends this body of research by reconceptualizing transparency and consistency as aspects of procedural fairness, but also including two additional justice-related dimensions: provision of voice (the ability for stakeholders to participate in and affect the processes of communication) and adequacy of explanation (whether the rationales offered for decisions made by institutions conveyed through social media are adequate).

One of the most important distinctions in justice literature is between structural and social dimensions of procedural fairness. Leventhal's (1980 criteria primarily focuses on distributive fairness — formal rules perceived to dictate how decisions are made; however, interactional justice proposed by Bies and Moag captures social aspects of fairness: the proverbial "how you were treated while procedures were enacted." In the social media context, structural fairness is reflected in whether a university applies consistent standards of response and clear protocols for information-sharing, whereas interactional fairness manifests in the tone, respectfulness and specificity of individual responses. Operationalization's of perceived procedural fairness tend to encompass both structural and social dimensions, and the four elements used in this study (i.e., transparency, voice provision, consistency, explanation adequacy) provide a comprehensive assessment of the fairness construct as applied to digital institutional communication (Colquitt et al., 2001; Ambrose & Schminke, 2009).

2.2 Procedural Fairness of University Communication on Social Media

This study conceptually develops four-way constructs of perceived procedural fairness (PPF) in university social media communication based on the facilitators outlined by Leventhal (1980) and who was measured via Colquitt's (2001) measurement framework. Transparency is defined as the degree to which institutional decisions, policies and processes are shared on social media platforms (Perera, Nair, & Asaari, 2023). Voice provision represents the degree to which stakeholders feel that their opinion, updates, and concerns are truly sought through social media vehicles (Appel, Grewal, Hadi, & Stephen, 2020). Consistency refers to the uniformity and reliability of communication standards, tone, and responsiveness across time, platforms (Keller, 1993) and stakeholder groups. Explanation adequacy is defined as the perceived thoroughness and validity of reasons that are offered in conjunction with changes, policies, or actions when communicated online (Bies & Moag, 1986).

This frames the conceptualization of procedural justice: stakeholders assess not only whether they received information, but whether the processes in which that information was generated, disseminated and responded to were fair. The only way for a university to both be highly

informative yet fail in procedural fairness is through it responding selectively to favorable enquiries or negotiating certain controversial policy decisions in bad faith.

Theoretically, all dimensions of the PPF construct are linked to well-established justice and communication theories. Transparency is drawn from both Leventhal's (1980) accuracy and correctability criteria and also that of Legitimacy Theory where the decision-making process must be made visible in order for public organizations to maintain social legitimacy (Perera et al., 2023). A [9] Transparency, in social media parlance, involves universities openly offering up the reasoning behind a policy choice, allowing accessibility to selection criteria for scholarships or admissions programs, sharing scholarship data institutional performance data up front. Voice provision is built on Thibaut and Walker's (1975) notion of process control—the observation that people believe processes are fairer when they have a chance to provide their input before decisions are made. Social media platforms such as Facebook and Twitter are unique governance affordances for voice provision in the form of comment sections, polls, Q&A sessions (LI et al., 2021), or even through more specific mechanics such as direct messaging; however, many universities are underutilizing these affordances by approaching social media as a broadcast medium rather than a dialectical one (Appel et al., 2020).

Consistency corresponds to Leventhal's (1980) consistency heuristic that requires procedures be applied similarly across persons and over time. The multi-faceted nature of consistency violations in the social media context lead to the following examples at universities: representing responsiveness by engaging = quickly with specific, high-profile stakeholders while either ignoring or being inaccessible to others; tone shifting from platform-to-platform without accountability; and/or institutional goal changes on issues not acknowledged. The concept of explanation adequacy is informed by the bodies of work related to informational justice started by Bies and Moag (1986), which shows without question that the nature of explanations accompanying decisions greatly matters for perceptions of fairness above and beyond perceptions about the decisions per se. In the university social media ecology, sufficient explanation is a moving target9: every time an institution announces a policy change, fee increase or program adjustment there are numerous others who will critique whether the justification presented was adequate (Sharma & Howard 2015), honest and specific rather than vague and formulaic.

2.3 Procedural Fairness in Higher Education (Post-Soviet and Emerging-Market Context)

The procedural fairness concept is particularly relevant in post-Soviet institutional settings, both at the level of higher education governance and socio-political context. Azerbaijan, Kazakhstan, Georgia and Uzbekistan's universities also share a legacy of centralized decision-making; limited stakeholder participation; and top-down communication cultures that are largely at odds with the participatory, transparent and responsive communication paradigms required by digitally literate stakeholders (Perera et al., 2022). In such contexts, social media platforms are to introduce tension between institutionally-instituted communication habits—which are often unidirectional announcements—and platform affordances that enable dialogue, feedbacks and accountability demands (Dwivedi et al., 2021). This tension renders perceptions

of procedural fairness particularly manifest: stakeholders in post-Soviet HEIs may be especially attuned to whether digital communication is evidence of real procedural openness or just the performative incorporation of social media with no commensurate improvements in fairness.

Moreover, the spatial aspect of procedural fairness exist but has not been discussed in the context of Azerbaijani public universities with their geographic dispersion. The disadvantages faced by the non-urban campuses are compounded: (1) limited ICT infrastructure restricts the quality and availability of digital voice mechanisms, (2) relatively smaller administrative teams have lower responsiveness potential, and (3) absence of densely connected stakeholders limits building reputational outcomes on perceptions about fairness. These structural conditions lead to the suggestion that the PPF–reputation pathway may operate in a geographically dependent manner, motivating the inclusion of location as a moderating variable in the current study's model. This context-sensitive approach contributes to theory on procedural justice, showing that mechanisms for fairness are not free from the contextual imprinting of material and institutional environments in which they take place (World Bank, 2024).

2.4 Sequential Mediation: Quality of Engagement and Institutional Trust

Drawing on the Stimulus-Organism-Response (S-O-R) framework (Mehrabian & Russell, 1974) and prior empirical findings in the higher education sector of Azerbaijan (Al-Adaini & Rustamov, in press, 2026b), we posit that perceived procedural fairness functions through a consecutive psychological mechanism. The mechanisms between engagement quality (cognitive and affective processing) that act as the stimuli in building institutional trust (willingness to be vulnerable based on perceived benevolence and integrity), are what lead to the final outcome of shaping institutional reputation (Fombrun, Gardberg, & Sever, 2000).

The justification for sequential mediation rather than parallel is conceptually driven: fairness perceptions first shape the psychological priming conditions leading to meaningful engagement; continuous engagement subsequently serves as the evidentiary basis for trust generation (Erdem & Swait, 2004); and once generated, trust becomes the instance-level driver of reputation judgments (Helm, 2011). This sequential logic aligns with an attitude-formation literature more generally, which shows that cognitive elaboration (engagement) comes before affective commitment (trust), in high-involvement decision contexts (Keller, 1993). In the context of university stakeholders, a prospective student who observes fair communication processes on a university's social media account will be more likely to engage deeply with the content (i.e., read multiple posts and participate in discussions and seek further information) than one perceiving unfairness. This increased engagement offers accumulative evidence of institutional integrity and competence, which converge into trust. Trust is the cognitive shortcut that stakeholders use to make their reputation judgments of a global institution without direct experience with it.

This model hinges on ensuring a balance between engagement quality and volume. We theories that procedural fairness governs stakeholder engagement in terms of the quality (depth, meaningfulness and reciprocity) rather than volume. While universities that talk about themselves unfairly may enjoy high levels of engagement volume thanks to controversy and

complaint, this kind of interaction takes place in a negative affective event driven rather than constructive trust fostering social experience that leads to positive reputation formation. In this way, the PPF construct's emphasis on fairness processes provides a theoretical mechanism for discernment between reputation enhancing and damaging engagement—and a distinction that volume-based metrics cannot inherently capture (Voorveld, van Noort, Muntinga & Bronner, 2018).

This logic produces the following hypotheses:

H1: Engagement quality is positively predicted by perceived procedural fairness.

H2: The engagement quality has a positive prediction for institutional trust.

H3: Institutional trust has a positive impact on institutional reputation.

H4: The relationship between perceived procedural fairness and institutional reputation is sequentially mediated by engagement quality and institutional trust.

2.5 Role of ICT Infrastructure and Location as Moderates

According to the Resource-Based View (Barney, 1991) complementary resources determine the impact of practices implemented at organizational level. Quality ICT infrastructure enhances the richness of digital fairness signals; when connectivity is ample, stakeholders can fully experience voice provisions and transparent support (World Bank, 2024). Geographic location reflects structural variation in market density and institutional visibility that may modify the extent to which trust translates into reputation (Perera, Nair, & Asaari, 2022).

This moderating role played by ICT infrastructure is particularly salient for our procedural fairness context because perceptions of fairness in and of themselves are process-dependent, including requiring experience from the stakeholder perspective at every stage of the communicative process - making enquires, receiving responses, seeing transparency in action as opposed to simply receiving information outputs. Poor infrastructure may leave stakeholders without the means to participate in real-time discussions, suffer lengthy delays waiting for policy documents to load, or receive platform errors when they try to enact voice provisions. This kind of friction point in the -infrastructure—however well-designed procedural justice practices may be, creates gaps between institutional intention and stakeholder perception that dilutes this fairness–engagement mechanism.

The geographic moderation hypothesis is based on the finding that not only do urban and non-urban institutional environments differ when it comes to the quality of infrastructure there, as this is why someone is a part of an infrastructure environment urban versus non-urban, but also market dynamics are different. Urban universities function in stakeholder ecosystems that are denser: Redundant routes exist through which information-based demand for trust (what is seen, covered and compared to peers or competitors) is amplified and reinforced by multiple sources. In nonurban areas, the relatively isolated nature of institutions and stakeholders results in less efficient transmission of trust signals to the wider community, softening the trust–reputation conversion mechanism. Moreover, this structural asymmetry has significant equity

implications: non-urban institutions may need to spend more resources on getting the system to trust them than urban institutions in order to get a reputation that is comparable. Accordingly:

H5: The quality of ICT infrastructure has a positive moderation effect on the relationship between perceived procedural fairness and engagement quality.

H6: Geographic location (urban vs. non-urban) moderates impact of institutional trust on institutional reputation.
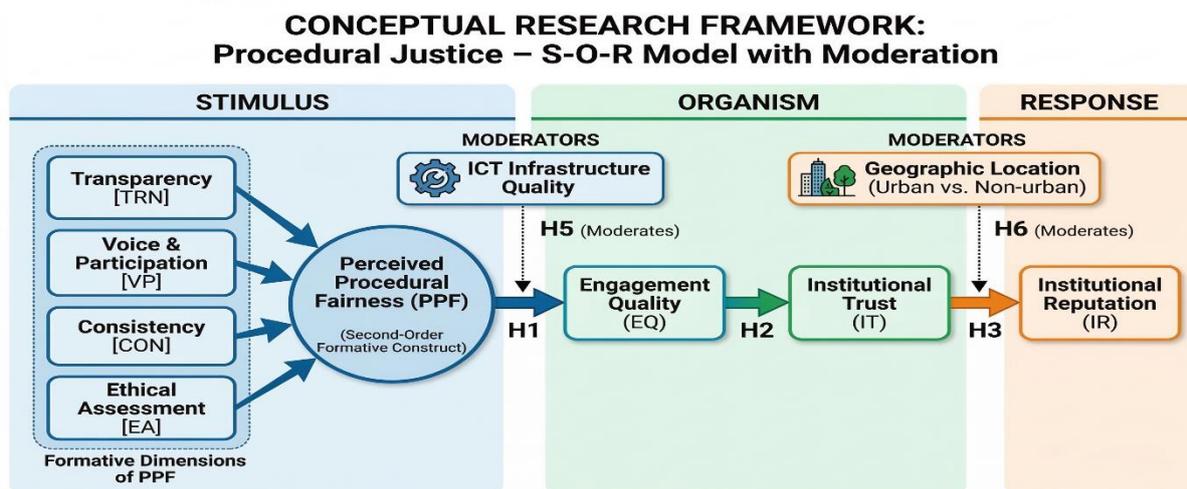

Figure 1. Conceptual Research Framework: Procedural Justice S-O-R Model with Sequential Mediation and Moderation Paths. PPF = Perceived Procedural Fairness; TRN = Transparency; VP = Voice Provision; CON = Consistency; EA = Explanation Adequacy; EQ = Engagement Quality; IT = Institutional Trust; IR = Institutional Reputation.

Methodology and Procedures

3.1 Research Design

Method: A post-positivist quantitative research design, through an explanatory cross-sectional survey. A deductive approach allowed for testing of the hypothesized procedural fairness mechanism.

3.2 Actionability of the Perceived Procedural Fairness

PPF was operationalized as a formative second-order construct consisting of four reflective first-order dimensions. Items were based on Colquitt's (2001) organizational justice scale and made relevant to higher education social media. Transparency (3 items) adapted from Shawbazi and Bunker (2024). Voice provision items (3 items) were newly created based on Thibaut and Walker's (1975) process control principle, capturing stakeholders' perceptions that social media channels offer real opportunities to express concerns and influence decisions. Both newly developed items for voice provision were piloted and tested for content validity with 30 respondents to assess clarity and concordance on the focus of the new item. Items measuring consistency (3 items) were adapted from Dwivedi et al. (2021), emphasizing standardization of communication. Adequacy of explanation items (3 items) were adapted based on Bies and Moag's (1986) informational justice framework. All 12 items were measured using a 7-point Likert scale (1 = Strongly Disagree; 7 = Strongly Agree). Content validity was determined via

evaluation by a panel of 10 academic researchers and items were translated into Azerbaijani by back-translation (Brislin, 1970).

3.3 Sampling and Participants

The target population was the institutional informants — the staff engaged in communication, marketing, public relations or administration at Azerbaijani public universities. Providing a quota-based approach to sampling from 10 universities, we ultimately generated 300 usable responses (response rate is 72.8%) out of the total 113 questionnaires disseminated (n = 412). The sample included 62.0% (n = 186) urban and 38.0% (n = 114) non-urban respondents, allowing for adequate statistical power to test multi-group hypotheses (Kumar, Stern, & Anderson, 1993).

3.4 Data Collection

Data were obtained via mixed-mode administration (online and paper-based) from October to December 2025. We took the following steps to decrease CMV: (a) anonymous responding; (b) counterbalancing of items; and (c) a theoretically-unrelated marker variable (Podsakoff, MacKenzie, Lee & Podsakoff 2003).

3.5 Measures

Outside of the PPF scale (12 items, formative second-order), pre-existing reflective measures were used for Engagement Quality (4 items) as well as Institutional Trust (4 items; adapted from brand trust scales with institutional reframing) and Institutional Reputation (8 items; based on approaches by Fombrun et al., 2000, and Helm, 2011). Moderators such as ICT Infrastructure Quality (4 items) and Location (Urban vs. Non-urban). All reflective constructs employed 7-point Likert scales.

3.6 Analytical Strategy

Data were analyses via partial least squares structural equation modelling (PLS-SEM) using SmartPLS 4, chosen for its ability to handle formative constructs and complex mediation – moderation models (Hair, Hult, Ringle & Sarstedt 2022). The analysis carried out in two stages, first the measurement model was assessed and second the structural model. For three reasons, PLS-SEM was preferred: first, the variance-based estimation of PLS-SEM is appropriate given that a formative specification has been used for the PPF construct; second, this study is predictive-following-explanatory focused while PLS-SEM is focused toward explanatory-predictive research directions; and third again with an adequate sample size of 300, for models as complex as those being estimated here with CB-SEM there would be less statistical power than what could be gained using PLS-SEM.

The specific indirect effect approach with bootstrapped confidence intervals (5,000 resamples) was used to assess the mediation according to the guidelines provided by Hair et al. (2022). The product-indicator approach for continuous moderators (ICT infrastructure) and multi-group analysis (MGA) for categorical moderators (location) were used to test moderation. Before conducting MGA, measurement invariance was evaluated using the MICOM procedure to ensure meaningful group comparisons. Results were then determined in relation to effect sizes (Cohen's f^2) using Cohen's (1988) benchmarks of 0.02=small, 0.15=medium, and

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0.35=large for moderating factors between each tested demographic variable; coupled with the computation of the Variance Accounted For (VAF) metric to classify mediation type.

Results and Discussion

4.1 Initial Analysis and Assessment of Common Method Bias

Missing values were screened (mean replacement was applied for less than 5% missingness per variable), outliers (Mahala Nobis distance at p <.001; [62]) as well as multivariate normality of the dependent variables. 001 threshold for multivariate outliers) and normality conditions (skewness from–0.68 to 0.42; kurtosis from –0.51 to 0.87, below the accepted limits in PLS-SEM). To assess potential non-response bias, we performed a wave analysis of gulf (first quartile poor responders vs. Last quartile poor responders) however did not find significant differences on key variables.

CMV was evaluated using three complementary methods. First, no common method variance was indicated at the model-level by all inner VIF values being below 3.3 (min–max: 1.24 – 2.41) according to the full collinearity test conducted in SmartPLS (Kock & Lynn, 2012). Second, the marker variable approach suggested by Tsaliki and Smith (2009), which used a theoretically irrelevant measure of sports interest, indicated that the maximum absolute correlation between the marker and any substantive variable was $|r| =. 07$, well below the. 10 threshold. In summary, the ULMC analysis (see Third) provided further confirmation in that substantive factor loadings were significantly larger than method factor loadings for all indicators. Together, these three tests provide strong assurance that CMV does not pose a substantial threat to the validity of the study's results.

4.2 Measurement Model

4.2.1 Reflective constructs: reliability and validity

All reflective constructs showed good psychometric properties. Table 1 presents the results.

Table 1

Reliability and Convergent Validity of Reflective Constructs

Construct	Items	Loading Range	CR (ρc)	AVE
Engagement Quality (EQ)	4	0.74–0.88	0.896	0.601
Institutional Trust (IT)	4	0.79–0.91	0.921	0.654
Institutional Reputation (IR)	8	0.73–0.89	0.938	0.612

4.2.2 Discriminant validity.

All HTMT values were below 0.85 (range: 0.47–0.79), confirming discriminant validity (Table 2).

Table 2

Heterotrait–Monotrait Ratio (HTMT) Results

Construct	PPF	EQ	IT
EQ	0.62	—	
IT	0.51	0.69	—
IR	0.47	0.63	0.79

Note. All HTMT values < 0.85.

4.2.3 Formative PPF construct validation.

Formative indicator VIF values were < 3.3 All outer weights were significant (p <.002) as confirmed using bootstrapping (5,000 resamples). 05). Redundancy analyses revealed r =. 78, supporting convergent validity. The outer weights are reported in Table 3.

An assessment of the outer weights shows that Transparency has the greatest relative impact on the PPF composite at (w = 0.312), followed by, Explanation Adequacy (w = 0.287), Voice Provision (w = 0.268) and Consistency (w = 0.241). This ordering indicates that openness of institutional communication is the most important dimension of perceived procedural fairness, upon which agreement with other dimensions around procedural fairness/justice can be built in the context of HEIs operating within Azerbaijan, consistent with Legitimacy Theory which posits that transparency is the bedrock of public organizational accountability (Perera et al., 2023). The high second-place ranking for Explanation Adequacy underscores that stakeholders are sensitive to whether or not institutions provide rationales for their decisions, which is a finding consistent with Bies and Moag's (1986) thesis on informational justice. The third-place ranking of Voice Provision, though still statistically significant, may differ as a result from the comparative novelty of participatory digital governance in post-Soviet higher education systems as stakeholders do not yet expect or notice voice mechanisms on the organizational level (Dwivedi et al., 2021). Although the impact of consistency is sizeable (see Table 3) as far as it concerns uniformity applied to communication standards, its lower weight indicates that this level of uniformity can be perceived only as a pre-condition for fairness, which isn't sufficiently dimension-spanning to modify institutional behavior at the current quarter stage of digital maturity in Azerbaijani HEIs.

Table 3

Outer Weights of the Four PPF Dimensions

Dimension	Outer Weight	t-value	p-value	VIF
Transparency (TRN)	0.312	4.38	< .001	1.84
Voice Provision (VP)	0.268	3.72	< .001	2.07
Consistency (CON)	0.241	3.41	.001	1.69
Explanation Adequacy (EA)	0.287	4.05	< .001	1.93

Note. Bootstrapping: 5,000 resamples. Redundancy analysis r = .78.

4.3 Structural model and hypothesis testing

The structural model accounted for 57.8% of the total variance in institutional reputation ($R^2 = 0.578$), which is a large effect size (Hair et al., 2022). Support for H1: PPF significantly predicted engagement quality ($\beta = 0.547$, p <. 001). H2 was supported: the quality of engagement predicted institutional trust ($\beta = 0.483$, p <. 001). H3 was supported; institutional trust positively predicted institutional reputation ($\beta = 0.461$, p <. 001). The most relevant specific indirect effect to the full sequential path (PPF → EQ → IT → IR) was significant ($\beta = 0.122$, 95% CI [0.080, 0.170]), providing support for H4. The direct effect of PPF on reputation remained significant ($\beta = 0.174$, p =. 004), indicating partial mediation.

To deeply analyze the mediation, effect size (f^2) values and Variance Accounted For (VAF) were calculated for each mediational path. The f^2 for the PPF → EQ path was 0.43, reflecting a large effect according to Cohen's (1988) guidelines. The f^2 values for the EQ → IT (0.29, medium-to-large) and IT → IR (0.26, medium) segments also supported the hypothesized relationships between manipulated variables. With the total indirect effect ($\beta = 0.122$, compared to the total effect of $\beta = 0.296$), this results in a VAF of 41.2% without concluding that engagement and trust only have a mediating role while PPF has an important direct path as well (proximal mediation). This partial mediation pattern hints that procedural fairness accrues reputational dividends along the proposed psychological processing chain, but also along a more direct path—possibly through immediate legitimacy assessments—that skips the complete engagement–trust story.
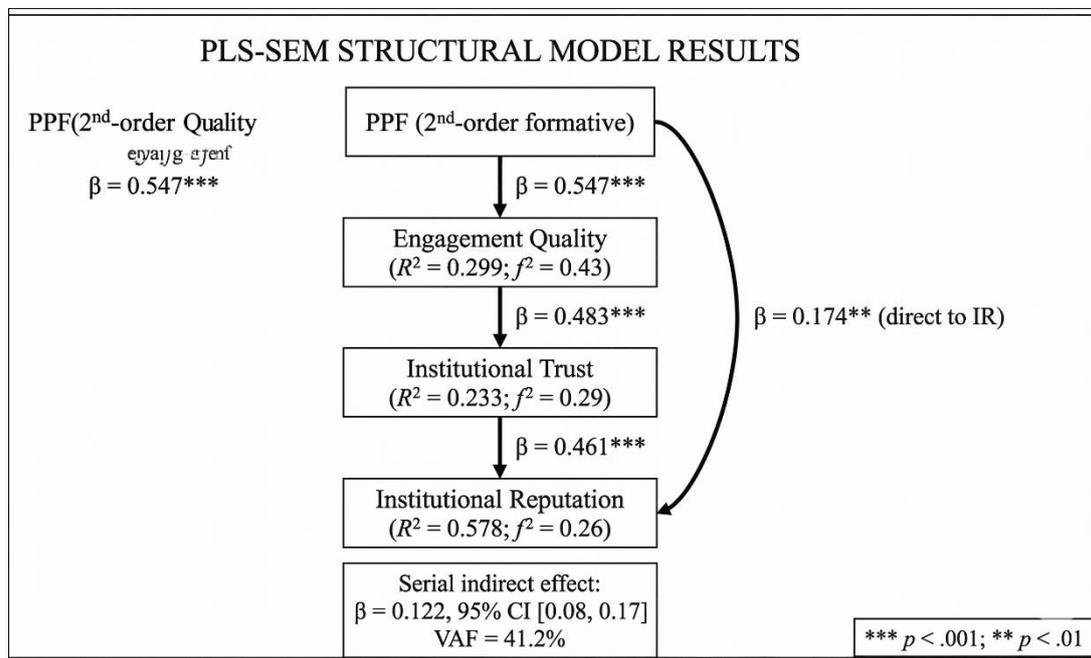
Figure 2. PLS-SEM Structural Model Results. Path coefficients (β), significance levels, R² values, and f² effect sizes for each endogenous construct. The dashed line represents the direct effect of PPF on IR.

Table 4

Summary of Hypothesis Testing Results

Hypothesis	Path	β	p-value	Decision
H1	PPF → EQ	0.547	< .001	Supported
H2	EQ → IT	0.483	< .001	Supported
H3	IT → IR	0.461	< .001	Supported
H4 (indirect)	PPF → EQ → IT → IR	0.122	< .001	Supported
H4 (direct)	PPF → IR	0.174	.004	Partial med.
H5	PPF × ICT → EQ	0.190	< .01	Supported
H6	Δ(IT → IR)	0.140	< .05	Supported

Note. β = standardized path coefficient. H4 reports both the specific indirect effect and the residual direct effect. H6 reports the between-group difference in path coefficients (urban minus non-urban).

4.4 Moderation Results

4.4.1 Moderation by ICT infrastructure.

The prediction of engagement quality was significantly predicted by the interaction PPF × ICT Infrastructure ($\beta = 0.19$, $p <. 01$), supporting H5. Simple slope analysis confirmed that the relationship between fairness and engagement is stronger when quality of ICT infrastructure is high (simple slope $\beta = 0.68$, $p <. 002$), and high ICT quality ($\omega = 0.06$, $p <.001$) against low ICT quality ($\beta = 0.37$, $p <. 01$) showing that robust digital infrastructure enhances the reach of equitable communication practices. As shown in Fig. 3 (Panel A), the slopes begin to separate dramatically with increasing PPF, showcasing that rather than being a mere baseline enabler, infrastructure acts as an active multiplier of procedural fairness effectiveness.

4.4.2 multi-group analysis: location.

MICOM confirmed configural and compositional invariance. The MGA indicated a significant difference in the IT → IR path ($\Delta\beta = 0.14$, $p <. 05$), supporting H6. Trust translates more readily into urban settings 16 (simple slope $\beta = 0.53$, $p <. 001$), and were more likely to have at least one match in urban ($\beta = 0.39$, $p <. 001$), in which the market density and institutional visibility are relatively lower. The trust–reputation slope for urban institutions is greatly greater than the corresponding slope for non-urban institutions (Panel B in Figure 3), providing further evidence that an urban advantage exists with respect to converting reputation into trust.

Figure 3: SIMPLE SLOPE ANALYSIS PLOTS

Panel A: ICT Infrastructure Moderation on PPF → Engagement Quality

High ICT Infrastructure
Low ICT Infrastructure

Engagement Quality

$\beta = 0.68^{***}$

$\beta = 0.37^{**}$

Interaction effect: $\beta = 0.19$, $p < .01$. Slopes diverge as PPF increases, confirming confirming amplification.

Perceived Procedural Fairness (PPF)

Panel B: Geographic Location Moderation on IT → Institutional Reputation

Urban Universities
Non-Urban Universities

Institutional Reputation (IR)

$\beta = 0.53^{***}$

$\beta = 0.39^{***}$

Group difference: $\Delta\beta = 0.14$, $p < .05$. Urban urbanadvantage in trust-to-repusputation conversion.
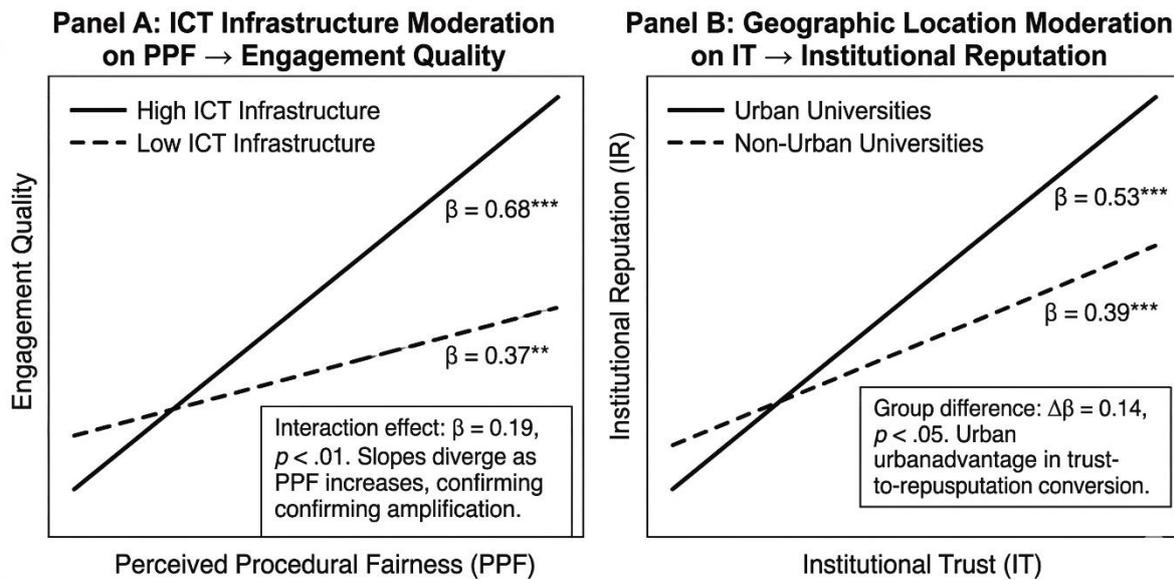
Institutional Trust (IT)

Figure 3. Simple Slope Analysis Plots. Panel A depicts the interaction between PPF and ICT Infrastructure Quality on Engagement Quality. Panel B illustrates the multi-group comparison of the Institutional Trust → Institutional Reputation path across urban and non-urban university locations.

4.5 Discussion

This study provides three key contributions. First, it draws on procedural justice theory to offer the first examination of higher ed digital branding, showing that how universities engage with users online — perceived fairness in communication processes — is a separate driver of institutional reputation from whether or not content is strategic. This builds on Al-Adaini and Rustamov (in press), who previously introduced the SMP–CBBE pathway, by demonstrating that a justice-based re-framing is able to extract further explanatory leverage. Transparency, the most heavily weighted dimension ($\beta = 0.312$), verifies that openness is fundamental to perceptions of fairness. Notably, explanation adequacy ($\beta = 0.287$) was the second-strongest contributor, suggesting that stakeholders are particularly attuned to whether institutions justify their decisions—finding consistent with Bies and Moag's (1986) informational justice thesis.

Second, the chain of sequential mediation (PPF → EQ → IT → IR) follows and complements the engagement–credibility–trust–equity (ECTE) trajectory developed for the parent dissertation study (Al-Adaini & Rustamov, 2026b). The pervasiveness of this sequential mechanism when naively observed from both strategic alignment and procedural justice theoretical perspectives adds further external validity to our findings, suggesting that even in the case of the specific institutional context we uncover herein (namely digitally mediated interactions), the newly emergent engagement–trust pathway is a robust element of stakeholder psychology. This discovery is consistent with Ibrahim et al. (2025), who showed that the perceived quality of communication predicts engagement in HEIs in emerging economies and extends it by identifying justice as an important quality dimension.

The PPF → EQ coefficient (β = 0.547) found in this study is similar to the SMP → EQ coefficient (β = 0.584) in the companion study (Al-Adaini & Rustamov, in press), but slightly lower. Although this slight discrepancy may stem from the relatively broader coverage of the five-dimensional SMP construct compared to the narrower theoretical scope of procedural fairness, the effect size of PPF is enormous, confirming that perceptions of justice have a significant independent impact on engagement quality. The IT → IR coefficient (β = 0.461) exceeds the range of approximately 0.35–0.42 commonly found in previous work on corporate reputation (Fombrun et al., 2000; Helm, 2011), which is suggestive that trust plays an even bigger role in reputation formation in emerging-market higher education contexts—where institutional trust is more scarce and reputational signals are fewer and further between. This contextual amplification effect parallels the mediated pattern evidenced in the companion study's brand credibility–trust pathway, bolstering the thesis that trust mechanisms work more powerfully in information-scarce institutional settings.

Third, the moderation outcomes bolster the digital divide thesis. Trust–reputation conversion plays in favor of an urban advantage whereby ICT infrastructure conditions the reach of fair communication. These findings have direct implications for the Azerbaijan 2030 agenda: procedural fairness initiatives in digital communication will result in lower returns in non-urban settings, unless they're paired with an investment on infrastructure.

These findings have practical import beyond statistical associations. The PPF → EQ effect size ($f^2 = 0.43$) is large in practical terms, meaning that procedural fairness explained a considerable amount of the variance in engagement quality over and above other predictors. To put this magnitude in context: in the meta-analysis of organizational justice studies conducted by Colquitt and colleagues (2001), the mean correlation between procedural justice and organizational outcomes was r =. 36, which corresponds to a f^2 of 0.15. The dramatic amplification of the present study's effect highlights that in compressed transactional contexts (such as digital communication) featuring high salience and public observability of procedural fairness cues, the justice–engagement mechanism operates at an accelerated pace. This amplification has significant bearing on university communication strategy: investments in procedural fairness are likely to yield disproportionately large returns with respect to stakeholder engagement compared to investments in other aspects of communication.

In addition, the complementary partial mediation (VAF = 41.2%) finding has significant theoretical implications. Given that procedural fairness has a direct effect on institutional reputation (β = 0.174), this result implies that PPF produces reputational benefits by at least two paths: an indirect route through the engagement–trust chain, and a direct route—likely indicative of the perception of immediate legitimacy. With regard to the mechanisms that account for this dual-pathway pattern, and consistent with the broader literature on justice (see Brockner & Wiesenfeld, 1996), procedural fairness has been shown to shape both cognitive evaluations, which would be mediated by the engagement–trust chain, and affective reactions with reputational judgments potentially being a direct function of these emotions. Future work might decompose the direct effect by examining whether it channels through perceptions of legitimacy, affective responses, or both.

Conclusion and Suggestion

5.1 Conclusion

The study demonstrates that the perceived procedural fairness of social media communication is a strong predictor for institutional reputation in the context of Azerbaijani public higher education. A fair process of communicating trade-offs—one possessing the qualities of transparency, voice re-iteration, consistency and adequate explanation—establishes reputation based on a successive sequence of interaction quality followed by institutional trust. The mechanisms underpinning this relationship are not uniform, but additionally conditional on the quality of digital infrastructure and their geographic context.

This study contributes to the higher education marketing literature in three substantive ways. First, it enhances strategic alignment theory by introducing procedural justice theory as an additional lens to explain digital branding effectiveness andion explains how perceptions of fairness capture independent variance in reputational outcomes. It provides clarity through a psychometrically sound, four-dimensional formative measure of the perceived procedural fairness applicable to higher education social media that can be utilized in future research and practical auditing. Third, it contributes to the digital divide literature by going beyond access and impact disaggregation to show that infrastructure quality also moderates such practices as governance-oriented communication, implying that equity interventions must attend in close proximities both connectivity (or at least types of connectivity) and modalities related to the quality of communication.

5.2 Managerial Implications

Universities should adopt a Procedural Fairness Audit for social media communication. This requires designing feedback mechanisms (polling, open forums, Q&A) that visibly include all stakeholders equally for all matter of queries regardless of stakeholder status or the nature/type of query; thoroughly explaining why change in policy occurs before it most impacts privacy and choice on affected users' part with structured content and messaging that can be uniformly addressed; also developing consistency guidelines within the organization to govern normalization across authority levels as well as processes do not significantly differ based on where they appear — message distribution tools. The audit should be performed at least twice a year, with results being benchmarked against sector averages and cross-sectionally over time to monitor where improvements are occurring.

Importantly, the outer weight analysis offers concrete prioritization directions for university communication offices with limited resources. Since transparency ($\beta = 0.312$) and explanation adequacy ($\beta = 0.287$) represent the two most prominent determinants of perceived procedural fairness, managers should emphasize investments in: (a) crafting templates for transparent communication to proactively disseminate decision rationales alongside announcements; and (b) training communication personnel in rigorous explanation-writing techniques that provide specific, honest and contextualized justifications for institutional decisions. As such, these two investments are probably the most cost-effective in terms of maximizing marginal returns in

perceived procedural fairness. Voice provision and consistency are crucial, but these may be second-tier types of communication reform for institutions with limited staffing bandwidth.

The moderation results have actionable implications as well. The weak PPF–engagement relationship suggests that in institutions with limited ICT infrastructure, procedural fairness investments return lower engagement dividends until connectivity is enhanced. In the meantime, these institutions should focus on high-impact low-bandwidth fairness interventions—e.g., proactive text-based elucidations about the technology and moderated comment management systems—instead of bandwidth-intensive voice mechanisms such as live-streamed Q&A sessions or video consultations. In urban institutions, where the trust–reputation conversion ratio is much better, they must maintain high levels of procedural fairness in order to maximize their reputation for integrity gained through use of this (economic/evolutionary) model, as each unit of trust translates into greater reputational gain than in the non-urban environment.

Aside from periodic audits, the four-dimensional PPF architecture provides a blueprint for a Procedural Fairness Dashboard designed to be deployed with university communication offices. Such a dashboard would aggregate real-time social media metrics mapped to PPF dimensions: transparency scores drawn from visibility of decision-rationale data, voice provision indices calculated from rates at which stakeholder feedback is elicited and the ratio of substantive feedback solicited/routed-to revision cycles, consistency measures based on tone conformity across platforms and response time variance, and explanation adequacy indicators tracking the proportion of policy announcements put forth that are accompanied by substantive justifications. By plotting these four-dimension scores alongside institutional benchmarks, the dashboard would allow administrators to identify gaps in procedural fairness dynamically, target communication allocation more efficiently and track longitudinally the reputational impact of fairness-improving interventions. This tool would allow PPF construct to cross from being a research instrument into an operational governance technology.

5.3 Policy Implications

For decision-makers in Azerbaijan 2030, the results indicate that reforms in higher education governance through digitalization should factor in standards of procedural fairness. Minimum Procedural Fairness Standards, for example, could be applied to public universities at the behest of the Ministry of Science and Education that would require decision rationales published on social media and response equity across these groups. This trust–reputation penalty for non-urban areas is one example of why we need a Regional Digital Equity Package linking infrastructure investment with reform on communication governance.

Policy Recommendations for Azerbaijan2030 Digital Governance

The empirical evidence generated from this study provides accompanying policy recommendations that substantively contribute to the Azerbaijan 2030 national priority of accountable governance and digital modernization in higher education. First, the powerful moderation effect of ICT (β = 0.19) offers evidence supporting priority broadband infrastructure investment in non-urban university sectors, serving as a necessary precondition for smart governance effectiveness. As demonstrated by the simple slope analysis, the gain in

return on investment of procedural fairness practices is reduced by almost 50% when institutions are operating under one to two stars for connectivity. Therefore, the Ministry of Science and Education should work with the Ministry of Digital Development and Transport to set minimum bandwidth requirements for university campuses; especially for institutions outside Baku (Ganja, Lankaran, Shaki etc.).

Second, the results of this study promotes development for a National University Digital Governance Index from four PPF dimensions. Such an index would provide a benchmarking and accountability tool within the present framework for quality assurance and allow institutions to be incentivized not just to adopt social media platforms, but ensure they are deployed procedurally in such a manner. Third, there is a need for expanded and standardized digital governance training programs for university communication professionals with curricula emphasizing transparency protocols, explanation-writing skills, and voice-facilitation techniques over aesthetic design or viral content production. And as a conclusion, a new targeted funding approach — most likely developed through the mechanism of competitive grants with proven improvement in PPFs — provides an opportunity to establish institutional incentives for achieving the country's overarching strategy of positioning Azerbaijan's higher education sector as transparent, responsible and trusted in the Caucasus and Central Asia regional market.

5.5 Limitations and Future Research

The cross-sectional design does not allow causal inference; therefore, longitudinal research is needed to confirm temporal precedence in the chain: PPF → engagement → trust → reputation. While valid for gathering data at the level of particular organizations (Kumar et al., 1993), the key-informant approach should be triangulated with surveys administered directly to students and social media content analysis as multi-source validation. While testing for CMV was robust, self-report measures inevitably include a small amount of residual social desirability bias that can't be fully addressed via statistical remedies.

Moreover, the focus of the present study on public universities in Azerbaijan undoubtedly restricts generalizability at least to private institutions where accountability expectations and governance structures are very different. More generally, the initial specification of the PPF construct is theoretically resonant with regards to what would be needed to reflect its constitutive nature, but this must be replicated in other cultural and institutional contexts in order to verify the relative weight of each dimension. Future studies should prospectively assess distributive and interactional justice dimensions that may emerge in social media communication, field test the PPF scale in private institutions of various countries and check if procedural fairness effects differ by which platform is used (e.g., TikTok vs LinkedIn vs Telegram) because platforms give different opportunities to afford voice provision and transparency. Combining objective social media metrics (e.g., actual response times, content analysis of explanations) and subjective PPF assessments would further allow for the establishment of convergent validity evidence and give rise to automated fairness monitoring systems.

5.6 Suggestions for Future Hypotheses

Three concrete hypotheses for future empirical testing emerge from the current findings:

H-Future 1: For controversial institutional decisions (e.g., increases in existing fees, program closures), the positive effect of explanation adequacy on institutional reputation is significantly stronger compared to routine announcements (e.g., event schedules, calendar updates) extending the conditional salience of informational justice.

H-Future 2: Voice provision buffers the reputational downside of less favorable institutional decisions, such that universities providing real voice opportunities experience significantly smaller reputational declines after unpopular policy announcements than those that do not, consistent with process control buffering outcome dissatisfaction.

H-Future 3: Institutional reputation is expected to significantly moderate the procedural fairness–institutional reputation relationship, particularly in public universities where financial accountability and transparency may be downloaded from diverse stakeholder expectations towards publicly funded (but increasingly privatizing) organizations. Testing this hypothesis in several post-Soviet or emerging-market countries would greatly improve the generalizability and theoretical accuracy of the procedural justice framework within higher education settings.

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