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Research Article

Determinants of Online Dispute Resolution Adoption in Islamic Banking: The Moderating Roles of Collectivism, Education, and Ethnicity

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Abstract:

Introduction: The rapid growth of digital financial services has increased demand for dispute resolution in the Islamic banking sector. This research examines the factors that affect the use of Online Dispute Resolution (ODR) systems in Islamic banks in Pakistan, based on the Unified Theory of Acceptance and Use of Technology (UTAUT). The study will examine six factors that are believed to influence individual's intention to use ODR: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Trust in the Bank (TIB), Trust in the ODR system (TIO), and Access to Justice (AJ). This research will also consider collectivism, education level, and ethnicity as important factors influencing these relationships.

Methodology: The data were collected using a structured survey of a sample of employees and customers from seven of the largest Islamic Banks located in Karachi, Pakistan (n = 918). For our preliminary statistical analysis, we utilized SmartPLS 4.0. The analytical process consisted of two stages. In the initial phase, we scrutinized the measurement model by taking into account the indicators loadings, reliability of construct, analysis of convergent validity, and discriminant validity. We proceeded to the next phase of evaluating the structural model by measuring path coefficients, R^2, Q^2, and bootstrapping with 5,000 subsamples. Predictions of the relationship between independent and dependent variables were made using moderation tests, and heterogeneity of Islamic banks as compared to conventional banks was assessed using MGA.

Results: The analysis established the existence of meaningful positive associations between the six independent variables, whose role is to predict Behavioral Intention (BI).

Conclusion: The moderation analysis made an indication that education increases the strength of connection of PE, SI, and TIB with BI; collectivism decreases the strength of that connection, but at the same time it increases the strength of EE and TIO relation; and ethnicity positively moderates AJ/Intention, and, simultaneously, moderates negatively PE/TIO relations.

Keywords: Online dispute resolution, Islamic banking, UTAUT, performance expectancy, collectivism, behavioural intention.

1. INTRODUCTION

The financial services industry is going digital, transforming not only the banking experience for customers, but also creating new forms of conflicts that standard conflict resolution lacks the capacity to deal with effectively (Rainey *et al.,* 2021; Schmitz, 2022). One way in which the gap could be filled is via online dispute resolution (ODR), which assists people in negotiating, mediating, or arbitrating conflicts using technology (Mania, 2015; Rule, 2002; Amatya *et al.,* 2023; Wahid, 2023). ODR presents theoretical and practical ground for filling in this gap, especially in the realm of Islamic banking, where (i) transparency (amanah), (ii) justice (adl), and (iii) fast execution of justice (raf' al-haraj) are demanded by shari'ah principles (Jones, 2020; Oseni *et al.,* 2016; El Maknouzi *et al.,* 2023).

In 2024, Pakistan's Islamic banking industry almost reached PKR10 trillion in total assets and PKR8 trillion in total deposits with more than 4,500 branches operating (SBP, 2024). In 2024,

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a constitutional amendment was also accepted that made it mandatory for banks to eliminate all riba (interest) charges from their offerings by 2028, thus becoming fully compliant with shari'ah standards (Rosmanidar *et al.,* 2021). Furthermore, digital payments accounted for 84% of retail activity in the financial year 2023-24 (a growth from 76% in FY2022-23), underlining the accelerating digital transformation of the banking sector. As this sector continues to grow and evolve, banks have seen an increase in customer disputes about how to resolve them, driven by increased internet banking and mobile payments, as well as the rise in digital financial products (Ltifi *et al.,* 2016). Nevertheless, customer dispute resolution in the Islamic banking industry is still carried out universally through traditional methods that are often time-consuming and cost-prohibitive for rural and lower-income customers alike (Cortés, 2010; Hassan *et al.,* 2021).

Studies of ODR adoption have been mainly based on developed countries, especially those belonging to the Western world (Cortés, 2010; Stipanowich, 2004). Research examining the situation in Islamic finance is practically nonexistent, as custom, law, and belief systems are often completely different from those in the West (Kaakeh *et al.,* 2019; Gulzar *et al.,* 2024). The UTAUT theory (Venkatesh *et al.,* 2003) has been widely used in studies focused on the adoption of new technologies in the finance industry as well as the banking sector (Rahi & Ghani, 2019; Khan *et al.,* 2022; Raza *et al.,* 2019; Hassaan *et al.,* 2023). However, up to the present day, not much research has been conducted on the application of that model to ODR, which is not surprising due to the lack of analysis of contextually important moderators since such aspects as collectivism, and ethnicity, are also essential (Shaukat *et al.,* 2024). Another recent systematic review has shown that trust and security perceptions are among the factors that have been studied extensively but not widely researched in fintech (Zhao *et al.,* 2024; Papanikolaou *et al.,* 2025).

The goal of the current study is to address the previously mentioned void through three connected objectives: 1) to empirically test the impact of consumer perception of PE, EE, SI, TIB, TIO, and AJ on ODR system adoption by consumers in Pakistan; 2) to examine whether variables such as collectivism, level of education, and ethnicity moderate these relationships; and 3) to explore variations in ODR adoption determinants in Islamic and conventional banking through multiple-group analysis (MGA). The anticipated contributions of the study are: (1) an extension of UTAUT model in terms of its application for Islamic fintech-ODR framework; (2) methodological contribution through application of Partial Least Square – Structural Equation Modeling (PLS-SEM) which uses moderation and MGA and follows the new recommendations made by (Hair *et al.,* 2022); and (3) provision of information regarding the implications of the research results for authorities, Islamic banks, and ODR system developers as the country aims to become Shari'ah-compliant financial state.

2. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

2.1. Online Dispute Resolution in Islamic Banking

Through technological solutions like automated negotiation tools, online mediation, and arbitration platforms ODR enables participants to settle their disputes without having to attend hearings (Mania, 2015; Rabinovich-Einy & Katsh, 2012). Following the principles of justice (adl), mutual consent (taradi), and the avoidance of hardship (raf' al-haraj), it is theoretically consistent with Islamic banking ethics (Jones, 2020; El Maknouzi *et al.,* 2023). Some sources claim that ODR can employ artificial intelligence, blockchain, and smart contracts to automate dispute resolution even further (Schmitz, 2022; Amatya *et al.,* 2023). Although past studies highlighted the advantages of ODR over litigation, such as decreased costs and time, easier access, and flexibility (Carton *et al.,* 2012; Stipanowich, 2004; Talha *et al.,* 2025), there is not enough empirical evidence of ODR effectiveness within Islamic finance (Oseni *et al.,* 2016; Daud *et al.,* 2024).

2.2. UTAUT Framework and ODR Adoption

In their work, (Venkatesh *et al.,* 2003) introduced UTAUT, a model that combined earlier technology acceptance theories. The theory states that there are four major factors in technology acceptance namely performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC) (Usman *et al.,* 2022; Rogers, 2003). The UTAUT model has been further developed with new additions like the inclusion of trust and justice influences (Gefen *et al.,* 2003; Zhao *et al.,* 2024; Ojiako *et al.,* 2018; Schmitz, 2022). This study is based on the UTAUT model as applied in ODR-Islamic banking context and uses as main variables six predictors and three moderators. According to the latest research principles proposed by (Hair *et al.,* 2022), the study employs PLS-SEM methodology.

2.3. Performance Expectancy

PE is defined as people's anticipation of achieving higher performance through technology (Venkatesh *et al.,* 2003). Specifically, in terms of ODR, PE is regarded as the perceptions of individuals regarding the speed, cost, and efficiency as compared to the traditional dispute resolution process (Azeem *et al.,* 2026; and Al-Refai, 2020) provide evidence of PE's impact on ODR adoption in the banking context of the United Arab Emirates. Based on the expectation confirmation theory (Bhattacherjee, 2001), individuals who believe that ODR is meaningfully better than adversarial litigation will show a greater intention to adopt ODR (Haris *et al.,* 2025; Sarwar *et al.,* 2025b). This effect is expected to be even stronger in Islamic banking because of the requirement for Shari'ah-compliant and timely resolutions (El Maknouzi *et al.,* 2023).

H1: Performance expectancy positively influences behavioral intention to use ODR.

2.4. Effort Expectancy

EE defines how much effort is needed to use a specific technology or tool (Venkatesh *et al.,* 2003; Davis, 1989). A user-friendly interface that is simple to navigate and has minimal cognitive burden decreases barriers to adoption and thus increases the potential for use (Tan & Leby Lau, 2016; Mouakket, 2020). In Islamic banking, given varying levels of digital literacy among customers and a lack of infrastructure affecting rural populations in particular, platform usability is a key factor in whether customers will adopt Islamic banking (State Bank of Pakistan, 2024; Wu & Peng, 2024).

H2: Effort expectancy positively influences behavioral intention to use ODR.

2.5. Social Influence

SI refers to the extent to which an individual perceives important people around him or her as expecting him or her to use a certain technology (as per Venkatesh *et al.,* 2003; Ajzen, 1991). Normative and informational social pressures, frequently related to significant individuals in one's life, play a significant role in the choice to use the technology (Hamed, 2016; Rahi & Ghani, 2019). In Pakistan, in particular, with regard to Islamic banking, ulama and elderly people of the community have a strong SI influence (awareness) among the population (Raza *et al.,* 2019; Hassaan *et al.,* 2023).

H3: Social influence positively influences behavioral intention to use ODR.

2.6. Trust in the Bank

TIB describes customers' general confidence in financial institutions' (banks') integrity, competence, and kindness (Grabner-Kräuter & Faullant, 2008; Masruki *et al.,* 2020). A TIB relationship fosters a halo effect, which strengthens positive perceptions of new services banks offer, such as ODR (Kim *et al.,* 2009; Oseni *et al.,* 2016; Hassan *et al.,* 2008). According to trust transfer theory (Stewart, 2003), if customers trust their current bank, they are more likely to trust and adopt its ODR systems (Ahmad *et al.,* 2025; Waseem *et al.,* 2025). This is especially important in Pakistan, where a recent study (Zhao *et al.,* 2024) confirms that institutional trust is also the most significant predictor of fintech adoption intentions (Taleghani *et al.,* 2011).

H4: Trust in the bank positively influences behavioral intention to use ODR.

2.7. Trust in ODR Technology

TIO represents the user's belief in the security, reliability, and impartiality of the ODR system itself (Bélanger *et al.,* 2002; Gefen *et al.,* 2003). In the context of Islamic banking, where Amanah is the principal guiding principle (Shari'ah), perceptions of technology use are essential. (Irfan *et al.,* 2020; and Mouakket, 2020) found that technology trust is highly statistically significant in a customer's intention to use ODR (Saeed, 2023). As a result, a thorough review of the fintech adoption literature indicates that technology trust is one of the strongest indicators of BI across many banking environments (Chiu *et al.,* 2009; Papanikolaou *et al.,* 2025).

H5: Trust in ODR technology positively influences behavioral intention to use ODR.

2.8. Access to Justice

AJ denotes individuals' capacity to seek and obtain fair redress for legal grievances (World Justice Project, 2019). Dispute resolution through ODR platforms lowers the geographic, temporal, and financial barriers to access (Njiri, 2020; Sarwar *et al.,* 2025c), which helps serve and expand underserved populations' ability to seek recourse (Ochieng & Nyaga, 2023; Noone & Ojelabi, 2020), and therefore, those individuals who see ODR as increased access to redress will have increased intentions to adopt ODR (Sarwar *et al.,* 2025a).

H6: Access to justice positively influences behavioral intention to use ODR.

2.9. Collectivism as Moderator

The collectivism dimension of (Hofstede, 1980) explains the degree to which an individual places their own interest below those of the group and relies on the collective agreement of others when making decisions (Özbek *et al.,* 2014). In collectivist cultures, such as Pakistan, both SI and TIB are perceived as more influential factors in making technology adoption decisions (Ojiako *et al.,* 2018; Goodrich & De Mooij, 2014). Collectivism is thought to strengthen the SI and TIB effects (such as a preference towards consensus and loyalty to the institution) while weakening the PE and EE effects on technology adoption (*i.e.,* evaluations are more determined by group norms than individual performance).

(Dauda & Lee, 2015) confirmed that the collectivism construct significantly moderated both the PE and EE relationships on the electronic banking adoption continuum. However, (Baptista & Oliveira, 2015) found that the moderation effects of collectivism on both PE and EE were dependent on the context of the technology being studied, suggesting that a context-dependent analysis is necessary (Azeem *et al.,* 2025; Zafar *et al.,* 2025). Evidence supporting a collectivist framework in the context of ODR in Pakistan can be found in (Khan *et al.,* 2022; and Khan *et al.,* 2024).

H7a–H7f: Collectivism moderates the relationships between PE, EE, SI, TIB, TIO, and AJ with behavioral intention to use ODR.

2.10. Education as Moderator

Individuals' education levels affect their technological knowledge, risk assessment ability, and information-processing skills (Oseni *et al.,* 2016; Basheer *et al.,* 2017). People with higher education levels will be better able to evaluate the functional features of ODR platforms and therefore have a greater influence on their perceptions of these platforms' functionality when deciding whether to adopt them. Higher education may also buffer concerns about the effort required to use ODR platforms because users with higher technological literacy perceive lower usability barriers (Wu & Peng, 2024). The literature regarding financial technology has indicated examples of how education moderates the diffusion

of technology and showed that education is one of the most significant factors that distinguish users of financial technology in underprivileged populations from those with less skilled digital competence (Azeem *et al.,* 2026; Wang *et al.,* 2024).

H8a–H8f: Education level moderates the relationships between PE, EE, SI, TIB, TIO, and AJ with behavioral intention to use ODR.

2.11. Ethnicity as Moderator

The term ethnicity is a wide-ranging concept representing shared cultures, common histories, and similar perceptions that determine how groups ethically relate and their perceptions (Rusu & Shen, 2012). In a country with so many ethnicities that such as Pakistan diversified into numerous ethnic groups like Punjabi, Sindhi, Pashtun, Baloch, and Muhajir, it is possible to conclude that some groups of the population (ethnic groups) may differ in their level of trust, performance evaluations, and sense of justice depending on their historical treatment by the society (Oseni *et al.,* 2016; Waseem *et al.,* 2025). Ethnic groups that have historically been marginalized are likely to respond more strongly to AJ-related interventions. In contrast, dominant ethnic groups are likely to place a much greater emphasis on the performance-related characteristics of AJ interventions.

H9a–H9f: Ethnicity moderates the relationships between PE, EE, SI, TIB, TIO, and AJ with behavioral intention to use ODR.

2.12. Conceptual Framework

This research is based on the premises of the Unified Theory of Acceptance and Use of Technology (UTAUT). According to this theory, performance expectancy, effort expectancy, social influence, trust in the bank, trust in ODR technology, and access to justice affect behavioral intention to adopt ODR in Islamic banking. The framework also extends the traditional UTAUT model by introducing collectivism, education, and ethnicity as moderating variables, indicating that cultural values, education disparities, and social identity guide technology acceptance decisions in Pakistan. Fig. (**1**) shows the relationships between the variables.

3. METHODOLOGY

3.1. Research Design and Context

The study employed a cross-sectional quantitative research design and was conducted within the Islamic banking sector in Karachi, Pakistan. Karachi is Pakistan's largest commercial and financial center and is home to the head offices and main operations of all major Islamic banks; it is the best choice for maximum sector representativeness. The data were collected over three months using a structured, self-administered questionnaire completed by employees (frontline and managerial staff) and customers of 7 Islamic banks: Meezan Bank, Dubai Islamic Bank, Bank Alfalah Islamic, MCB Islamic Bank, UBL Islamic Bank, Bank Islami, and Al Baraka Bank.

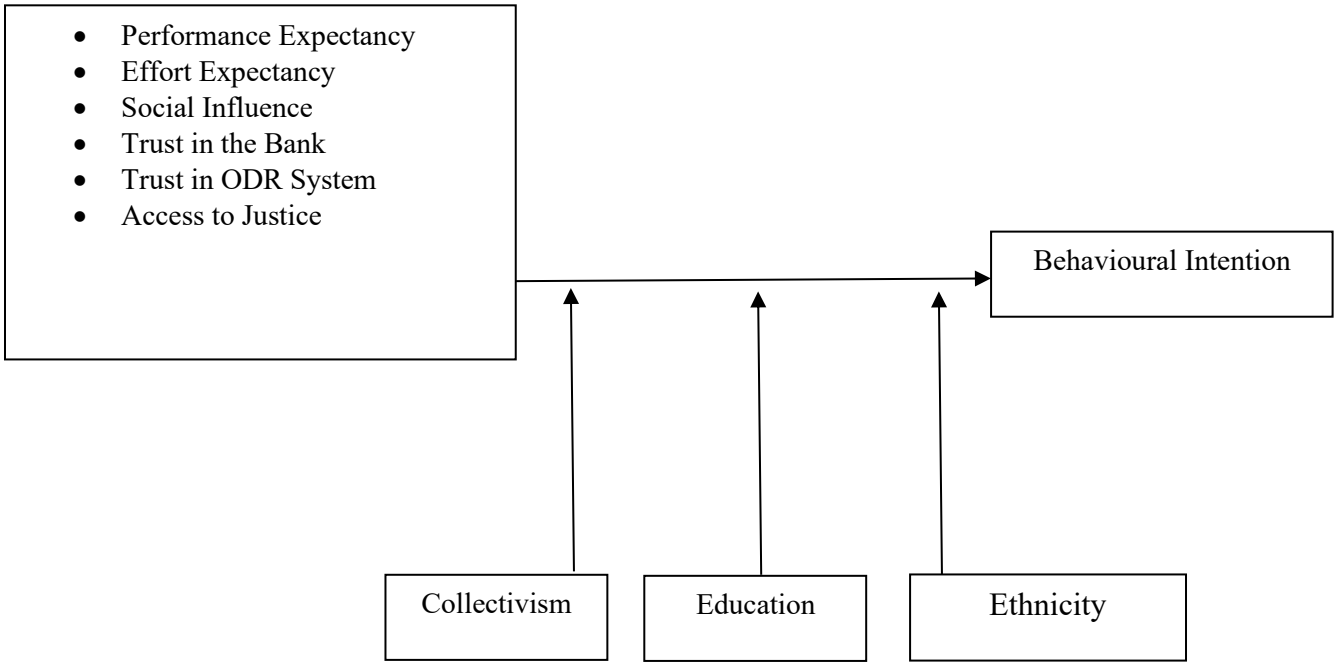

Fig. (1). Conceptual framework.

Source: *Developed by the author based on (Venkatesh et al., 2003) and extended with trust, access to justice, and cultural moderators.*

3.2. Sampling

Respondents were selected through purposive sampling on the basis of their direct experience with, or knowledge of, banking dispute resolution. This sample size provided sufficient strength for PLS-SEM analysis at the 95% level of certainty with a 0.5 standard deviation and a 1% margin of error (Hair *et al.,* 2013).

3.3. Measurement Instrument

All concepts were operationalized using validated tools from past studies. The constructs used to measure the 4 dimensions of (Venkatesh *et al.,* 2003) included PE (3 items), EE (3 of 5 items), SI (3 items), and intention to behave (2 items). The questionnaire measuring trust in a banking institution (3 items) was adapted from (Zhou *et al.,* 2010). To measure trust in ODR technology, four assessment items were derived from (Ashraf *et al.,* 2014; Pavlou, 2003; and Swilley & Goldsmith, 2015). Individuals' collectivism was measured as defined by (LeFebvre & Franke, 2013), with expanded measures comprising seven items. AJ (4 items) was adapted from (Nkonge *et al.,* 2021). All items used in the study used a five-point Likert scale (Appendix **A**). Two items related to EE (EE4 and EE5) were removed from consideration during the evaluation of measurements because their outer loadings were below 0.70 (Hair *et al.,* 2013).

3.4. Analytical Strategy

The PLS-SEM method was implemented in SmartPLS 4.0 software for data analysis. The choice of PLS-SEM method was justified as the method is best suited for complicated systems in which there are many moderating variables (Dijkstra & Henseler, 2015; Chin, 1998). Another reason for choosing SmartPLS is that it shows robust performance with non-normal distribution of data (Hair *et al.,* 2022). This study followed the two-step analysis method introduced by (Anderson & Gerbing, 1988; Gefen *et al.,* 2000). The first step concerned the assessment of the measurement model in terms of its convergent and discriminant validity; the second step concerned the analysis of the structural model coefficients, R^2, and Q^2 using bootstrapping (5,000 subsamples). Harman's single-factor test and HTMT criterion were used in order to estimate the degree of common method bias (Henseler *et al.,* 2015; Sarstedt *et al.,* 2022). The moderation analysis was performed via the PLS product-indicator approach (Chin *et al.,* 2003; Henseler & Fassott, 2010). To perform the multiple-group analysis (MGA), Islamic and conventional banking sub-groups were formed in accordance with (Hair *et al.,*'s 2022) permutation-based MGA procedure.

4. RESULTS

As a result, we found a valid sample size of n = 918 responses from 1,000 questionnaires sent by mail (response rate of 91.8%; other responses were omitted from validity because they were incomplete). The sample population was 59% male and 41% female, with 78% having an undergraduate or graduate education and 78% between 18 and 35 years of age, reflecting the demographics of Islamic Bank's employee and customer base in Pakistan.

4.1. Demographic Profile

Table **1** summarises the sample's demographic characteristics.

Table 1. Demographic profile of respondents (n = 918).

Characteristic	Category	N	%
Gender	Male	542	59.0
	Female	376	41.0
Education	Undergraduate	294	32.0
	Graduate	330	36.0
	Postgraduate	156	17.0
	Diploma	83	9.0
	Other	55	6.0
Age Group	18–25	395	43.0
	26–35	321	35.0
	36–45	174	19.0
	46–60	18	2.0
	> 60	10	1.0

4.2. Measurement Model

Validity was established through indicator outer loadings, average variance extracted (AVE), composite reliability (CR), and Rho_A. All of the retained items had loadings above the recommended cutoff values (*i.e.,* > 0.70) (Hair *et al.,* 2013); the AVE values all had values above the recommended cutoff (> 0.50); the values for CR and Rho_A were both higher than the cutoff of 0.70 (all were adequate and sufficient indicator reliability and construct validity) (Table **2**). Discriminant Validity was established using the heterotrait-monotrait (HTMT) ratio, as recommended by (Henseler *et al.,* 2015). All HTMT values were below the conservative threshold of 0.85, as recommended by (Kline, 2016), therefore satisfying the criteria for sufficient discriminant validity. Cross-loading was found for each indicator, therefore confirming that each indicator had a higher loading on its designated construct than on any other construct, as shown in Table **3** in the supplementary materials. Furthermore, the (Fornell-Larcker criterion, 1981) was met, as the square root of the AVE for each construct was greater than any inter-construct correlation.

Table 2. Measurement model: loadings, AVE, CR, and Rho_A.

Construct	Items	Loadings	AVE	CR	Rho_A
Performance Expectancy (PE)	PE1, PE2, PE3	0.852–0.900	0.737	0.893	0.829
Effort Expectancy (EE)	EE1, EE2, EE3	0.832–0.948	0.730	0.890	0.821
Social Influence (SI)	SI1, SI2, SI3	0.797–0.854	0.668	0.858	0.753
Trust in Bank (TIB)	TIB1, TIB2, TIB3	0.780–0.831	0.650	0.835	0.848
Trust in ODR Tech. (TIO)	TIO1–TIO4	0.746–0.845	0.624	0.869	0.805
Access to Justice (AJ)	AJ1–AJ4	0.707–0.829	0.625	0.869	0.814
Behavioral Intention (BI)	BI1, BI2	0.909–0.924	0.840	0.910	0.733

Note: *Items with outer loadings < 0.70 (EE4, EE5) were excluded following (Hair et al., 2013).*

4.3. Structural Model and Direct Effects

The Structural Model was assessed using bootstrapped samples (5,000 samples). The model explained 46.1% of the variance in intention to use ODR ($R^2 = 0.461$). This indicates that the model has a substantial degree of explanatory ability according to (Cohen's, 1988) interpretation. The predictive relevance was confirmed with $Q^2 = 0.379$, which is greater than zero. The standard path coefficients, t-values, and *p*-values for direct effects are shown in Table **3**.

Table 3. Direct effects on behavioral intention to use ODR.

Relationship	B	T-Value	*P*-Value	Decision
PE → BI	0.178	4.564	< 0.001	Supported
EE → BI	0.112	2.963	0.003	Supported
SI → BI	0.215	6.386	< 0.001	Supported
TIB → BI	0.107	2.843	0.005	Supported
TIO → BI	0.145	3.594	< 0.001	Supported
AJ → BI	0.134	3.248	0.001	Supported

Note: *β = standardized path coefficient; bootstrapping with 5,000 subsamples. All t-values > 1.96. $R^2 = 0.461$; $Q^2 = 0.379$.*

The most important variable influencing the decision to use ODR technology was SI (β = 0.215) closely followed by PE (β = 0.178) and trust in ODR technology (β = 0.145) and AJ (β = 0.134) and EE (β = 0.112) and TIB (β = 0.107). All hypotheses tested were supported (H1-H6). These findings coincide with the UTAUT hypotheses and show the significance of trust and justice perceptions in facilitating ODR use in the Islamic banking sector.

4.4. Multiple-Group Analysis: Islamic *vs.* Conventional Banking

Multi-Group Analysis (MGA) is a technique that comes under PLS-SEM. It checks whether any structural relationship varies significantly among certain pre-defined groups. The current study used MGA to identify differences in the determinants of behavioral intentions to adopt Online Dispute Resolution (ODR) between people who opted for Islamic banking services and those who opted for conventional banking services. The permutation-based MGA technique was applied in this context, as a *p*-value below 0.05 is considered statistically significant for differences between the path coefficients of the groups in question (Hair *et al.,* 2022). The Multiple-Group Analysis (MGA) demonstrated significant differences between the Islamic and Conventional banking groups (β_Islamic = 0.179 *vs.* β_Conventional = 0.017) for PE ($p = 0.008$) and AJ (β_Islamic = 0.136 *vs.* β_Conventional = 0.088; $p = 0.044$), indicating that the expectation of performance and AJ have a stronger impact on ODR adoption in Islamic banking than conventional banking. Additionally, the Islamic banking sub-sample reported a negative coefficient for trust in banks (β = −0.210), possibly suggesting that high levels of trust in Islamic banks may lessen the individual's sense of urgency towards formal ODR procedures. We found no significant differences in other variables (EE, SI, TI) across groups (Table. **4**).

4.5. Moderation Analysis

The moderation analyses outcomes for collectivism, educational success, and ethnicity are depicted in Table **5**. Usage of the product-indicator approach aided by bootstrapping with 5,000 samples was employed for determining significance (Chin *et al.,* 2003).

Collectivism moderated five of the six hypothesized relationships. Collectivism tempered the strength of the relationship between the predictors of BI (PE, SI, and TIB) and group success (*i.e.,* the group dominates individual performance evaluation and bank trust in high-collectivism contexts). However, it amplified the impact of EE and TIO on BI. The AJ × Collectivism interaction effect was not statistically significant. Education amplified the influence of PE, SI, and TIB on BI, indicating that those with higher levels of education can more accurately evaluate the utility of ODR and the signals afforded by institutions. In contrast, although education negatively moderated the EE-BI relationship, this may be due to greater tolerance among educated individuals for moderate levels of complexity in their use of ODR. Ethnicity has also been demonstrated to moderate three interactions: positive amplification of the AJ-BI relationship, negative moderating effects on PE and TIO on BI, indicating that being a member of a minority ethnic group makes an individual more sensitive to their AJ and more skeptical of the performance of their organizations, as well as their level of trust in the organizations that they use to access the ODR.

Table 4. Multiple-group analysis: Islamic *vs* conventional banking.

Path	β (Islamic Banking)	β (Conventional Banking)	Difference	*P*-Value (MGA)	Decision
PE → BI	0.179	0.017	0.162	0.008	Significant Difference
EE → BI	0.135	0.082	0.053	0.345	No Significant Difference
SI → BI	0.225	0.198	0.027	0.581	No Significant Difference
TIB → BI	-0.210	0.125	0.085	0.162	No Significant Difference
TIO → BI	0.152	0.131	0.021	0.614	No Significant Difference
AJ → BI	0.136	0.088	0.048	0.044	Significant Difference

Note. *BI = Behavioral Intention. MGA p-values indicate the significance of the difference between the two groups (permutation-based procedure). β = standardized path coefficient.*

Table 5. Moderation analysis results.

Interaction Term	B	T-Value	*P*-Value	Decision
PE × Collectivism → BI	-0.093	2.021	0.044	Supported
EE × Collectivism → BI	0.203	2.980	0.003	Supported
SI × Collectivism → BI	-0.117	2.605	0.009	Supported
TIB × Collectivism → BI	-0.173	3.755	< 0.001	Supported
TIO × Collectivism → BI	0.110	2.766	0.006	Supported
AJ × Collectivism → BI	0.041	0.943	0.346	Rejected
PE × Education → BI	0.204	4.156	< 0.001	Supported
EE × Education → BI	-0.188	2.945	0.003	Supported
SI × Education → BI	0.103	2.310	0.021	Supported
TIB × Education → BI	0.107	2.363	0.019	Supported
TIO × Education → BI	-0.041	0.952	0.342	Rejected
AJ × Education → BI	-0.090	1.825	0.069	Rejected
PE × Ethnicity → BI	-0.101	2.932	0.004	Supported
EE × Ethnicity → BI	-0.045	1.380	0.168	Rejected
SI × Ethnicity → BI	0.019	0.317	0.752	Rejected
TIB × Ethnicity → BI	0.042	1.003	0.316	Rejected
TIO × Ethnicity → BI	-0.123	3.234	0.001	Supported
AJ × Ethnicity → BI	0.183	5.130	< 0.001	Supported

Note. *β = interaction term coefficient; bootstrapping with 5,000 subsamples.*

5. DISCUSSION

5.1. Discussion of Direct Effects

The research shows that all six proposed predictors, specifically, PE, EE, SI, TIB, TIO, and AJ positively and significantly relate to BI to use ODR. Out of the predictors, SI showed the maximum impact (β=0.215), followed by PE (β=0.178), Trust in ODR Technology (β=0.145), AJ (β=0.134), EE (β=0.112), and Trust in the Banking Sector (β=0.107). The stronger effect of SI indicates that the choice of respondents to use ODR technology is more influenced by people's recommendations, speeches, endorsements, and comments. The fact that SI proved to have the strongest impact is extremely important in the context of Pakistan, where the decision to use something new for individual users may depend on their family members, friends, colleagues, and other relatives, who may bring positive feedback about the new technology. At the same time, the relatively strong influence of PE is noteworthy.

5.2. Trust, Access to Justice, and ODR Adoption

The favorable impacts of Trust in Banking, Trust in ODR Technology, and Accessibility to Justice offer additional insights into the adoption of technology-enabled resolution of conflicts. Trust in ODR Technology has a more significant direct impact than Trust in Banking. This shows that the respondents make a difference between the assumption towards the reliability of the bank and ODR Technology. The bank itself

may be trusted as an institution but the customer who is going to use ODR should also ensure that the platform is capable of adequate handling of sensitive information regarding disputes. Likewise, a strong positive correlation between Accessibility to Justice and Behavioral Intention shows that people are willing to use ODR if they are convinced that it can facilitate the process of receiving payment by eliminating geographical, temporal, procedural, or financial barriers. It is also worth mentioning that this conclusion is particularly important for banking clients conducting transactions in various locations of Pakistan, which is explained by the fact that ODR would decrease the customer's dependencies on his/her physical presence in the certain bank.

5.3. Moderating Role of Collectivism

The outcome gained in regard to collectivism pose that cultural orientation does not have uniform effect on strengthening all technology adoption relationships. Collectivism serves as a negative moderator for the impact of PE (β = -0.093), SI (β = -0.117) and Trust in Bank (β = -0.173) on Behavioral Intention. It can be shown that with the increase of collectivism, the efficacy of the above-mentioned determinants becomes lower. One might imply that the highly collectivist population is less likely to adopt technology based on personal evaluation of performance or credibility due to lack of acceptance in their social group. In contrast, collectivism positively moderates EE (β = 0.203) and Trust in ODR Technology (β = 0.110) with Behavioral Intention. This shows that positive experience of potential ODR users can be transmitted through the collective network. The non-significant AJ × Collectivism interaction points out that the effect of AJ on ODR adoption remains unaffected by the respondents' level of collectivism. Thus, the empirical evidence proves that collectivism cannot be seen as a straightforward factor of the enhancement or decrease of the ODR usage; its impact depends on the particular determinant in question.

5.4. Moderating Role of Education

The role of education is also evident in moderation effects. The positive moderation effect of PE (β = 0.204), SI (β = 0.103), and Bank Trust (β = 0.107) implies that their importance is increasing with education level. It can be assumed that better educated individuals possess better capabilities in assessing the functional benefits of ODR, exploring the information on technology-based dispute resolution, and interpreting institutional signals regarding the trustworthiness of the launched system. On the other hand, education acts as a negative moderator in the connection between EE and Behavioral Intention (β = -0.188). This means that the importance of ease of use decreases with higher education level, because more educated respondents feel more comfortable with technical issues and realize the importance of performance and other tangible results over simplicity. Education has no impact on the relationship of Trust in ODR technology and AJ.

5.5. Moderating Role of Ethnicity

The analysis of moderation shows that ethnicity plays an important role in specified relationships with ODR use but not in all relationships within the theoretical model. Ethnicity negatively moderates the link between PE and Behavioral Intention (β = -0.101) as well as the connection of Trust in ODR Technology and Behavioral Intention (β = -0.123), and positively moderates AJ and Behavioral Intention (β = 0.183). The relatively strong positive moderation of the AJ-BI relationship shows that the attitudes towards accessibility of justice are different for different ethnic groups and can affect different aspects of willingness to use ODR, but it should be mentioned that these conclusions should be made carefully taking into account the generality of the concept of ethnicity, the type of moderation applied, and limited statistical interaction analysis, as well as the fact that this approach does not provide the opportunity to assume that absolute trust is linked to ethnic background.

5.6. Islamic and Conventional Banking Comparison

Multiple Group Analysis reveals more evidence that some relationships regarding ODR adoption may vary depending on whether respondents are connected with Islamic or conventional banking services. It has been found that PE is stronger in the Islamic banking sector (β = 0.179) compared to its conventional counterpart (β = 0.017), which provides a statistically significant difference (p = 0.008). AJ demonstrated a similar outcome (β = 0.136 in the Islamic sector compared to β = 0.088 in the conventional sector) with a statistically significant difference as well (p = 0.044). Thus, one may conclude that PE and AJ play a bigger role for the respondents assessing ODR experiences within Islamic banking. In comparison to conventional banking, Islamic banking may put bigger focus on the notion of justice and fairness, along with other aspects of profitable banking. Moreover, one should bear in mind that the study doesn't mean an assertion that Islamic banking is more willing to support ODR than conventional banks.

5.7. Practical Meaning of the Moderation Results

The significance of the moderation results has implications for how ODR systems need to be designed and promoted. The interaction effect suggests that the same ODR strategy may not suit everyone. For instance, the positive moderation of PE by education suggests that a communication that focuses on the efficiency and usefulness of ODR would work better for highly educated individuals. On the other hand, the negative interaction of EE with education suggests that ease of use would be a more important consideration for people with low education level. More so, the positive interactions of EE with collectivism and TIO with collectivism indicate that user friendly and trustworthy ODR will be readily accepted in evaluations that will be done through collective social networks. The positive moderation of AJ-BI relationship by ethnicity indicates that the ODR function must be effective and culturally relevant regardless of the ethnic background of users. Thus, these results indicate approach to communication, accessibility, and platform design not based on standard implementation of the ODR.

5.8. Interpretation of Non-Significant Moderation Effects

The moderation effects that are not statistically significant are helpful in theoretical terms. The study found that

collectivism had no moderating effect on the relationship between AJ and Intent to Act; education also did not moderately affect the influence of Trust in ODR Technology on AJ; ethnicity also did not play any moderating role in the relationship between EE, SI, and TIB. The results thus allow us to conclude that corresponding direct relations remain generally unchanged regardless of the differences concerning these moderators in the present study sample. Thus, the dismissal of the moderation hypothesis should not be viewed as a suggestion that the effect of the predictor in question is weak. Actually, it means that there is a lack of evidence to show that the degree and direction of the predictor-Intent-to-Act relationship is influenced by the suggested moderator.

5.9. Cautious Interpretation of the Findings

It is crucial to understand the results according to the cross-sectional and non-probabilistic nature of research which is the design of the study. The analysis has shown that the relationships are very solid in theory and they are statistically significant but the results still refer more to the correlation and nature of the forecasting relationship than to the actual causation. At the same time, the participating banks are working in Pakistan and the surveyed customers can have transactions all over the country but the research has only been conducted in Karachi because of the purposive sampling method. Therefore, the results cannot be deemed statistically representative of any banking client in Pakistan. Future studies using longitudinal approaches, probability sampling, and respondents from different regions both rural and urban would enable obtaining more reliable evidence regarding causality and generalizability.

CONCLUSION

Theoretical Contributions

The findings of this study make three primary contributions to the theory. First, it extends the UTAUT model to the ODR market. This shows that the UTAUT model has a general form across cultures for embedded-fintech applications. Second, it introduces and validates collectivism, education, and ethnicity as empirically supported moderators of adoption behaviors based on theoretically motivated hypotheses in Islamic finance, showing that cultural and individual-difference factors are important considerations when researching technology management. Third is the AJ effect, which further supports including justice constructs in frameworks that guide the adoption of technology applications within the legal sector.

Practical Implications

As Islamic bank executives and ODR platform creators, you should approach your current marketing and outreach efforts with an understanding that using SI, particularly community opinion leaders and Islamic scholars (ulama), will be a more effective way to seed adoption of your product or service than employing mass media. You should also communicate performance-based outcomes that highlight the benefits of ODR, such as time savings, Shari'ah-compliant solutions, and cost savings, to take advantage of the positive impact of ODR adoption. Regulators and other entities that issue ODR policy guidance should develop ODR-related policies specifically for the Islamic finance industry, as this industry has unique dynamics related to users' institutional trust and the imperative of providing equitable AJ. The fact that user ethnicity moderates ODR adoption strengthens the argument for utilizing culturally relevant, multilingual ODR systems to assist users from ethnic minority communities in overcoming barriers to accessing ODR. Additionally, targeted financial literacy initiatives designed to facilitate ODR awareness among lower-educated users can improve overall ODR adoption rates across all socioeconomic classifications.

Limitations and Future Directions

The limitations of this research include the degree to which findings can be generalized across locations and months due to the cross-sectional nature of the study and the requirement of larger, longitudinal panel studies in the future. This study collected a good number of samples from Islamic banks based only in Karachi, Pakistan, hence limiting its ability to generalize its findings into rural and peri-urban areas. Furthermore, it did not look into the organizational and regulatory factors affecting the study such as the role of the Shari'ah supervisory board on the legitimacy of the ODR, therefore providing room for multilevel studies on the issue. Future studies should also incorporate inquiries into mediation variables, such as examining whether or how digital self-efficacy mediates the influence of education as this can shed light on how culture-specific adoption behaviors differ from Islamic finance-specific adoption behaviors through expanding the analysis into the like of Malaysia, the UAE and Indonesia among other OIC members.

LIST OF ABBREVIATIONS

AJ	=	Access to Justice
AVE	=	Average Variance Extracted
CR	=	Composite Reliability
EE	=	Effort Expectancy
MGA	=	Multiple-Group Analysis
ODR	=	Online Dispute Resolution
PE	=	Performance Expectancy
SI	=	Social Influence
TIB	=	Trust in the Bank
TIO	=	Trust in the ODR System
UTAUT	=	Unified Theory of Acceptance and Use of Technology

AUTHOR'S CONTRIBUTION

F.Z. has contributed to the study conceptualization, methodology, data analysis, interpretation of results, and manuscript writing.

ETHICAL APPROVAL & INFORMED CONSENT

This research was conducted in accordance with ethical research principles. Before data collection, the author outlined the research aim, the data collection procedure, and how the confidentiality of respondents' data was maintained. All participants had the right to refuse participation. Also, the informed consent from all respondents was obtained before the research.

AVAILABILITY OF DATA AND MATERIALS

The author collected the data for this research through a structured questionnaire administered to banking customers and banking industry workers. In compliance with confidentiality and privacy processes, we cannot publicly publish the full dataset. However, the author [F.Z.] can provide the information and materials used for the research under reasonable conditions and in compliance with confidentiality principles.

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CONFLICT OF INTEREST

The author discloses the absence of a conflict of interest that could potentially have affected the research design, data collection, data analysis, interpretation, or discussion of the results.

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DECLARATION OF AI

The author affirms that no AI tools were used to produce the results, conduct the data analysis, interpret the results, or develop any conclusions reflected in the manuscript. In this work, only language-improvement tools were used. The author is accountable for the originality and integrity of the research results.

APPENDIX A

Survey Questionnaire

Title: Determinants of Online Dispute Resolution Adoption in Islamic Banking: The Moderating Roles of Collectivism, Education, and Ethnicity

Introduction: The purpose of this questionnaire is to investigate the factors that affect customers' intention to use ODR, or Online Dispute Resolution, in banking. ODR is the use of technology and online platforms to settle disputes arising from banking problems, issues, and complaints without the need for physical attendance in a bank office.

Demographics Factor	Response Options
1. Gender	☐ Male ☐ Female
2. Age	☐ Below 25 years ☐ 25–35 years ☐ 36–45 years ☐ Above 45 years
3. Education Level	☐ Intermediate ☐ Bachelor ☐ Master ☐ MS/MPhil ☐ PhD ☐ Others
4. Type of Banking Service Used	☐ Islamic Banking ☐ Conventional Banking
5. Relationship with Bank	☐ Customer ☐ Employee
6. Banking Experience	☐ Less than 1 year ☐ 1–5 years ☐ 6–10 years ☐ More than 10 years
7. Ethnicity	☐ Punjabi ☐ Sindhi ☐ Urdu-speaking ☐ Pashtun ☐ Baloch ☐ Other

Section B: Measurement Items

Performance Expectancy:

PE1: Using ODR would improve the efficiency of resolving banking disputes.

PE2: ODR would help me resolve banking complaints more quickly.

PE3: I believe ODR would provide useful benefits in handling banking disputes.

Effort Expectancy:

EE1: Learning to use ODR would be easy for me.

EE2: My interaction with an ODR system would be clear and understandable.

EE3: I would find ODR easy to use.

Social Influence:

SI1: People who are important to me would encourage me to use ODR.

SI2: People who influence my decisions would support my use of ODR.

SI3: People around me would consider using ODR a good idea.

Behavioral Intention:

BI1: I intend to use ODR if my bank provides this service.

BI2: I plan to use ODR for resolving future banking disputes.

Trust in Banking Institution:

TIB1: I believe my bank handles customer complaints reliably.

TIB2: I trust my bank to resolve disputes fairly.

TIB3: I believe my bank protects customers' interests during dispute resolution.

Trust in ODR Technology:

TIO1: I believe ODR technology would securely manage my dispute information.

TIO2: I believe ODR technology would provide reliable dispute-resolution services.

TIO3: I feel confident using technology-based dispute-resolution systems.

TIO4: I believe ODR technology would protect my privacy and personal information.

Access to Justice:

AJ1: ODR would make banking dispute resolution more accessible.

AJ2: ODR would reduce barriers to resolving banking disputes.

AJ3: ODR would provide customers a fair opportunity to present their complaints.

AJ4: ODR would make dispute-resolution procedures more convenient.

Collectivism:

COL1: I consider the opinions of my family and close friends when making important decisions.

COL2: Group agreement is important when I make decisions.

COL3: I prefer solutions that are accepted by people close to me.

COL4: Maintaining harmony with others is important to me.

COL5: I value cooperation and collective decision-making.

COL6: I feel responsible for the well-being of my group.

COL7: I prefer working with others rather than making decisions alone.

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