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Fintech Attaining Sustainable Development: An Investor Perspective of Crowdfunding Platforms in a Developing Country

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Abstract: Crowdfunding is a successful disruptive innovation of fintech that substitutes financial intermediaries and contributes toward financial inclusion and sustainable development. The present research aimed at exploring the underlying determinant factors that shape the investors' intentions to fund in a crowdfunding platform, a phenomenon still under-researched in the developing world. To bridge this void in the literature, we investigated how calculus and relational trust mediate the effects of perceived accreditation, blockchain technology, structural assurance, and third-party seal on the investors' intention using the SEM technique to analyze the data collected from 110 platform investors in Pakistan. Findings suggest that third-party seal and blockchain technology strongly influence the calculus trust. While the investors' intention to invest is mediated by calculus trust, the relational trust fails to show any mediation effect, suggesting that investors make investment decisions based on what makes sense to them cognitively instead of affectively. The research was concluded with implications for both theory and practice.

Keywords: crowdfunding; fintech; sustainable development; trust; SEM; investor's intention



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1. Introduction

Fintech is an interlink between finance and technology, which refers to digital innovation to improve, develop, and automate financial services to promote and support enterprises, business owners, and investors in managing their financial activities [1–3]. Fintech and information communication technology (ICT) have been cited as the main drivers of financial inclusion in recent research [4]. With the fintech industry's growth and post-COVID-19 crisis restrictions [5,6], crowdfunding (CF) as a type of fintech has emerged as a more popular choice for young and aspiring entrepreneurs [7]. It is quite an innovative method of funding, and various studies focused on its effects on its participants are being conducted from multiple perspectives [8].

Crowdfunding is quite a historical phenomenon that started gaining popularity after the financial crisis of 2007–2008 [9], and the number of research studies on crowdfunding is increasing [10]. "Crowdfunding is a way to raise small sums of money from a large group of (often occasional) investors as it involves an open call for financial resources, conducted primarily through the internet" [11,12]. Simultaneously, there has been an increasing emphasis on developing potential investors for crowdfunding [13].

There are four methods of crowdfunding that include donation-based crowdfunding, reward-based crowdfunding, equity-based crowdfunding, and peer-to-peer lending. The first two methods are for non-monetary benefits, and the other two methods are for monetary benefits [14,15]. Equity crowdfunding as an alternative financial tool that avoids complex systems and reduces costs for a fundraiser compared to traditional modes [16] was the focus of our research. Under various risks, equity crowdfunding contributes toward economic development [17] and sustainability [18].

Small and medium businesses (SMEs) and entrepreneurship play a significant part in developing a sustainable economy [8,19]. In the case of emerging economies, SMEs are

responsible for 7 out of 10 jobs [20]. SMEs account for nearly 90 percent of many projects and contribute to an annual G.D.P. of around 40 percent, with a 30 percent proportion in overall Pakistan's exports [21].

A lack of financing opportunities can pose a potential threat to startups, SMEs [22], and the entrepreneurial ecosystem. Startups that do not have sufficient funds to qualify for bank financing also struggle to access angel or venture capital financing. The majority are looking for equity-based crowdfunding (ECF) to stay in the competitive business environment [23]. Crowdfunding potential in the developing world is anticipated to rise to USD 300 billion by 2025 [24]. However, the acceptability of any new technology (crowdfunding) is influenced by various economic and psychological aspects that must be learned to comprehend their implications fully.

The success of equity crowdfunding (ECF) is dependent on a supportive legal environment, such as the regulatory sandbox that can prevent the risks related to fintech [25] and allow "sophisticated", "unsophisticated", "household", or "small", or "restricted", investors to participate in the crowdfunding ecosystem [26]. Platforms implement institutional protection mechanisms (platform rules, monitoring, and pledging security) to adhere to regulations [27]. Policymakers must implement reforms to improve the quality of institutions and build effective rules and infrastructure [28], and governmental initiatives, assistance, and policies are vital for economic progress [29].

The study's primary purpose was to understand better the fintech innovation that is crowdfunding, especially in the developing world. Previous research on the efficacy and determinant factors of the ECF method has mainly focused on developed countries, and there is a lack of academic research in developing countries on crowdfunding, especially in Pakistan. In an emerging economy like Pakistan, there is a lack of experience in startup funding, it faces a high-risk reward situation [30], and there is a dearth of research on the behavioral aspects of finance.

Therefore, the novelty and contributions of our research are as follows: (1) The impact of behavioral characteristics on crowd investors' intention, which is currently a gap in developing countries like Pakistan [31], utilizing a large primary dataset that includes most of Pakistan's provinces, is a distinctive aspect of this study. (2) Using the lens of the theory of planned behavior (TPB) by [32], the majority of studies observed TPB's predictive power on online purchases [33–35], but only a few investigated the TPB linked to investor intention in crowdfunding [5,34,36,37], with an additional factor of trust that strengthens the role of the platform in consumer decision making [38–42], which is rarely used in literature, especially in a developing country context. (3) Platform-related factors of crowdfunding with the addition of blockchain technology as an additional factor affecting investors' trust for investing in a crowdfunding platform.

Finally, this research aimed to develop an integrated, comprehensive research model to understand crowdfunding behavior in Pakistan. This investigation accounts for the linkages among the TPB, trust, blockchain technology, and the concurrent impact on the funder's intention for investment in an equity-based platform with the help of a second-order research framework to be presented shortly. This research will motivate investors for financial inclusion and platforms, policymakers, incubation centers, entrepreneurs, and universities that can devise training programs based on identified behavioral factors to increase the success of startups. The policymakers can develop and modify future strategies by looking at the motivating factors from this study.

According to Ref. [27], the Securities and Exchange Commission of Pakistan (SECP) is now working on institutionalizing crowdfunding platforms. Researchers have emphasized the need to investigate the phenomenon of these developing ECF platforms to understand investor behavior in Pakistani ECF platforms better. For this purpose, the study highlighted three institutional mechanisms used by crowdfunding platforms to protect backers' interests: platform rules (perceived accreditation), protective measures (third-party seal), and structural assurance, with an additional factor introduced in this study of pledging-increased security (blockchain technology) [27]. It also investigated how an individual's

perception of the mechanism influences the trust and distrust of the founders and backers and in turn will affect the success of crowdfunding.

1.1. Research Questions

The study addressed the following research questions:

- How does blockchain technology, in addition to existing platform-related factors (perceived accreditation, structural assurance, and third-party seal), influence investor trust dimensions in crowdfunding?
- How do calculus and relational trust in platforms influence investor intention to crowdfund?

The remaining part of the paper is organized such that Section 2 characterizes crowdfunding literature and theoretical framework by explaining the relationships between ascendants, trust, and investor willingness. Section 3 addresses the methodology section, followed by data analysis. Section 4 summarizes research findings to conceptualize and characterize investor perceptions of crowdfunding, and Section 5 concludes the study with research limitations and implications.

1.2. Literature Review

Crowdfunding has emerged as the driving force of alternative forms of financing to revolutionize and foster the financial sector and economy [6,43]. Crowdfunding has attracted startups and businesses seeking capital [44] while encouraging potential investors to participate in online platforms [41].

1.2.1. Crowdfunding Platforms

Crowdfunding is a dynamic process in which various interactions help ideas to life, similar to entrepreneurial behavior [45], by involving an intermediary platform with a seller (fundraiser) and a buyer (investor) [46]. Platforms use the internet structure to speed up investment processes by organizing, collecting, and sharing information with potential entrepreneurs and investors [47]. Funders/investors expect the platforms to act as intermediaries in countries such as Europe and the U.S.A. to certify, appraise, or reject complex projects, protect private information such as escrow accounts, protect against fraud risk to create specialized trust factors [48,49] and provide partial substitution in the absence of institutions.

Trust in crowdfunding platforms can also build trust in investors [50] as the competence of entrepreneurs seeking funds is merely observed by them [47]. A few studies conducted on various platforms in the UK, Germany, France, and Italy platforms [51,52] focused on how various factors contribute to investment-based crowdfunding success.

The present study focused mainly on the authenticity of investor intention (II) of perception through platform-related factors (blockchain technology (BT), perceived accreditation (PA), structural assurance (SA), and third-party seal (TPS) through calculus (CT) and relational trust (RT).

1.2.2. Theory of Planned Behavior

TPB is a specific behavior that is a function of intention. The intention combines subjective norms, attitudes, and perceived behavior control. There will be a higher intention to participate in specific activities when subjective norms, attitudes, and perceived behavior have a stronger influence [53]. Furthermore, the academic research implies that within the TPB framework, other characteristics such as trust can be considered a determinant of intention [47,54], and trust can drive producers and customers to form strong bonds and overcome consumer uncertainty, resulting in new loyalty and supporting the growth of the business based on a study on China and Germany. Trust can also remove asymmetries in crowdfunding platforms and positively influence investors [55].

The extended model of planned behavior theory (TPB) defines the relationship between perceived behavioral control and trust. In online transactions, perceived behavioral

control will boost the presence of trust [56]. TPB variables such as trust in investments within components reflect a favorable association between subjective norms, respondents' attitudes, perceived behavioral control, trust, and intention to invest in a study on Italy [36].

The perceived behavior control, attitudes, and subjective norms significantly impact consumer purchase intention [36] with an additional factor of trust that strengthens the platform's role in consumer decision making [38–41].

In light of the TPB, this study explains that the factors of perceived behavior control (perceived accreditation, blockchain technology, structural assurance, and third-party seal) along with trust (calculus and relational) will affect the individual intention to participate (investor intention to invest) in a crowdfunding platform [33,35,36,57–60]. The extended model of TBP with first and second order references is shown in Table 1.

Table 1. Literature of TPB in crowdfunding.

Areas of Research with a TPB Perspective	First Order	Second Order
In online transactions	[33,35,57,58]	
Trust (in online transactions)	[54,56]	
Trust as an additional framework (purchasing)	[36]	
Investor intention to invest in crowdfunding	[59]	
Investor intention to invest		[60]

1.3. Theoretical Framework

1.3.1. Platform-Related Factors and Trust

Trust plays a vital role in a crowdfunding platform by effectively managing rules and outcomes and applying policies [61]. ECF platforms based on returns are more demanding than others in terms of infrastructure as they are highly reliant on establishing a favorable regulatory framework to enhance the investor's trust [62].

Various factors of platforms should be considered while using a crowdfunding platform to invest in a crowdfunding project [63]. This study focused on some previously developed platform-related factors in Korea and China: third-party seal, perceived accreditation, and structural assurance [38,41,63], along with a new variable of blockchain, which is a growing application in financial technology (fintech) [64]. All these factors can be considered as an antecedent for increasing an investor's trust in investing on crowdfunding platforms.

a. Perceived Accreditation

Accreditation refers to the belief that platforms made some effort to ensure that the fundraiser can perform as expected and the project has enough capital to work as intended [65]. It refers to the belief in how well the crowdfunding platform puts checks on the projects and fundraisers to ensure the authenticity and credibility of projects for the investor. In crowdfunding, the calculus trust in ventures is significantly influenced by perceived accreditation (an antecedent of platform attribution) [38].

b. Structural Assurance

Structural assurance mainly refers to the encryptions, coding, and building blocks placed in the crowdfunding platform to ensure the safety and privacy of data [66]. If a person believes the platform's mechanism ensures safety, then the perceived trust is likely to increase; thus, structural assurance has a significant positive relation with trust (calculus and relational) [38,66].

c. Third-Party Seal

Third-party seals usually refer to the verification of the online retailer by an independent party [67], e.g., TRUST-e and BBBOnline use a stamp to certify that such procedures or regulations affect an e-commerce website [68]. The presence of a third party reduces risk and can significantly enhance the calculus and relational trust [66,69], increasing investor intention [38].

d. Blockchain Technology

Blockchain technology is used to assess creditworthiness [70], and its potential to enable new governance has yet to be explored [71]. It is a secure, reliable, and low-cost method for registering crowdfunding stocks and shares, allowing trade between entrepreneurs and investors [72,73]. Documents processed by blockchain ensure fund management confidentially during fundraising, reduce risk, and improve trust during appraisal and due diligence of the venture [74].

The above platform factors (blockchain, perceived accreditation, structural assurance, and third-party seal) influence calculus and relational trust individually in various studies conducted mostly in the developed world as mentioned above. In light of the discussion earlier, we hypothesize:

Hypothesis 1 (H1). *Platform-related factors positively influence the calculus trust of investors.*

Hypothesis 2 (H2). *Platform-related factors positively influence the relational trust of investors.*

1.3.2. Calculus and Relational Trust for Investor's Intention to Invest

Online trust can be defined as "the level of confidence assigned to internet effectiveness as a medium to conduct transactions", which is explicitly examined on equity-based platforms [75]. Trust plays a vital role in platform, project, and fundraising [39,41] and strengthens funding intentions [76].

Calculus trust refers to trust based on economic gain or exchange termed conditional trust [38] (Kang et al., 2016b), while relational trust is "trust from the heart" formed due to continuous social interaction and the formation of an emotional bond between the two parties [38].

According to some researchers, relational trust can be built on the foundation of calculus trust. Calculus trust is a cognition based on the reasonable evaluation that aids a funder in building the credibility of the fundraiser by developing a relationship between the funder and the fundraiser [77]. From the above discussion, we hypothesize:

Hypothesis 3 (H3). *Calculus trust mediates the relationship between platform-related factors and the relational trust of investors.*

Ref. [78] found trust crucial in personal relationships and offline commerce. Trust can be considered a type of social capital in the business world to establish long-term relationships [79].

Recently, trust has been recognized as a substantial predictor of investing intention in crowdfunding and entrepreneurial financing [39,80]. In short, trust is the factor that plays a direct role in the customer's online investment intention, as early-stage investors require higher trust [81] as shown in Figure 1.

Similarly, in the case of ventures, trust influences decision making [81]. Thus, by reducing risks, trust can increase the funder's participation in online crowdfunding activities. In light of the above discussion, we hypothesize that:

Hypothesis 4 (H4). *Calculus trust has a positive relationship with investor intention to invest.*

Hypothesis 5 (H5). *Relational trust has a positive relationship with investor intention to invest.*

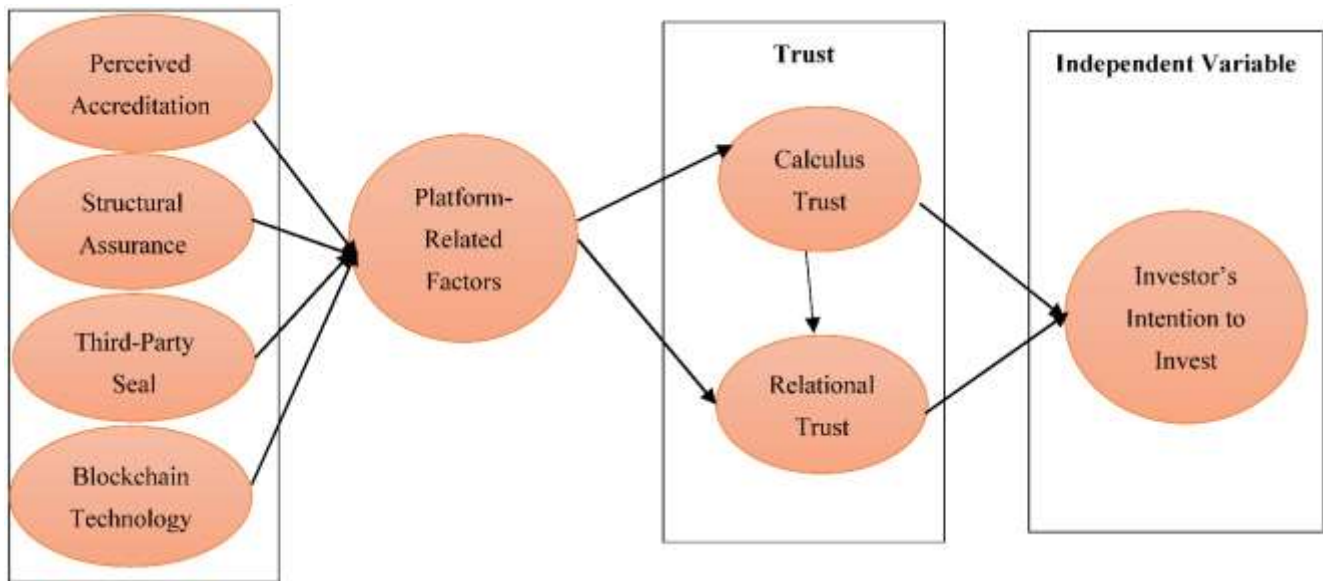


Figure 1. Theoretical framework.

1.3.3. Role of Trust as a Mediator

If an individual has more faith in the crowdfunding site, campaigns, and fundraisers, they are more likely to participate in the projects available on that platform [62]. In various studies, trust has played a mediating role in online purchase intention [82,83]. The mediating role of trust can be explained in the presence of some factors that may increase an investor's trust and, in turn, can lead to an increased intention to invest [27,82,84,85].

Studies proved that both calculus trust and relational trust, both separately and collectively, mediate the effect of platform-related factors of perceived accreditation [38,41,86], third-party seal [38,41], structural assurance [41], and blockchain technology [87,88] on an investor's intention to invest. The funder's goal is linked to knowledge and the connection between the funder and the fundraiser, influenced by calculus and relational trust [62]. As a result, the funder would be encouraged to form stronger emotional bonds with the fundraiser, which strengthen the investor's intention to invest; thus the study suggests the following hypotheses:

Hypothesis 6 (H6). *Calculus trust mediates the relationship between platform-related factors and investor intention to invest.*

Hypothesis 7 (H7). *Relational trust mediates the relationship between platform-related factors and investor intention to invest.*

2. Materials and Methods

In our study, a survey questionnaire was designed that includes 12 items for seven constructs. The constructs contain perceived accreditation, blockchain technologies, third-party seal, structural assurance, trust in the platform, and investor intention in crowdfunding. The items of constructs were adapted from prior research [38,89,90]. The survey instrument is based upon an extensive literature review, and the question items and their references are included in the bibliography.

An internet survey was sent to the respondents as an appropriate way to explore funder behavior on online crowdfunding platforms [41]. A Likert scale of 5 points was prepared to evaluate each question. Two experts created the instrument in English and translated it into Urdu to overcome the language barrier.

Table 2 includes the respondent profile of the study based on types of general characteristics (e.g., participant education, the average amount of funding, type of investment) included in the survey with some socio-demographic items (e.g., educational level, age).

Table 2. Respondent profile.

Characteristics	Number (110)
Age	
18–25	01
26–35	64
36–45	28
45 and above	17
Education	
High school and below	32
Bachelor's	46
Master's	30
Ph.D.	02
Amount of funding	
Less than 50 K	10
50 K–100 K	19
100 K–1 M	34
1 M and above	47
Type of investment	
Equity-based non-technological	24
Equity-based technological	69
Others	17

This research was based on 110 responses from investors who took part in the survey. The majority of our respondents lie in the bracket of 26–35 years of age (64/110), have a bachelor's degree (46/110), have invested more than a million Pakistani rupees (47/110), and (69/110) are interested in equity-based technology businesses. There were four types of investors: seed funders, angel investors, venture capitalists, and potential investors; as there are only a few institutionalized investors in Pakistan, a major part of the study was focused on the potential investor.

The purposive sampling technique was employed for the target population of investors (seed funders, angel investors, and venture capitalists) and informal/potential investors. The criteria based on literature, used for potential respondent investors, included:

1. The person has a social media identification (Facebook, LinkedIn, forums, Twitter, emails, etc.) [91].
2. They have owned a running business for the past two years [92–94].
3. The individual has invested somewhere other than stocks and mutual funds for the past two years [95,96].
4. Being a taxpayer.

The survey was initially sent through emails, LinkedIn, Facebook, and online investor forums to 300 respondents by asking a screen question to find information-rich respondents: Have you any idea about crowdfunding? Only 200 responded with a yes answer. Out of 200, only 110 fit our above criteria. The sample size was 110, as few were identified as potential investors for startups. There is no official database of investors listed, as crowdfunding is a relatively new phenomenon and is still in the process of legalization compared to a previous study [97]. We have to tap our target audience by purposive sampling initially and then snowball sampling due to the lack of information in Pakistan.

Partial least squares structural equation modeling (PLS-SEM) was used for data analyses in this study. PLS-SEM requires minimum residual distributions, measurement scales, and sample size [98,99]. PLS-SEM analyses first-order reflective indicators within one model while also using second-order variables and repeated indicators as a formative approach [100]. For using complex models and multi-group analysis (MGA), PLS-SEM

is preferred over covariance-based SEM [101]. Smart-PLS 3.2.7 was used to validate the structural and measurement model and the results of the study.

Firstly, a measurement model was used to explore the reliability and validity of all variables (investor intention, calculus trust, relational trust, blockchain technology, perceived accreditation, structural assurance, and third-party seal). Secondly, to explore the relationship between the platform-related factors (BT, PA, SA, TPS) and CT and RT and then the relationship between C.T. and R.T. and dependent variable II, structural equation modeling (SEM) was used. Furthermore, a mediation analysis was conducted to explore the mediating effect of calculus trust and relational trust.

3. Results and Analysis

The results and analysis include the measurement and structural models of second-order reflective formative construct and mediation analysis [100–103].

3.1. Measurement Model

In Table 3, we present our measurement model or outer model. Internal reliability and consistency were measured through composite reliability (CR) and Cronbach's alpha. For measuring convergent validity, we used average variance extracted (AVE) and standardized item loadings; endogenous construct prediction was calculated through R-square.

Table 3. Results of measurement model.

	Item #	Factor Loading	Cronbach's Alpha	CR	AVE	R-Square
II	II1	0.871	0.847	0.907	0.764	0.389
	II2	0.882				
	II3	0.870				
BT	BT1	0.806	0.766	0.865	0.682	
	BT2	0.788				
	BT3	0.881				
TPS	TPS1	0.865	0.859	0.914	0.780	
	TPS2	0.898				
	TPS3	0.886				
CT	CT1	0.821	0.696	0.802	0.508	0.299
	CT2	0.708				
	CT3	0.748				
	CT4	0.545				
PA	PA2	0.815	0.680	0.858	0.752	
	PA3	0.917				
RT	RT1	0.844	0.814	0.890	0.729	0.189
	RT2	0.816				
	RT3	0.900				
SA	SA2	0.871	0.679	0.862	0.757	
	SA3	0.870				

Composite reliability for all measures ranges between 0.802 and 0.914, much higher than the threshold value of 0.7. For Cronbach's alpha, the values of the three measures are slightly lower than the threshold of 0.7. However, Hair [101] claimed that composite reliability is a better measure of internal consistency than Cronbach's alpha, which depicts good results. The results of factor loadings are above 0.5, for all items, except item CT4; since the AVE of all constructs is more than 0.5 [104], none of the items were deleted. The AVE of all constructs reflects satisfactory results.

Discriminant validity is measured by using the average variance extracted (AVE) method and the Fornell–Larcker criterion, which compares the AVE of each variable by taking the squared correlation with the other variables. The diagonal shown in Table 4 depicts the values of the AVE square root, whereas the others represent correlations between

constructs. In each case, the correlations are greater, indicating appropriate discriminant validity [102].

Table 4. Fornell–Larcker criterion.

	BT	CT	II	PA	RT	SA	TPS
BT	0.826						
CT	0.278	0.713					
II	0.273	0.574	0.874				
PA	0.277	0.329	0.310	0.867			
RT	0.116	0.38	0.382	0.191	0.854		
SA	0.368	0.256	0.381	0.154	0.137	0.870	
TPS	0.347	0.232	0.193	0.318	0.241	0.273	0.883

3.2. Structural Model

The structural model should be able to anticipate endogenous components accurately. Hair [102] explained that the R-square, coefficient of determination, for the key constructs should be more than 0.25. A strong ability of exogenous variables to anticipate investor intention to invest (II) is shown in Table 3 above by an R-square value of 0.389.

Table 5 and Figure 2 describe the path coefficients, t-values, and relationship significance, including all the direct relationships proposed in the model using the bootstrapping approach with 5000 subsamples included with replacements from the original data. Three out of four relationships show significance, and only one hypothesis is not accepted through the analysis. Only Hypothesis 2 about the relationship between platform-related factors and relational trust has a *p*-value of 0.74, greater than 0.5, depicting an insignificant relationship. All of the other relationships in Table 5 have a *p*-value less than 0.5, demonstrating acceptance of Hypotheses 1, 4, and 5.

Table 5. Parameter estimation.

Hypotheses	Standardized Coefficient	t-Value	<i>p</i> -Value	f-Square	Result
H1: PRTF -> CT	0.380	3.786	0.000	0.192	Accepted
H2: PRTF -> RT	0.166	1.785	0.074	0.028	Rejected
H4: CT -> II	0.434	5.239	0.000	0.235	Accepted
H5: RT -> II	0.168	1.979	0.048	0.039	Accepted

The effect size (f-square) explains the role of the exogenous construct toward the endogenous constructs within the model. According to Hair [102], small, medium, and large effects are estimated with values of 0.02, 0.15, and 0.35, respectively. The platform-related factors influencing investor intention to invest (H4) have a medium-sized effect with a value of 0.235; it is followed by another medium-sized effect of 0.192 of platform-related factors influencing calculus trust (H1). Finally, calculus trust has a small effect on investor intention to invest (H5) with a value of 0.039, as shown in Table 5.

The formative second-order construct of PTRF has significant results with four related first-order constructs of BT ($B = 0.425$, $t = 9.035$), PA ($B = 0.265$, $t = 5.528$), SA ($B = 0.278$, $t = 7.008$), and TPS ($B = 0.463$, $t = 9.124$) as shown in Figure 2 and Table 6.

Table 6. First-order platform-related factors.

First-Order Construct -> Second-Order Construct	Original Sample	Sample Mean	Standard Deviation	T-Statistics	<i>p</i> -Values
BT -> PRTF	0.425	0.422	0.046	9.156	0.000
PA -> PRTF	0.265	0.258	0.049	5.438	0.000
SA -> PRTF	0.278	0.269	0.039	7.098	0.000
TPS -> PRTF	0.463	0.462	0.051	9.068	0.000

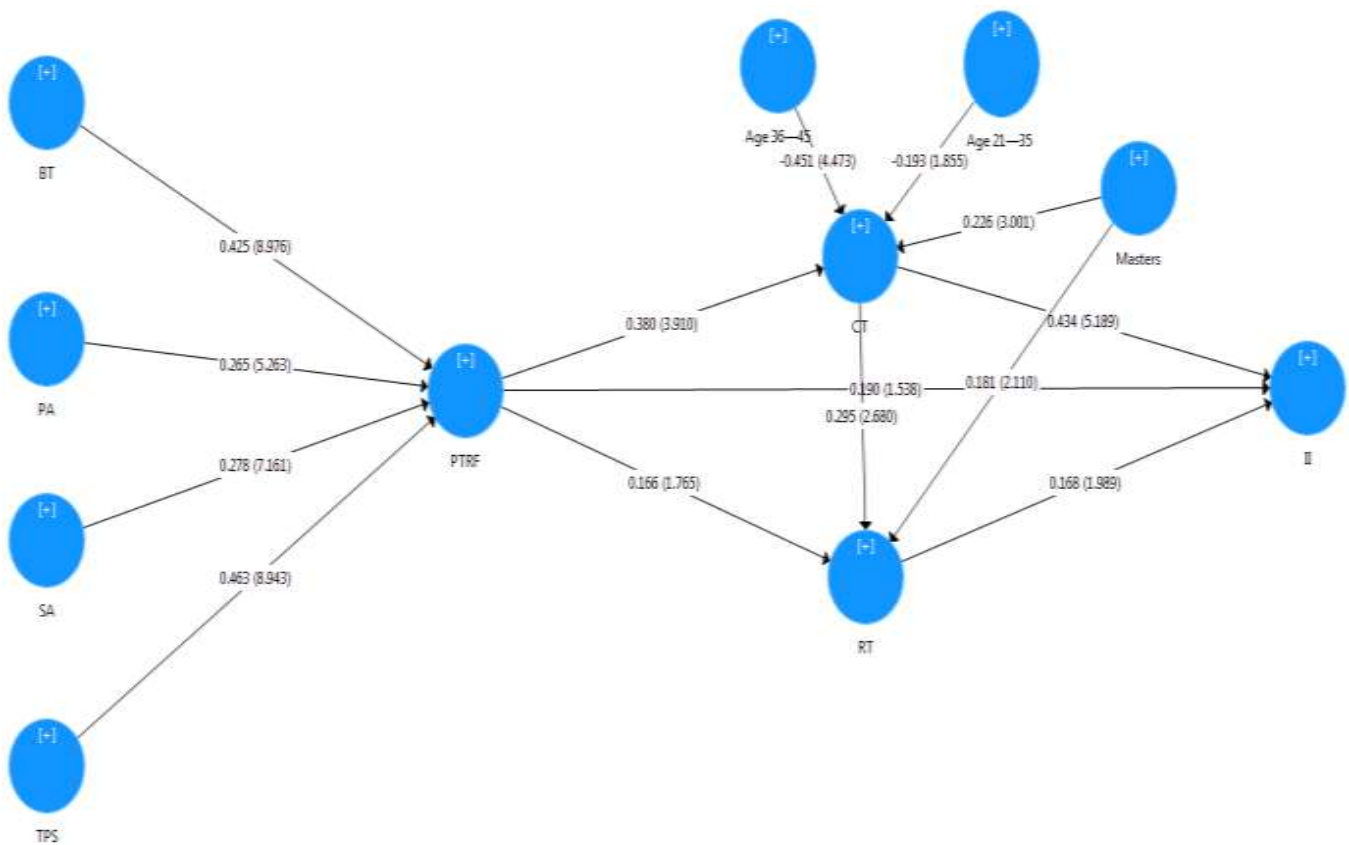


Figure 2. Path coefficients of various factors.

3.3. Mediation Analysis

Three hypotheses were tested for mediation: H3, H6, and H7, as shown in Table 7. The impact of exogenous constructs on endogenous constructs was first assessed and compared through mediator constructs, and then the direct effect of exogenous on endogenous constructs was investigated. The table depicts the relevant calculation needed for the mediation analysis.

Table 7. Summary of mediation analysis.

	Path	B Value	Indirect Effect	Total Effect	VAF	Mediation	t-Value	p-Value	Decision
H3	PTRF -> CT	0.380	0.112	0.278	0.403	Partial	3.786	0.000	Supported
	PTRF -> RT	0.166					1.785		
	CT -> RT	0.295					2.729		
H6	PTRF -> CT	0.380	0.165	0.355	0.471	Partial	3.786	0.000	Supported
	PTRF -> II	0.190					1.535		
	CT -> II	0.434					5.239		
H7	PTRF -> RT	0.166	0.028	0.218	0.128	No	1.785	0.074	Not Supported
	PTRF -> II	0.190					1.535		
	RT -> II	0.168					1.979		

Hypotheses 3 and 6 were accepted with partial mediation, whereas H7 was rejected with no mediation. As per Hair’s [102] recommendation, we used the variance accounted for (VAF) value to assess the mediating impact size (VAF = indirect effect/total effect, where total effect = indirect effect + direct effect). Furthermore, according to Hair [102], a VAF of 80% or above suggests a full mediation, 20% to 80% indicates partial mediation, and less than 20% implies no mediation. The VAF value for H3 was 0.403, or 40.3 percent, indicating partial mediation. Similarly, the VAF value of 0.471 or 47.1% indicates a partial mediation for Hypothesis 6. Hypothesis 7 shows no mediation with a VAF value of 0.128 or 12.8%.

4. Discussion

This research explored the relationship between various platform-related factors and calculus and relational trust with their mediating effects on investor perception. Extant literature has widely researched the relationship between investors' intention to invest using a crowdfunding platform and various determinant factors, including the unitary construct of trust. The role of various platform-related factors in shaping the intentions to invest is already established. It is interesting to compare the relative roles of these factors on various trust dimensions that are under-researched to date.

The purpose of this study was to investigate the TPB variable led by the trust influenced by investor intention to use crowdfunding services in Pakistan. According to the study's findings, investors' behavioral intention to use crowdfunding platforms is directly influenced by their perceived behavior control [32] as it significantly influences the investor intention [13,105]. Suitable incentives and security measures are critical for encouraging lenders' involvement and trust and lead to perceived behavior control involved in equity/lending crowdfunding platforms [106,107].

The individual capacity is influenced by perceived behavior control [32] which is enhanced by situational confidence. If platforms are able to provide services (PA) and security (SA, BT, TPS) that enhances the trust factor, then investor intention to contribute to a platform will be increased and in turn will result in a growing economy [108].

The study extends the planned behavior theory where certain behavior is influenced by adding the element of calculus trust and relational trust. Only a single study added the trust element as an additional element in the TPB framework [36]; we contribute by breaking the trust element into calculus and relational trust. The results evidently explain the theoretical relationship with the empirical results, including that calculus trust plays a vital role in investment matters compared to relational trust, both as dependent variables of platform-related factors (perceived accreditation, blockchain technology, structural assurance, and third-party seal) and as antecedents of investor intentions [38]. Results demonstrate that third-party seal (TPS) and blockchain technology (BT) are the two most dominant platform-related factors that influence perceived behavior, while structural assurance (SA) has the least dominant effect on influencing the investor intention. However, these four platform factors influence the investors' intention to invest only through calculus trust, as the other dimension of relational trust fails to offer any mediation effect.

The two hypotheses of direct relationships relating calculus trust with investor intention and relational trust with investor intention are accepted in the study. The relationship of perceived trust with crowdfunding intention was found to be significant in previous studies [23,63,103]. In this study, calculus trust and relational trust both influence investor intention; however, the effect of calculus trust is greater than relational trust on investor intention as in an investor and fundraiser relationship, the funder is more concerned about the performance rather than the time-consuming relationship [109].

The relationship between relational trust and investor intention is probably influenced by the mediating role of relational trust between calculus trust and investor intention. This indicates that investors' preferences are more influenced by their cognitive perceptions than affective perceptions.

In our study, calculus trust mediates the relationship between platform-related factors and investor intention, and this is in line with prior studies for platform-related factors except for structural assurance [38,104,110,111]. In our research, relational trust does not mediate the relationship between platform factors and investor intention. This effort breaks down the black box and clearly illustrates the role of calculus and relational trust with the theory of planned behavior and will also limit the chances of mixed results in the case of employing trust as a single dimension.

4.1. Theoretical Implications

This paper theoretically contributes in several areas. Foremost, this paper contributes by including blockchain technology as a part of platform-related factors. Prior studies

have suggested platform-related factors but have not included blockchain technology. Similarly, a very limited number of papers [41] have analyzed platform-related factors as a second-order construct. This study supports this theoretical development of presenting platform-related factors as a formative second-order construct with blockchain technology as an additional factor.

Secondly, the linkage of PA, SA, and third-party seal is vital in encouraging investor interest. In conclusion, BT was added, making the platforms safer, particularly in Pakistan, where internet activity is always fraught with security risks [112].

Finally, this study also highlights the cultural dimension of Pakistan as a collectivist society with the lowest ranking in long-termed orientation [113]. Apparently, it seemed that relational trust would be an essential aspect in this type of cultural setting. Trust has been demonstrated as important in determining investor intention in previous studies [37,105]. This study illustrates that calculus trust is more imperative than relational trust for investment purposes.

4.2. Managerial Implications

Crowdfunding is an evolving concept in developing nations, including Pakistan. The formal acceptance of this mechanism has been very recent since 2019 by the Securities and Exchange Commission of Pakistan (SECP) and has so far only allowed equity-based funding under this platform. This study would benefit all three parties involved in this mechanism—the entrepreneur, policymakers, and the investor—by identifying the importance of the factors that lead to investor intentions. They can improve technology, certifications, endorsements, systems, latest information, and procedures to increase their trust and induce investors to invest instead of improving relational matters [49,105].

That would lead to overall economic sustainability, including an untapped market of investors. We employed two control variables of age and education level of investors. Our relationship of trust is significant for highly qualified and middle-aged investors. Since Pakistan represents a predominantly young population, the policymakers need relevant policies for an untapped pool of young and not so highly educated investors.

5. Conclusions

Crowdfunding has piqued the interest of businesses and policymakers all around the globe and is considered to play a role in venture capital and the entrepreneurial ecosystem of developing economies [31]. Investor perception of equity-based crowdfunding is under-researched, especially in the social settings of developing nations.

Pakistan has a huge opportunity to improve its financial inclusion by leveraging fintech, such as crowdfunding and blockchain, to substitute and introduce the conventional role of intermediaries. The trust factor in crowdfunding can be enhanced by blockchain technology. Technology usage and online activities are rapidly increasing in emerging economies, but infrastructure and financial systems still need improvement [64]. Startups based on crowdfunding are working under the umbrella of a regulatory sandbox in Pakistan, but a proper regulatory framework with relaxed rules with some exemptions should be implemented to strengthen the trust of all stakeholders, including investors, entrepreneurs, platform owners, and policymakers for strengthening the entrepreneurial ecosystem. The regulation should contain transparent rules regarding ownership of platforms, implementation of caps, and relaxing maximum net worth of investors. The fundraising capacity can be increased by allowing funds from foreign resources by collaborating with international platforms. The first equity-based platform named Pakistan National Investor portal is operating under the SECP for establishing crowdfunding platforms. A proper regulatory framework will bring opportunities for startups and MSMEs to get a large pool of investors.

This research has certain limitations as well that invite further investigations.

The study used a small dataset of 110 potential platform investors who were CEOs of their own businesses, but currently, the crowdfunding phenomenon is in a nascent

phase. Still, no official platform has documented the number and nature of investors active in crowdfunding venture operations. More detailed research is warranted to cover the unexplored segment to generalize the findings. In the future, the dataset can be increased to make the study's findings robust [114]. The viewpoint of other stakeholders, including entrepreneurs, platform owners, and policymakers, can also be included in future research. Secondly, we only covered the investors' intentions from a cross-sectional viewpoint. No inquiries were made about the quality and credibility of the platforms over a considerable period of time that will need repetitive panel research in the future.

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