Antecedents of Investment Behavior in Neo Broker App Platforms: FINTECH Product Innovation and Investor Education as Determinants

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Abstract

Investor's investment behavior is susceptible to contextual, environmental and technology driven influences. Investing activity across apps identifies as novel area of research as mobile phone embedded apps enact and act the bounding of user's rationality and seemingly lead the user to investing in a specific portfolio or collection of stocks. Product innovation across neo broker apps and respective adoption of new methods of making retail investor aware and literature about the stock market, have been observed as shaping human cognition in multiple ways. AI enabled app platforms leverage the reality that retail amateur investors has limited access to information regarding environment and seeks to acquire information through immediate interaction with their dynamically changing environment. In view of retail investor's limited computational power, resource limitations and uni-directed pattern of learning, the apps seem to bound rationality in multiple ways. The research hence leverages two aspects of app based bounded rationality: 'product innovation' and 'investor education' in understanding dynamics of 'investment behavior' under the moderating role of 'digital financial literacy'. The study relied on self-devised measures of phenomenon across 110 respondents from NCR. The research leveraged extractive factor analysis and structural equation modeling to validate the research hypothesis and observed statistically significant impact on the outcomes and significant impact of app induced bounded rationality.

Key Words: Bounded rationality, Product innovation, Investor education, Digital financial literacy, Neo broker apps

Introduction

Investing is key to future wealth creation. Investing across the history of mankind has been the most researched aspect yet nonetheless the most complex and confusing research aspect. Investment across retail households has undergone a dramatic change from being a rational and mental exercise to being a technology supported, irrational and bias driven activity. The challenge of deriving optimal gains and returns from

investing has long remained a viable bone of contention across dominant studies on subject matter. Investor as a human being in individual retail capacity is expected to depict an investment behavior that is an outcome of multiple facets. Scholars argue that bounded rationality does play a critical role in shaping investment outcomes and investment behavior. Earlier it was social capital, or more precisely the susceptibility of human investor to in borne and harnessed biases, now it is the technology slacks and ecosystems that are bounding the human rationality to choose an appropriate course of action and exhibit responsible investment behavior. Investment perspective has in fact undergone dramatic changes (Palmie, Wincent, Parida, & Caglar, 2020). The post pandemic democratization of capital markets, financialization of savings, transformation of saving mindset into investor mindset; are some dominant changes. Technology pervasiveness in decision making, across work life and across daily living as enhanced the human susceptibility to incorporating technology in decision making and financial decision making is no exception at all (Hlaca, Engel, & Gummandi, 2019). In this sense, technology as guiding investing, financial decision making and technology as shaping priority assignment, medium based product innovations, and concurrent level of investor education; do seem to exert considerable impact on resultant investment behavior. Yet the technology insemination and its impact mapping on resultant investor's behavior is not reviewed effectively in Indian scenario. A host of studies call for need for sequential and systematic consideration of literature form diverse streams: HCI(Human computer interfaces), IS(Information Sciences), behavioral economics (Benthall & Goldenfein, 2021), activity theory, information processing (Tsvetkova, Yasseri, Pescetelli, & Werner, 2024) and self-determination based gamification (Aoujil, Hanine, & Flores, 2023); for wholesome treatment of subject.

Research Objectives

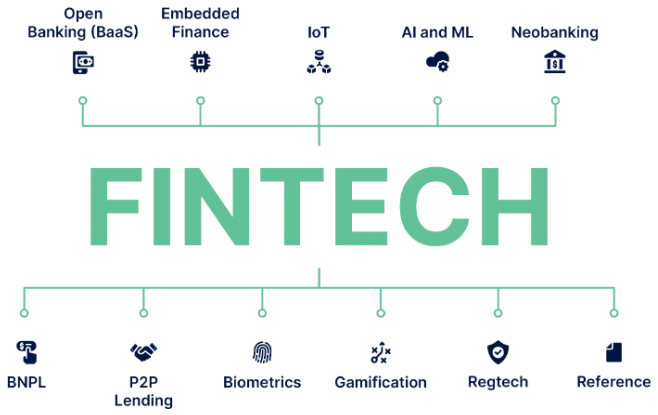
1. To assess the impact of FINTECH product innovation and investor education on retail investor's investment behavior
2. To examine moderating impact of digital financial literacy (challenge) on product innovation and investor education relationship on retail investor's investment behavior

Nested in technology task fit literature (Fuller & Dennis, 2009) and bounded rationality literature; the objectives call for the exploration of impact of product innovation and selective investor education as acting as bounded rationality outcome; in influencing the investment undertaking behavior.

Fintech Ecosystems: Democratization of Investments

Fintech Ecosystems(apps and platforms) are democratizing the investment undertaking by reducing the transaction costs, decreasing the barriers to secure and convenient investing, provision of innovative and productivity enhancing tools and lateral empowerment of the individual retail investors (Singh, Sandhu, & Kundu, 2010). The simultaneous provision of investor resources, investor education and awareness enhancement also seems to add to seamless transition of investors from traditional paper oriented route to app and platform based ecosystems (Migozzi, Urban, & Wozcik, 2023) in Indian and global perspective. Across the Asian rising economies, the transition has been marked with increase in app and platform usage base and respective reliance on apps for undertaking investing.

Figure 1: Rising signficnace of fintech in India and investor addition in states



Top 10 states in terms of investor addition

	Additions in 2023* (mn)	% Y-o-Y growth**
Uttar Pradesh	2.31	33.80
Maharashtra	2.18	16.90
Gujarat	1.13	17.20
Rajasthan	0.99	25.60
West Bengal	0.97	24.50
Madhya Pradesh	0.90	28.90
Bihar	0.88	36.60
Tamil Nadu	0.82	20.40
Karnataka	0.74	18.50
Delhi	0.62	18.90
Total	15.69	22.40

*As on Dec 25; **In terms of total investor count compared to Dec 2022 Source: NSE

The evident rise in number of investors investing via online app media from 3.4 million in 2021 to 16.1 million in September 2023, point to the rising role of capital market engagement in wealth creation and susbsequent investment behavior. Gen Z's confident approach to investing and emphasis on 'do-it-yourself' approach as transformed the investment democratisation into a app driven and platform ecosystem driven process (Bisaria, 2023). Though the consistency of engagement with capital markets is under cloud yet the app download rate has renewed on time to time basis. The app route to capital market investing is gradually emerging as the most preferred optiona corss young Indian investors in wake of wealth creation motivations. App based routes classifies as distinctive paperless, digital and e-KYC as well as Adhaar slack driven route and seem to be the most evident symbol of youth's reachout to capital markets in search of wealth creation. As Kotak reviewed in the report that India is transforming from a nation of savers to nation of investors, the trend find equivalent reflection acorss ground situation as well. In such perspective the digital device based investing is rising abruptly. Yet this rapid explosion in retail investors investing via apps and neo broker platforms is a challeng ein itself as they are not prepared about the risk management, about the prospects of nudges, bounded rationality driven infleunces on rational decision making and respective varying levles of digital financial literacy. The abnormal digital regulation and governance issues in India is also a matte rof concern as fair playing access to informaiton vital for investment decision making may not be available.

Hypothesis and conceptual model

Fintech product innovation as shaping investor's investment behavior on Apps and platforms

Fintech (Werth, Cardona, Torno, & Breitner, 2023) derived product innovation in form of trend analysis, AI recommendations, digital nudges, bias inculcation and selective decision making inclusion has been observed as casting marked impact on investment decision making and behavior. Scholars argue that value creation in the financial services sector (Kukreja, Bahl, & Gupta, 2021) has been critically transformed on account of digitally enabled investment decision making tools and applications (Jafri, Amin, Rahman, & Nor, 2024). The cost-benefit dynamic of innovation, technology adoption, security, privacy and user trust as well as user perceived quality; are some of the distinct advantages of product innovation in investment space (Haris, 2024). A study across Oxford Research revealed the incidence of investment innovations as yielding significant impact on investment behavior modeling (Chen, Wu, & Yang, 2018). Another academic research (Chi, Ness, & Muhammad, 2024) explored the rationale for machine learning and customer value co-creation. Not only the product based innovation is center of focus, yet involvement of native customer in value co-creation has also emerged as thrust area (Heidenreich, Jordanow, Kraemer, & Obschonka, 2024). Innovation in product (Alt, Fridgen, & Chang, 2024) has widely been regarded as fueling the app user's (retail investor's) interest, sustained engagement with gamification and decisional guidance over period of time. Innovation (Dyck, Luttgens, Diener, & Pollak, 2024) could encompass focus on service dominant logic and platform ecosystem dynamisms. Recent research by McKinsey (Fong, Han, Liu, & Shek, 2021) revealed the value creation feasibility with active incorporation of AI, block chain technologies, real time transaction settlement, digital asset support services, tokenization, authentication ecosystem, decentralization of finance, cloud computing, IoT (internet of things),open source, SaaS platforms and reduced barriers to knowledge

creation and knowledge sharing; as some of the potential innovation aspects.

Hence the first research hypothesis as:

H1: There is significant relationship between platform's product innovation and investor's investment behavior.

Investor Education as shaping investor's investment behavior on Apps and platforms

Investor's education is integral to sustainable and consistent investment undertaking across platform ecosystem (Setiawan, Andrianto, & Safira, 2020). Investor education (Gaudio, Gallo, & Previtali, 2024) literally stands for broadening the investor's horizon and understanding of art of investment undertaking and respective risk assessment (Werth, Cardona, Torno, & Breitner, 2023). Investor education (Gambacorta & Mihet, 2023) entails the emphasis on making the incumbent investor aware regarding the pros and cons of investing in a series of stocks or in mutual funds or likewise financial options. Investor education is critical as this shapes the investor's sense making regarding financial matters and financial decision making attributes. In-app inclusion of financial literacy (Panos & Wilson, 2020) enhancing tools and features seem to usher in a unique opportunity before the native app user(or the retail investor) to remain engaged and think purposefully regarding a course of investment decision making. In-platform or in-app provision of investor education has been observed as possessing advantages in terms of broadening the user's awareness regarding financial instruments, financial tools and the ways and means of participation in capital markets (Pallathadka, 2022).

Hence the second research hypothesis as:

H2: There is a significant relationship between platform's investor education campaigns and investor's investment behavior.

Digital financial literacy: a challenge

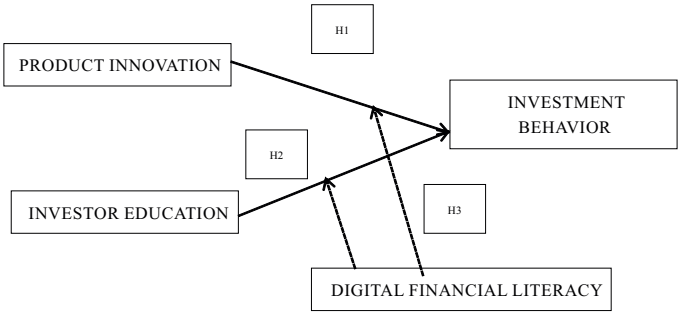
The challenges as perceived by the investor include the focus on extent of technological dexterity, the extent of technological readiness, the extent of security of privacy, the data , the wallet security, trust and encryption aspects. Scholars on subject argue that the challenges like digital financial literacy (direct or lateral) are immense and play a critical role in determining the probable investment behavior. Platform app based user designs, hedonic and utilitarian motivations, product knowledge, sense of seriousness as experienced by the user across app platform count as some of the other characteristics that define and underline the user's propensity to consistently use an app or platform ecosystem. The malware and deceptive attacks on personal information, scope for monetization of personal information by service provider count as related aspects.

Hence the research suggests these hypotheses:

H3a: Digital financial literacy moderates the relationship between app innovation and investor behavior.

H3b: Digital financial literacy moderates the relationship between app-based investor education and investor behavior

Figure 2: Research hypothesis and model



Instrumentation and approach

The measurement instrument was developed from the inputs from focus groups, academia and industry practitioners. The relevant inputs were secured from the pilot run and items were devised from self-experience, from academician's inputs and industry experts. The research relied on heterogeneous sample of 110 respondents and technology savvy retail investors were the core participants. The research relied on extractive factor analysis, followed by confirmatory factor analysis and structural equation modeling based outcomes.

Analysis

The respective data-based factorability was assessed with KMO Bartlett's test and communalities as mentioned in Table 1 and Table 2. The KMO in range of 0.5 to 0.99 is observed as satisfactory and communalities in range 0.7 to 0.99 is regarded as satisfactory.

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.835
Bartlett's Test of Sphericity	Approx. Chi-Square	8660.275
	df	378
	Sig.	.000

Table 2: Communalities

	Initial	Extraction
DF1	1.000	.690
DF2	1.000	.779
DF3	1.000	.730
DF4	1.000	.741
DF6	1.000	.707
IE1	1.000	.713
IE2	1.000	.656
IE4	1.000	.709
IE5	1.000	.673
IE7	1.000	.663
IE9	1.000	.646
PI1	1.000	.771
PI2	1.000	.730
PI3	1.000	.686
PI4	1.000	.714
PI6	1.000	.758
PI7	1.000	.780
PI8	1.000	.762
PI10	1.000	.785
PI12	1.000	.790
IB1	1.000	.565
IB2	1.000	.629
IB3	1.000	.654
IB4	1.000	.617
IB6	1.000	.557
IB7	1.000	.659
IB8	1.000	.632
IB9	1.000	.620
Extraction Method: Principal Component Analysis.		

Table 3: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1=Product Innovation	7.907	28.241	28.241	7.907	28.241	28.241	6.779	24.209	24.209
2=Investment Behavior	5.836	20.841	49.082	5.836	20.841	49.082	4.990	17.821	42.030
3=Investor Education	3.323	11.866	60.948	3.323	11.866	60.948	4.059	14.495	56.525
4=Digital Financial Lit	2.350	8.392	69.341	2.350	8.392	69.341	3.588	12.816	69.341
Extraction Method: Principal Component Analysis.									

The respective factor variance assessment revealed that product innovation exhibited maximum variance of 28.24 followed by factor 'investment behavior' exhibiting 20.841 per cent variance. This exemplifies the critical role of factor 'product innovation' in shaping investment behavior while investing from neo broker apps. The respective factor dimensional analysis revealed the loading statements as mentioned Table 4. The loading statements were considered as those which exhibited loading as greater than 0.5 and loading under similar vertical factor.

Table 4: Rotated Component Matrixa

	Component			
	1	2	3	4
DF1				.788
DF2				.834
DF3				.845
DF4				.830
DF6				.809
IE1			.836	
IE2			.803	
IE4			.831	
IE5			.799	
IE7			.806	
IE9			.787	
PI1	.872			
PI2	.851			
PI3	.817			
PI4	.841			
PI6	.868			
PI7	.880			
PI8	.871			
PI10	.875			

	Component			
	1	2	3	4
PI12	.885			
IB1		.724		
IB2		.771		
IB3		.773		
IB4		.755		
IB6		.730		
IB7		.796		
IB8		.767		
IB9		.766		
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 5 iterations.				

The overall cron bach alpha for twenty eight loading items was observed as 0.805(in range 0.5 to 0.99) .

The respective linear regression modeling revealed these beta values which further ascertained the support for research hypothesis. The beta values of 0.742 and .130 illustrated strong statistical support for the impact of aforesaid factors on the dependent investment behavior.

Table 5: Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.432	2.771		6.291	.000
	PRODUCT_INNOVATION	.742	.077	.415	9.691	.000
	INVESTOR_EDUCATION	.130	.035	.159	3.709	.000
a. Dependent Variable: INVESTMENT_BEH						

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.456[a]	.208	.205	8.85738
a. Predictors: (Constant), INVESTOR_EDUCATION, PRODUCT_INNOVATION				

The respective R and R square values were observed as satisfactory and respective regression equation can thus be considered as:

Investment Behavior (over neo broker apps) = Constant + (0.742) Product Innovation + (0.130) Investor Education

In empirical terms it can thus be deduced that investment behavior = f (Product Innovation, Investor Education)

On-app investment behavior of respondents can thus be regarded as a function of app induced product innovation attributes and respective selective investor education attributes.

Empirical Findings

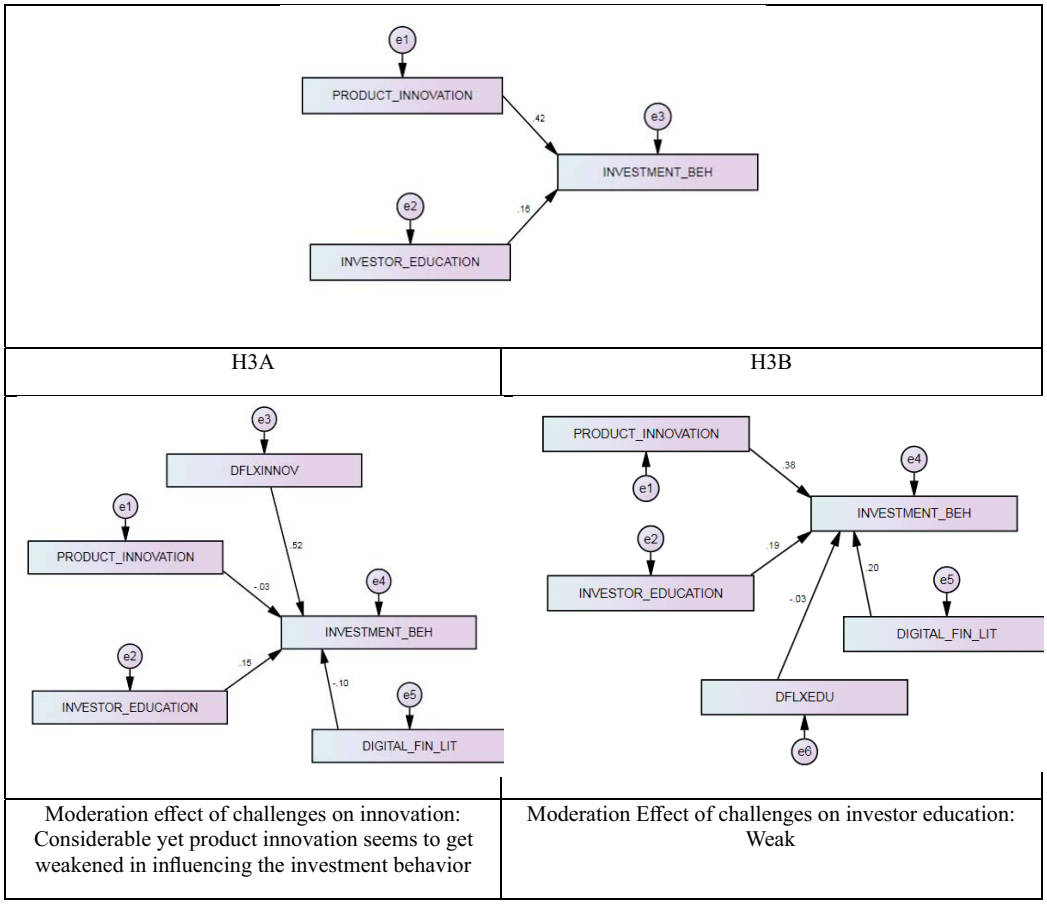
In line with literature review, the relations across factors 'product innovation', 'investor education' and 'investment behavior' were assessed. As per bounded rationality theoretical paradigms, the on app product innovation was observed to increase the investor's pro-investment behavior and indulgence in investment.

- The product innovation based perceptions were observed to fuel the prospects for pro investment behavior across period of study.
- In similar aspect the app based proactive measures promoting the investor education were sought to exhibit

statistically significant impact on fueling and shaping the investment behavior across app users in particular.

- The observed outcomes are in line with earlier research studies that reflect upon the phenomenon (Kaiser & Lusardi, 2024), (Patil, Jadhav, & Nimbagal, 2024). The study based outcomes echo the findings across Oxford Research that pointed to statistically significant the incidence of investment innovations as yielding significant impact on investment behavior modeling (Chen, Wu, & Yang, 2018).
- The research based outcomes also reflect and extend the findings of academic research (Chi, Ness, & Muhammad, 2024) that explored the rationale for machine learning and customer value co-creation. Not only the product-based innovation is center of focus, yet involvement of native customer in value co-creation has also emerged as thrust area (Heidenreich, Jordanow, Kraemer, & Obschonka, 2024).
- The study-based outcomes hence provide tangible empirical support for the research hypothesis H1 and H2 on basis of structural equation modeling based path regression coefficients as greater than 0.1. In association, the moderating role of factor 'digital financial literacy' was explored, and new insights were developed into the phenomenon.
- In line with ADB study on Chinese investors (Yang, Wu, & Huang, 2020), and respective studies on digital financial literacy (Yadav & Banerji, 2023); the current study portrays the strong empirical evidence of moderation effect of challenges(digital financial literacy) on innovation, as being observed as considerable yet product innovation seems to get weakened in influencing the investment behavior. In association, the moderation effect of challenges on investor education was observed as weak across the sample.

Figure 3: Summarizing the path diagrams



The respective data model fit indices were observed as satisfactory in range 0.7 to 0.99

Research Hypothesis	Findings as observed
$H1_1$: There is a relationship between platform's product innovation and investor's investment behavior. $H1_0$: There is no relationship between platform's product innovation and investors investment behavior.	Significant as path regression is 0.42, signifying statistically significant impact of platform's product innovation capacity on shaping the investor's investment behavior
$H2_1$: There is a relationship between platform's investor education campaigns and investor's investment behavior. $H2_0$: There is no relation between platform's investor education campaigns and investor's investment behavior	Significant as path regression is 0.16, signifying statistically significant impact of platform's investor education campaign capacity on shaping the investor's investment behavior
$H3A_1$: Digital financial literacy moderates the relationship between app innovation and investor behavior. $H3A_0$: Digital financial literacy does not moderate the relationship between app innovation and investor behavior.	Considerable yet product innovation seems to get weakened in influencing the investment behavior
$H3B_1$: Digital financial literacy moderates the relationship between app-based investor education and investor behavior. $H3B_0$: Digital financial literacy does not moderate the relationship between app-based investor education and investor behavior.	Insignificant as path regression coefficient is less than threshold of 0.1

Discussion

The research portrays massive support for bounded rationality principle; digital nudges prospects and AI recommendation system as interfering with human decision making. The research-based outcomes projects support human computer interaction as critical to shaping of human cognitions and human decision-making patterns. Bounded rationality is an approach that illustrates the impact of external actors and stakeholders on probable department of human decision making from economic rationality and leading to irrational decision making. Product innovation and selective investor education seem to enable the probable retail investor to depart from economic and rational decision making. In association, the app-based boost to digital nudges seems to derail the existing rational perceptions and tendency for adoption of irrational options gets increased. As decisions regarding investment in stocks, in digital assets, in crypto assets are being made more across digital platforms and digital devices, the scope for digital nudges is on the rise. The research outcomes point towards theoretical support for digital nudges and that investor's choice architecture are susceptible to external contextual and app derived influences. The problematic bounding of rationality under the influence of app usage and decision making across digital devices, leads to creeping of biases and aberrations in human decision making and retail investors are not aloof from this. The research hence extends the behavioral finance, human computer interaction and bounded rationality theoretical paradigms.

Conclusions

The research portrayed theoretical and empirical support for bounded rationality of human cognitions in investment decision making. Further research can be conducted in areas of AI, AI derived recommender systems, nudges and notification, gamification and dark patterns in app based choice architecture. AI, ChatGPT and AI driven app interfaces owes the potential to influence retain investment decisions, investor behavior and irrationality in decision making in multiple ways and means. The first time and frequent app usage, richness in terms of content and investor education, frequency of app usage could be other vital differentiators can areas of research.

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PI1	Pearson Correlation	1	.718**	.594**	.625**	.618**	.136**	.121*	.135**	.172**	.147**	.142**	.310**	.302**	.338**	.321**	.267**	.287**	.294**	.332**
	Sig. (2-tailed)		.000	.000	.000	.000	.004	.011	.005	.000	.002	.003	.000	.000	.000	.000	.000	.000	.000	.000
PI2	Pearson Correlation	.718**	1	.655**	.701**	.676**	.154**	.183**	.190**	.240**	.172**	.186**	.333**	.321**	.353**	.329**	.315**	.306**	.306**	.317**
	Sig. (2-tailed)	.000		.000	.000	.000	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
PI3	Pearson Correlation	.594**	.655**	1	.695**	.646**	.093	.108*	.054	.148**	.134**	.149**	.214**	.231**	.255**	.202**	.205**	.195**	.201**	.235**
	Sig. (2-tailed)	.000	.000		.000	.000	.053	.024	.263	.002	.005	.002	.000	.000	.000	.000	.000	.000	.000	.000
PI4	Pearson Correlation	.625**	.701**	.695**	1	.633**	.086	.162**	.130**	.207**	.154**	.144**	.277**	.294**	.342**	.328**	.277**	.263**	.247**	.291**
	Sig. (2-tailed)	.000	.000	.000		.000	.073	.001	.006	.000	.001	.003	.000	.000	.000	.000	.000	.000	.000	.000
PI6	Pearson Correlation	.618**	.676**	.646**	.633**	1	.083	.062	.080	.173**	.067	.119*	.266**	.246**	.341**	.330**	.235**	.291**	.279**	.319**
	Sig. (2-tailed)	.000	.000	.000	.000		.084	.194	.096	.000	.160	.012	.000	.000	.000	.000	.000	.000	.000	.000
IE1	Pearson Correlation	.136**	.154**	.093	.086	.083	1	.651**	.652**	.620**	.606**	.610**	.208**	.157**	.188**	.150**	.148**	.165**	.146**	.154**
	Sig. (2-tailed)	.004	.001	.053	.073	.084		.000	.000	.000	.000	.000	.000	.001	.000	.002	.002	.001	.002	.001
IE2	Pearson Correlation	.121*	.183**	.108*	.162**	.062	.651**	1	.603**	.591**	.583**	.548**	.155**	.135**	.154**	.121*	.139**	.144**	.127**	.117*
	Sig. (2-tailed)	.011	.000	.024	.001	.194	.000		.000	.000	.000	.000	.001	.005	.001	.011	.003	.002	.008	.014
IE4	Pearson Correlation	.135**	.190**	.054	.130**	.080	.652**	.603**	1	.659**	.624**	.566**	.174**	.146**	.152**	.194**	.189**	.197**	.156**	.128**
	Sig. (2-tailed)	.005	.000	.263	.006	.096	.000	.000		.000	.000	.000	.000	.002	.001	.000	.000	.000	.001	.007
IE5	Pearson Correlation	.172**	.240**	.148**	.207**	.173**	.620**	.591**	.659**	1	.559**	.601**	.196**	.178**	.235**	.232**	.186**	.166**	.173**	.187**
	Sig. (2-tailed)	.000	.000	.002	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
IE7	Pearson Correlation	.147**	.172**	.134**	.154**	.067	.606**	.583**	.624**	.559**	1	.635**	.154**	.186**	.181**	.159**	.160**	.167**	.132**	.106*
	Sig. (2-tailed)	.002	.000	.005	.001	.160	.000	.000	.000	.000		.000	.001	.000	.000	.001	.001	.000	.006	.026
IE9	Pearson Correlation	.142**	.186**	.149**	.144**	.119*	.610**	.548**	.566**	.601**	.635**	1	.209**	.158**	.231**	.166**	.132**	.158**	.183**	.174**
	Sig. (2-tailed)	.003	.000	.002	.003	.012	.000	.000	.000	.000	.000		.000	.001	.000	.000	.006	.001	.000	.000
IB1	Pearson Correlation	.310**	.333**	.214**	.277**	.266**	.208**	.155**	.174**	.196**	.154**	.209**	1	.558**	.540**	.508**	.488**	.541**	.571**	.522**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.001	.000	.000	.001	.000		.000	.000	.000	.000	.000	.000	.000
IB2	Pearson Correlation	.302**	.321**	.231**	.294**	.246**	.157**	.135**	.146**	.178**	.186**	.158**	.558**	1	.612**	.556**	.563**	.610**	.538**	.534**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.001	.005	.002	.000	.000	.001	.000		.000	.000	.000	.000	.000	.000
IB3	Pearson Correlation	.338**	.353**	.255**	.342**	.341**	.188**	.154**	.152**	.235**	.181**	.231**	.540**	.612**	1	.592**	.536**	.597**	.579**	.605**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.001	.001	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
IB4	Pearson Correlation	.321**	.329**	.202**	.328**	.330**	.150**	.121*	.194**	.232**	.159**	.166**	.508**	.556**	.592**	1	.513**	.591**	.578**	.583**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.002	.011	.000	.000	.001	.000	.000	.000	.000		.000	.000	.000	.000
IB6	Pearson Correlation	.267**	.315**	.205**	.277**	.235**	.148**	.139**	.189**	.186**	.160**	.132**	.488**	.563**	.536**	.513**	1	.547**	.542**	.500**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.002	.003	.000	.000	.001	.006	.000	.000	.000	.000		.000	.000	.000
IB7	Pearson Correlation	.287**	.306**	.195**	.263**	.291**	.165**	.144**	.197**	.166**	.167**	.158**	.541**	.610**	.597**	.591**	.547**	1	.572**	.601**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.001	.002	.000	.000	.000	.001	.000	.000	.000	.000	.000		.000	.000
IB8	Pearson Correlation	.294**	.306**	.201**	.247**	.279**	.146**	.127**	.156**	.173**	.132**	.183**	.571**	.538**	.579**	.578**	.542**	.572**	1	.572**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.002	.008	.001	.000	.006	.000	.000	.000	.000	.000	.000	.000		.000
IB9	Pearson Correlation	.332**	.317**	.235**	.291**	.319**	.154**	.117*	.128**	.187**	.106*	.174**	.522**	.534**	.605**	.583**	.500**	.601**	.572**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.001	.014	.007	.000	.026	.000	.000	.000	.000	.000	.000	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).