

## Unveiling the Dual-path Influence on E-tax Filing Adoption Intention: An Integrated TOE-DOI Perspective with Firm-size Moderation

Girma Zeleke\*<sup>1</sup>, Ashenafi Beyene<sup>2</sup>, Sewale Abate<sup>3</sup>

<sup>1</sup>Department of Accounting and Finance, Addis Ababa University, Addis Ababa, Ethiopia

<sup>2</sup>Department of Development Finance, Stellenbosch University Business School, Cape Town, South Africa

<sup>3</sup>Department of Accounting and Finance, Addis Ababa University, Addis Ababa, Ethiopia

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### ABSTRACT

The purpose of the study was to investigate the factors that influence medium and large enterprises' intentions to adopt an e-tax filing system in Ethiopia, with respect to the tax-to-GDP ratio having decreased dramatically as well as the increased burden of heavy reporting requirement for businesses (Group, 2024). Despite the advantages offered by digital transformation, such as improved compliance and data management, the uptake of e-tax filing has been slow. The study surveyed 266 medium and large enterprises in Ethiopia was conducted for this study. The data were analysed using the SEM-PLS model (SmartPLS v4.1) in combination with a blend of Technological-Organizational-Environmental and Diffusion of Innovation theories. The findings suggest that the IT infrastructure demonstrates a dual-route adoption mechanism that facilitates initial acceptance and boosts perceived advantages in this critical sector. The study identified that compatibility, top management support, company size, comparative benefits, and governmental oversight, significantly influence the adoption of e-tax filing intention, while security concerns and perceived complexity have adverse effect. Furthermore, enterprise size moderates the negative effects of complexity, with medium-sized businesses having a significant greater negative influence than large firms do. Despite the apparent efficacy of the government's IT strategy, its influence was statistically insignificant, indicating a disconnect between policy and its implementation. Medium-sized enterprises should prioritize user-friendly interfaces, robust security measures such as end-to-end encryption, and transparent disclosure of the system's benefits.

**Keywords:** E-Tax Filing System, Adoption Intention, TOE-DOI Framework, PLS-SEM.

\*Corresponding author email: : [girma.zeleke23@gmail.com](mailto:girma.zeleke23@gmail.com)

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### Introduction

Taxation is a critical source of revenue for governments, as it provides funds that support both public services and physical infrastructure, allowing both governments and the economy to operate (Bird, 2015; Musimenta et al., 2017). However, tax systems face challenges such as tax evasion, high administrative costs, and overly complicated regulations (Alm & Torgler, 2011). The significant compliance costs associate with these issues are notably high for taxpayers, particularly for small and medium-sized businesses (Obodoechi, 2024). These costs can distort economic decisions, leading to economic inequality and adversely impact revenue collection efforts (Mbelwa & Mahangila, 2019).

Electronic tax systems play a critical role in helping improve tax compliance by leveraging real-time data analysis and automated reporting features, which significantly enhance detection capabilities,

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reduce administrative burdens, and improve voluntary compliance (Alm, 2021; Villanueva & Cristina, 2022). The adoption of technology for revenue collection is essential in order to create an efficient tax administration, and it can highlight the importance of transparent, honest fiscal practices (Ariyanto et al., 2024).

A lack of access to digital service in many parts of the world, such as Sub-Saharan Africa, has created a significant digital divide that has impeded the ability to take advantage of new technologies in addressing tax-related issues (Onyeiwu, 2002). An example of this would be Ethiopia, which has a low tax revenue despite experiencing significant economic growth primarily because its tax code is very complicated (IMF, 2025).

Businesses in Ethiopian spend on average 300 hours a year to comply with tax law, while some small and medium-sized enterprises can incur compliance costs in exceed 12% of their total sales

(Group, 2016). Electronic tax filing systems have been implemented to simplify the process of tax compliance; however, the adoption of e-tax filing remains low, which negatively impacts the progress of productivity overall (ERCA, 2017).

Past research regarding e-tax filing in Africa has concentrated on the initial introduction of e-tax filing and, therefore, has not provided information on the motivations for firms to choose to file electronically when it is not compulsory, particularly in emerging economies. The present study examines the factors influencing medium and large enterprises' decisions for the e-tax filing system in Ethiopia. Therefore, this study intended to fill the gap in understanding why firms would choose to adopt digital tax submission without being compelled to do so. This would explain why developing countries have low e-tax filing adoption rates despite the large amounts of investments (Bhattacharjee, 2001; Yimam *et al.*, 2024).

Existing models for initial acceptance of e-filing rely on one of the theoretical foundations such as Technology Acceptance Model, Theory of Reasoned Action, Theory of Planned Behaviour, or Diffusion of Innovations, using each of these theories independently, which has led to mixed and contradictory findings (Hesami *et al.*, 2024; Rahman & Pangendra, 2022). There is limited empirical research that combines the Technology–Organization–Environment (TOE) framework and Diffusion of Innovations (DOI) theory into a unified model to explain initial adoption intention in non-mandated or semi-mandatory e-government systems (AbuAkel & Ibrahim, 2023).

Research on e-tax filing adoption often fails to fully explain the mechanism through which key resources influence user motivation. Specifically, while IT infrastructure and existing technological resources are known to influence initial adoption outcomes, prior studies employ limited methodological designs- a dual-path influence. They rarely test whether these effects are mediated through users' cognitive evaluations of relative advantage, such as efficiency gains, the core DOI construct (Nguyen *et al.*, 2022; Uleg, 2025), thereby leaving the crucial theoretical interplay between the organizational and innovation contexts largely underexplored.

The vast majority of e-government adoption research originates from developed or high-literacy settings, which fundamentally limits the applicability and generality of Western-based models to low-trust, unique bureaucratic complexity, low-infrastructure developing countries (Ebrahim & Irani, 2005; Heeks, 2003). There is a notable shortage of empirical research on organizational-level adoption intention for the e-tax

filing system in Sub-Saharan Africa, with literature largely skewed towards individual taxpayers.

Organizational size is a key predictor of e-tax adoption, as long firms typically possess greater financial, technological, and human resource (Hesami *et al.*, 2024). Yet empirical evidence on whether size consistently reduces perceived complexity, especially between medium and large firms, is mixed (Yimam *et al.*, 2024). While scale can enable standardization and robust IT infrastructure (Wiesböck & Hess, 2020), medium-sized firms may offset resource gaps through greater agility in adopting regulatory technologies (Firmansyah & Arman, 2022).

Furthermore, most prior studies overlook MLEs, a group often ignored in favor of SMEs or individual taxpayers. The current study offers clearer insight into why e-tax filing systems are adopted (Faiz *et al.*, 2024). Therefore, there is limited research focusing on the adoption intention of medium and large enterprises, which make up a major component of the tax base. By integrating the DOI and TOE frameworks and examining the complex nature of technology adoption decisions through the mediating pathway of perceived relative advantage and the moderating role of firm size in resource-limited, non-mandated environment among medium and large enterprises in Ethiopia, this study addresses important mechanistic, contextual, theoretical and gaps in the e-government adoption literature.

## **Theoretical Foundations & Hypothesis Development**

### **Theoretical Foundation**

Given the rapid evolution of information technology, researchers argue that no single theory can capture the adoption of all innovation types (Thong, 1999). This study adopts a synthesis approach to integrate DOI's strengths in explaining innovation-specific perceptions with TOE's robustness in explaining organizational and environmental behaviours (Alshamaila *et al.*, 2013). The combination of these models provide an alternative approach to examining key variables associated with e-tax returns in Ethiopia. The combined approach goes beyond examining e-tax returns from individual's perspective only; it addresses factors affecting e-tax returns for organizations by utilizing different elements of technology acceptance; where firm size and IT infrastructure (ITI) must be balanced against system complexity and relative advantage (DOI) (Hesami *et al.*, 2024; Santoro *et al.*, 2023).

Table 1: Systematic Synthesis of E-tax Filing Literature

Author(s) & Year	Theory / Framework	Key Variables & Context	Key Findings	Identified Gaps & Relevance to the Current Study
AbuAkel & Ibrahim (2023)	TOE Framework	Relative advantage, Top management support, IT infrastructure, Trust	Relative advantage and top management significantly affect adoption and trust in Jordan.	Focuses on an emerging economy but lacks the dual-path influence of IT infrastructure and the moderating role of firm size between complexity and e-tax filing adoption.
Alshamaila et al. (2013)	DOI-TOE	Relative Advantage, Compatibility, External pressure	Validated integrated model for cloud adoption by SMEs	Limited focus on e-tax bureaucracy and firm-level infrastructure.
Shao et al. (2015)	TOE Framework	9 factors across T-O-E; Ownership and Business size	Ownership and business size significantly influence adoption intentions in China.	While it includes business size, it sees it only as a direct driver, not as a moderator between complexity and online tax adoption.
Gor, K. O. (2015)	Integrated DOI, TAM, and TRA	Relative advantage, Complexity, Compatibility, Social systems	Social systems and ease of use are primary drivers for Kenyan medium taxpayers.	Uses an integrated model but focuses on medium taxpayers without addressing the non-mandated environment complexities or large-firm dynamics.
Hussein et al. (2010)	TAM, DOI, PCI Integrated	Trust (Gov/Internet), Service Quality, Perceived Risk	Trust in government and web quality are significant in Malaysia.	Relies on individual-level analysis; fails to explore firm-level organizational readiness or infrastructure as a multifaceted driver.
Kumar & Sachan (2017)	TAM, DOI, PCI, Web Trust	PU, PEOU, Compatibility, Social Influence, Result Demonstrability	Compatibility and result demonstrability significantly predict intention in India.	Conducted in a high-infrastructure/trust developing context; does not account for high bureaucracy or firm size as a moderator.
Rifat et al. (2019)	Extended TAM	Perceived Risk (Financial, Cyber, Time), Service Quality	Risks negatively influence intention; PEOU has a significant impact in Bangladesh.	Utilizes a single theoretical perspective (TAM); lacks the contexts from TOE to explain organizational behavior.
Zhu et al. (2006)	DOI-TOE	Technology, Organization, and Environment facets	Proven effectiveness for e-business across multiple countries.	Targeted at developed/high-trust contexts; ignores Sub-Saharan infrastructure gaps.
Zainavy et al. (2023)	UTAUT / TAM Influenced	Performance/Effort Expectancy, Trust, Perceived Risk	Performance expectancy and trust positively correlate with intention.	Individual-level study that ignores organizational readiness and the mediating role of relative advantage.
Sulaiman et al. (2023)	Integrated TAM-TOE	System/Service/Info Quality, Gov't Policy, Tech Support	Gov't policy and Info quality are key; PU and PEOU act as mediators.	Applied to LMS usage, not e-tax; lacks the DOI innovation characteristics (compatibility, triability) specifically needed for e-tax filing.

## Hypotheses Development

### Influence of Relative Advantage on e-tax filing system adoption intention

According to DOI theory (Lee *et al.*, 2005) relative advantage is considered an extrinsic motivation due to its ability to support a particular objective. The influence of relative advantage on attitude to use technology will be determined by whether or not technology is mandated, however, the benefits of e-tax will remain unchanged (AbuAkel & Ibrahim, 2023; Millenia *et al.*, 2022). The advantages are especially vital in low-income countries, where firms face steeper hurdles in modernizing and reducing bureaucracy. Results of a study in countries like Tanzania, Vietnam, and Malaysia showed similar improvements, indicating that e-tax filing's speed and accuracy significantly increase adoption where economies and tech access are comparable (Ullah *et al.*, 2023; Yefni *et al.*, 2018). Accordingly, we hypothesize:

H1: Relative advantage influences e-tax filing systems adoption intention.

### Influence of Perceived Complexity on e-tax filing System Adoption Intention

Complexity is considered the third essential for the technological factors in e-government services studies (Rana *et al.*, 2012). Perceived complexity is linked to the extent to which a particular system will be free of physical and mental efforts or ease of understanding and using e-tax filing (Zhang *et al.*, 2019). Jargon words, endless clicks, or awkward designs put stress, pushing many to stop using it. Those who struggle to use modern technology are more likely to experience physical and mental load, so they tend to abandon it (Mujalli *et al.*, 2024; Shao *et al.*, 2015). In the context of Ethiopia, where slow internet and technological skills are low, this is worse, particularly for SMEs (Saptono *et al.*, 2024). Accordingly, we hypothesize:

H2: Perceived complexity influences e-tax filing systems adoption intention.

### Influence of Compatibility on e-tax Filing System Adoption Intention

How well the electronic tax filing works with what the company already uses in its information system, and how the company is set up. Adoption is facilitated by a seamless integration with current software, which reduces staff resistance (Mujalli *et al.*, 2024; Rogers, 1995). According to Alkandi

(2022), adoption is accelerated when digital systems mimic current practices or integrate seamlessly with common software. As noted by (AlSharji *et al.*, 2018; Parisot, 1995), businesses are inclined to move towards e-tax filing if it is easy to fit within current business processes, which significantly reduces the barriers associated with adoption while still meeting a critical business need. So, we hypothesize:

H3: Compatibility influences e-tax filing system adoption intention

### Influence of Security Concern on e-tax Filing System Adoption Intention

Since risk is inherently subjective, the adoption of e-tax filing system will depend on how users feel about it, rather than just what the data say (Bélanger & Carter, 2008; Schupp & Carter, 2010). During the initial phases of utilizing an e-tax filing system, users tend to experience a high level of insecurity, as their belief in the security of digital government services is quite low. This is particularly true in countries like Ethiopia, where user fears of data breaches and the threat of cyberattacks are exacerbated by a lack of adequate internet protections (Oluka, 2025; Pumulo & Yohane, 2025). The potential risk associated with losing control of entity information far outweighs the potential advantages of having a more convenient, electronically submitted tax return, and therefore leads to a negative relationship between users' perceptions of risk and their willingness to adopt the system (Fatima, 2018). Thus, we hypothesize.

H4: Security concern influences e-tax filing system adoption intention

### Influence of Top management support on e-tax filing system adoption intention

Executive support for technology adoption is essential, since good leadership can provide e-tax filing system with sufficient funding, will provide strategic direction and continued oversight during the implementation of the system (Al-Hattami & Almaqtari, 2023; Thong, 1999). In addition, without funding from company management, staff training and hiring for skilled workforce will not occur (AbuAkel & Ibrahim, 2023; Zakaria & Jizat, 2025). Therefore, top management support facilitates institutionalization of e-tax filing systems within MLEs, changing them from merely technical systems to being significant objective for an organization. Therefore, we hypothesize:

H5: Top management support influences e-tax filing system adoption intention.

### **Influence of IT infrastructure on e-tax filing system adoption intention**

An organization's technology infrastructure includes physical hardware, networks capabilities, and human capital, constitute the primary structural requirement for e-tax filing integration as identified by (Duncan, 1995; Terry Anthony Byrd, 2000). Prior studies has shown that without an IT infrastructure, the success of implementation of e-government initiatives is severely limited in low-income countries (Elsheikh & Azzeh, 2014). IT infrastructure also defines the organization's overall resource base, which includes its ability to leverage both technical and human IT resource (AbuAkel & Ibrahim, 2020). Therefore, we hypothesize:

H6: IT infrastructure influences e-tax filing system adoption intention

### **Influence of Firm Size on e-tax Filing System Adoption Intention**

Organizations of a large size have greater leverage over others through having cost advantages, greater access to more sophisticated technology, and higher levels of expertise in the area of digital taxation systems (Abubakar *et al.*, 2024; DeFelice, 2011). In developing economies, because of existing systems, large organizations can adapt quickly to digitalization and meet their requirements to comply with online compliance requirements (Shao *et al.*, 2015; Yimam *et al.*, 2024). Therefore, large organizations have greater financial and technological capabilities associated with digitalization compared with SMEs (Hopkins, 2021; Horváth & Szabó, 2019). Accordingly, we hypothesize:

H7: Firm size influences e-tax filing system adoption intention

### **Influence of Government oversight on e-tax filing system adoption intention**

Government oversight plays a crucial role in the adoption of e-filing by promoting trust and confidence in the system's reliability while preventing unauthorized data disclosure (Shao *et al.*, 2015). Measures such as incentives, training, and promotional activities can enhance perceptions of ease of use and usefulness, thus encouraging e-filing adoption (Arkanuddin & Broto, 2023; Pattiruhu, 2025). Studies conducted in various countries like Indonesia and China have shown that government oversight significantly influences users' willingness to adopt e-filing (Rusli, 2023; Shao *et al.*, 2015). Therefore, we hypothesize:

H8: Government oversight influences e-tax filing system adoption intention

### **Influence of Government IT strategies on e-tax filing system adoption intention**

The implementation of coordinated government IT strategies that include infrastructure investment, regulatory harmonization and public-private partnerships will facilitate e-tax filing, which in turn enhance service quality, trust, and the interoperability of systems (Putri & Ratnasari, 2025; Salama & Farag, 2024). Researches indicate that the adoption of e-tax filing has also been promoted when a government has taken a leading role to promote their information and technology initiatives and reduced concerns over uncertainty by passing legislation and providing funding for the initiatives (Ullah *et al.*, 2023; Wang & Feeney, 2016).

H9: Government IT strategies influence e-tax filing systems adoption intention.

### **Moderation**

It was hypothesized that size of a firm moderates the pathways between perceived complexity and e-tax filing adoption intention, such that businesses grow, the negative influence of feeling overwhelmed by e-tax filing diminishes (H10). The interaction term is formed by combining of firm size and perceived complexity for estimation. As noted by (AlAwadhi & Morris, 2008; Estébanez *et al.*, 2016), large organizations are better positioned to navigate adoption challenges; their substantial financial resources and technological capabilities enable significant investment in workforce development and system integration. Nevertheless, medium-sized businesses face greater challenges due to limited funding, which makes complex systems harder to handle and increases barriers (Na *et al.*, 2023). As a result, the degree of complexity on adoption intention, which varies by size of the firm; large firms are better able to manage (Zhu, Kraemer, & Xu, 2006). Therefore, we hypothesize:

H10: The size of a firm changes how complexity affects e-tax filing adoption intention

### **Mediation**

By activating technologies that make activities quicker, safer, or easier, a robust technical setup increases people's perception of its usefulness (AbuAkel & Ibrahim, 2023; Uleng, 2025). According to Zhu, Dong, *et al.* (2006), this sense of utility connects reliable systems to actual e-tax filing usage, and users are more likely to adopt new tools when they perceive definite benefits over

outdated ones. Peer pressure and ease of use are important, but the primary factor is how well the system feels due to what the backend makes possible, which encourages first use (Tan & Foo, 2012). Switching spreads more quickly across teams as people see benefits from employing it. So, we suggest:

H11: The relation between IT infrastructure and the e-tax filing adoption intention is mediated by relative advantage

## Research Method

The proposed research model was tested utilizing SmartPLS 4.1 (Ringle *et al.*, 2024). Partial least squares (PLS), in contrast to the covariance-based technique, is ideally suited for complicated predictive models and requires few limitations on measurement scales, sample size, and residual distributions (Hair Jr *et al.*, 2017). The majority of covariance-based structural equation modelling techniques require a multivariate normal distribution, an interval scale, and a high sample size in order to produce good estimates (Wold, 1982). 10 times the greatest number of independent latent factors influencing the dependent variable is the minimum sample size suggested for SmartPLS analysis (Chin, 1998). Observation size of 266 was sufficient to move forward with the PLS analysis technique because this is a non-experimental, predictive study applying an integrated model of TOE-DOI in e-tax filing.

Questionnaires were modified from an earlier study to operationalize the constructs in the study model based on the literature analysis and the features of Ethiopian firms. After speaking with a senior academic specializing in Accounting Information Systems (AIS) and a senior tax official from the regional revenues bureau (zonal level), the questions were first modified. Following a pilot test conducted on 10 business taxpayers before it was distributed to respondents (Leavy, 2017), together with the usual procedures. The latest version of the questionnaire was given to medium and large-sized business managers and staff. Following a combination of purposive and convenience sampling staff and managers were chosen simply due to availability and are believed to live the experiences that they respond better than others (Johnson & Christensen, 2024; Taylor & Todd, 1995; Venkatesh *et al.*, 2003). For maintaining accuracy, the survey was first translated into Amharic and back-translated into the English version, and finally, the English version was appended (Brislin, 1986; Ozolins, 2008).

Data collection involved distributing the printed survey to medium and large sized business taxpayers operating in Debre Birhan and Addis Ababa city. The questions used in this research were adapted and which were tested in earlier technology adoption research (Akram *et al.*, 2018; Belanche *et al.*, 2014; Bélanger & Carter, 2008; Chen *et al.*, 2015; Shao *et al.*, 2015; Teo *et al.*, 2008; Veeramootoo *et al.*, 2018). Rather than using simple yes or no options, a 7-point scale allowed participants to express their degree of agreement; this layout followed established formatting principles (Festinger & Katz, 1953; Sekaran & Bougie, 2016). A reliability check on the data was carried out to ensure consistency, and the results produced high values of reliability with Cronbach's alpha ranging from 0.708 to 0.881, significantly greater than the established minimum standard (Heale & Twycross, 2015).

For testing whether values spread normally, we checked skewness and kurtosis, which both stayed within standard limits (Kline, 2016). The skewness ranged from -1.104 to 1.104, where kurtosis swung between -1.368 and 1.432. This tells us that the values were close to a bell-shaped pattern. Even though the data values are distributed normally, the application of the PLS-SEM approach removes issues of normality (Henseler, 2017).

The analysed conceptual model shown in Figure 1 was tested utilizing a common two-stage method from (Anderson & Gerbing, 1988), first looking at the measurement model before jumping into the structural model, as provided by (Chin, 1998), without taking assumption techniques to judge importance. Descriptive details are supplied in Table 2.

## Analysis of Results

We looked at the data using a method called PLS-SEM in SmartPLS v4.1. This data analysis tool worked well when we wanted to explain or forecast results (Ringle *et al.*, 2024). We run the PLS Algorithm, used bootstrapping with 5,000 resamples, and also tested prediction strength via PLSpredict, applying 10-fold cross-validation to determine prediction accuracy (Duarte *et al.*, 2010).

Average replacements were utilized to substitute for any missing data when analysing consistency, convergence and discriminant validity between constructs in accordance with suggestion of several authors in order to confirm results are reliable (Fornell & Larcker, 1981; Henseler *et al.*, 2015). The model's framework was examined for evaluating suggested hypotheses based on recognized methods in the field (Chin, 2009). A

detailed discussion of the findings of these analyses

is presented in the subsequent sections.

Table 2: Descriptive statistics of the sample

Variable	Level of measurement	Scale/Latent construct	#	%
Staff	Position	Management	65	24.4
		Finance head	104	39.1
		Accountant	97	36.5
Industry/sector	primary operation of the business	Manufacturing	122	45.9
		Service	144	54.1
Firm age	Number of employees	$\leq 75$	115	43.2
		$> 75$ but $\leq 99$	82	30.8
		$> 99$ but $\leq 250$	47	17.7
		$> 250$	22	8.3
Age	Age/Year of operation	$< 5$	49	18.4
		$>5$ but $\leq 10$	121	45.5
		$> 10$	96	36.1
Location	Capital/ Zonal city	1= Addis Ababa	194	72.9
		0= Debre Birhan	72	27.1

Source: Authors' own work

### Measurement Model Assessment

Established questionnaire items were re-evaluated for reliability and validity within the current study to ensure the credibility and applicability of the findings. The reflective measurement was used to assess the constructs and all the item loadings crosses the threshold of 0.70, indicating satisfactory convergent validity as recommended by Hair Jnr et al. (2010).

The minimum acceptable score for Cronbach's alpha was 0.7, with values exceeding 0.708, generally considered acceptable (Nunnally, 1978; Tavakol & Dennick, 2011). The structural layout of the model concurred with those proposed by (Anderson & Gerbing, 1988; Bagozzi & Yi, 1988), demonstrated the significance of the overall contribution of the constructs to the variance of the associated items (factor loading  $>0.5$ ).

The composite reliability of each construct was also above 0.7, and AVE values was over 0.5, which indicates high level of reliability and

convergent validity (Fornell & Larcker, 1981; Hair Jnr et al., 2010; Henseler, 2017; Henseler et al., 2015; Nunnally, 1978) (Table 3 for specific values). To ensure the construct's content was valid, we further refined the constructs based on an extensive review of available literature (Haynes et al., 1995; Polit & Beck, 2006). Evidence for the convergence validity of the constructs was reflected in their AVE values of between 0.614 to 0.808, all exceed the 0.50 threshold (Hair Jnr et al., 2010; Kline, 2015). AVE values were also greater than the squared correlations between constructs, further validity the convergence validity of each constructs (Fornell & Larcker, 1981; Henseler et al., 2015).

To assess the discriminant validity of the constructs, we used the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio, with HTMT value between 0.028 to 0.839 and below the 0.85 threshold (Fornell & Larcker, 1981; Henseler, 2017). The results of the Fornell-Larcker tests of discriminant validity are presented in the upper diagonal of the data, while HTMT ratios are

presented in the lower diagonal (See Table A1 in Appendix 1).

Table 3: General overviews of scale reliability and validity

Construct	Item	loadings	A	CR (rho a)	CR (rho c)	AVE
CPT	CPT1	0.811	0.731	0.78	0.841	0.638
	CPT2	0.747				
	CPT3	0.835				
EFA-INTN	EFA-INTN1	0.826	0.826	0.828	0.884	0.656
	EFA-INTN2	0.813				
	EFA-INTN3	0.782				
	EFA-INTN4	0.819				
GITS	GITS1	0.74	0.755	0.841	0.856	0.666
	GITS2	0.907				
	GITS3	0.793				
GO	GO1	0.875	0.881	0.891	0.927	0.808
	GO2	0.92				
	GO3	0.901				
ITI	ITI1	0.921	0.819	0.852	0.893	0.738
	ITI2	0.907				
	ITI3	0.737				
RA	RA1	0.906	0.798	0.887	0.863	0.614
	RA2	0.747				
	RA3	0.733				
	RA4	0.736				
SC	SC1	0.755	0.708	0.715	0.837	0.631
	SC2	0.791				
	SC3	0.836				
PCX	PCX1	0.932	0.867	0.969	0.916	0.784
	PCX2	0.856				
	PCX3	0.866				
TMS	TMS1	0.796	0.737	0.742	0.85	0.654
	TMS2	0.822				
	TMS3	0.808				

Source: Authors' own work

### Structural Model Assessment

To evaluate the structure of the model using PLS-SEM, various parameters were assessed (Henseler, 2010) including; multicollinearity,  $R^2$  values,  $f^2$

values, path coefficients, model fit and  $Q^2$ . To control for common method bias (CMB), a collinearity assessment were performed following (Kock, 2015) recommendation, with VIF values between 1.110 to 1.960, indicating no serious

concerns with collinearity as all VIF values between recommended threshold of 3.3. Furthermore, Harman’s single-factor analysis showed that the first factor accounted only 25.247% of the variance, well below the 50% (Podsakoff *et al.*, 2003) (see Table A3).

The model’s ability to explain results was checked using R<sup>2</sup> along with 5,000 bootstrapped samples to reduce error from random chance (Hair Jr *et al.*, 2020). The output of the model regarding predictors – RA, CPT, PCX, SC, GO, ITI, TMS, GITS, and FS, together explained 71.1 % of changes in EFA-INTN (R<sup>2</sup> = 0.717), which indicated a strong predictive power (Cohen, 1988); (see Figure1). Among the factors, ITI made a solid impact on RA by covering 26.3% of its variation. To assess path coefficients and to confirm findings for hypotheses, researchers ran tests in SmartPLS v4.1 backed up by 5,000 resamples for accuracy.

Table 4: Predictive Relevance (PLSpredict LV Summary)

Constructs	Q <sup>2</sup> predict	RMSE	MAE
EFA-INTN	0.668	0.580	0.464
RA	0.256	0.868	0.719

Source: Authors’ own work

**Model Fit Statistics**

Table 5: Model Fit Criteria Summary

	Saturated model	Estimated model
SRMR	0.074	0.093
d ULS	2.529	3.999
d G	0.938	1.177
Chi-square	1423.98	2028.76
NFI	0.672	0.532

Source: Authors' Own Work

We assessed how well models fits data using the common metrics SRMR and NFI (Hu & Bentler, 1998), with values below 0.08 and close to 1 indicating a good fit, respectively (Mai *et al.*, 2021). The test results demonstrated a moderate overall fit with potential for structural refinement to further improve fit of these measures.

**Structural Model Estimation Results**

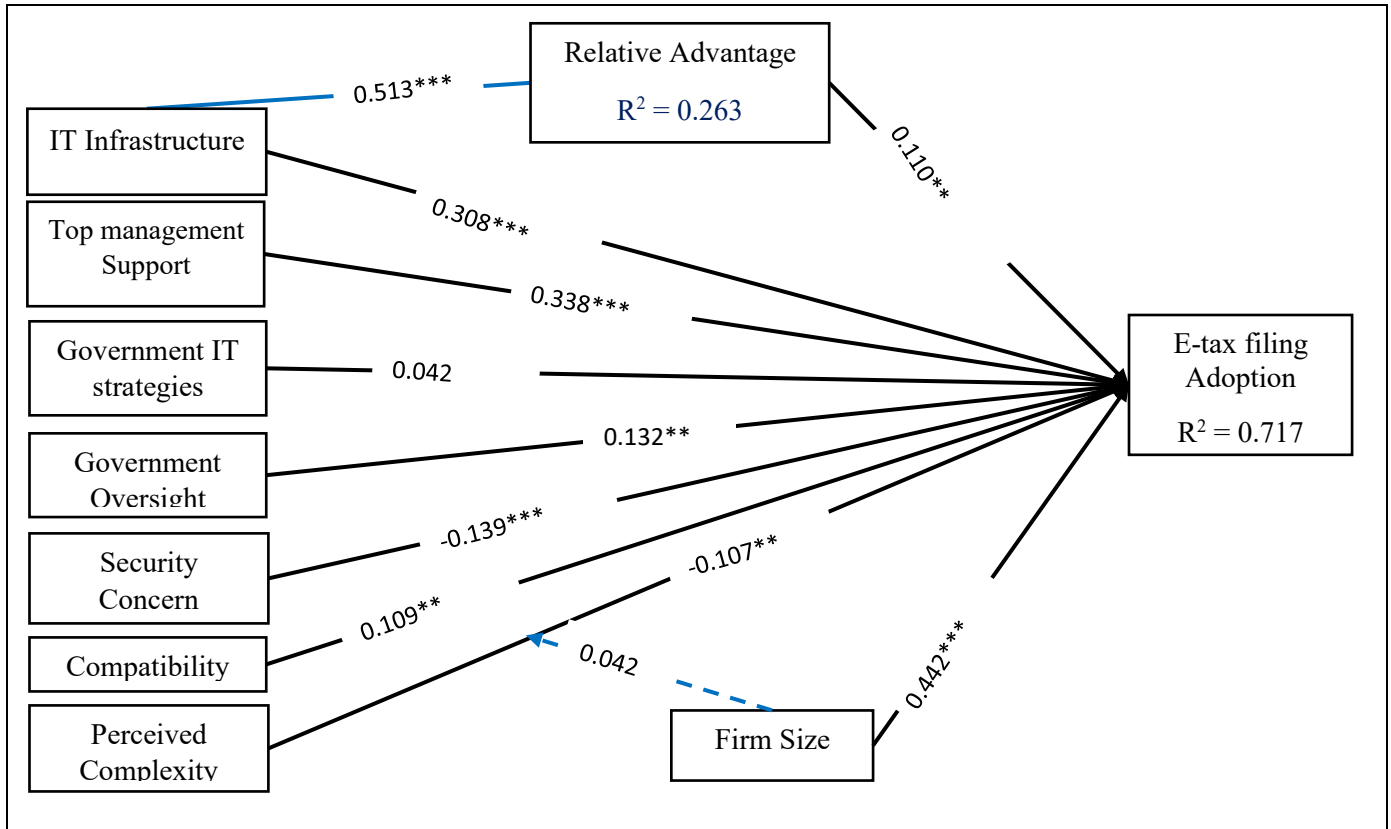
Structural model assessment results (Figure 1 and Table 4) reveal that there are significant path relationships that explained 71.7 % of the total variance in EFA-INTN. The relationship in H1(RA > EFA-INTN) indicates a positive correlation between RA and the acceptance of e-tax filing (β = 0.110, t = 2.393, p = 0.017), which proposes that those who receive a tangible benefit from e-tax

Effect strengths (f2) followed Cohen’s rule (small ≥ 0.02, medium ≥0.15, and large ≥0.35), as shown in Table A4, helping clarify how meaningful each test result of the relationships (Guenther *et al.*, 2023; Hair Jr *et al.*, 2020).

**Assessing Predictive Relevance**

Although R<sup>2</sup> denotes in-sample prediction ability, it does not reveal out-of-sample significance (Shmueli *et al.*, 2019). Therefore, we checked for predictive validity by conducting a PLSpredict procedure in SmartPLS 4.1 using 10-fold cross-validation with 5000 bootstrap resamples, each fold containing at least 30 samples for reliability (Danks & Ray, 2018). Using Q<sup>2</sup>predict, we found the core construct (EFA-INTN) predicted at 0.668 with the mediators ranging from a low of 0.256, indicating strong out-of-sample predictive significance (Hair *et al.*, 2019; Hair Jr *et al.*, 2020). (See Table 4).

filing such as auto-filled taxes, quicker workflows, or less paperwork stress are more likely EFA-INTN. Also, H3 indicated that CPT played a big role in EA-INTN (β =0.109, t = 3.08, p =0.002), since it helps users handle mental load and daily tasks when switching systems, making the shift easier to accept. Conversely, PCX has shown a significant but negative influence on EFA-INTN (β =-0.107, t = 2.435, p = 0.015), demonstrating that complex jargon, processes, or interfaces deter adoption intention, especially among SMEs lacking technical expertise and training, supporting H2. Also, H4 demonstrated a considerable and negative influence on SC on EFA-INTN (β = -0.139, t = 3.366, p = 0.001), substantiating that the sensitivity of tax data amplifies these concerns, making security a non-negotiable factor for initial uptake.



Note: NB – sig. level set at ( $p$ -value  $< 0.001$ ); ( $< 0.01$ ); ( $< 0.05$ ); ( $> 0.05$ , ns). A dashed line shows how perceived complexity (PCX) influences FS through moderation. Meanwhile, a solid line links FS to EFA-INTN, revealing FS's direct impact on EFA-INTN. In like manner, the link from ITI to RA reflects a mediating role, whereas the connection from RA to EFA-INTN highlights a straightforward effect.

Figure 1: Analysed Research Model

Source: Authors' own work

Table 4: Statistical output of the structural Model

Hypothesis	Variable Relationships	$\beta$ -value	Std. Error	T-statistics	P-values	Results
H1	RA -> EFA-INTN	0.110	0.046	2.393	0.017	Accepted
H2	PCX -> EFA-INTN	-0.107	0.044	2.435	0.015	Accepted
H3	CPT -> EFA-INTN	0.109	0.035	3.08	0.002	Accepted
H4	SC -> EFA-INTN	-0.139	0.041	3.366	0.001	Accepted
H5	TMS -> EFA-INTN	0.338	0.04	8.384	0.000	Accepted
H6	ITI -> EFA-INTN	0.308	0.052	5.911	0.000	Accepted
H7	LGF -> EFA-INTN	0.442	0.1	4.409	0.000	Accepted
H8	GO -> EFA-INTN	0.132	0.048	2.775	0.006	Accepted
H9	GITS -> EFA-INTN	0.042	0.04	1.052	0.293	Rejected
H10	LGF x PCX -> EFA-INTN	0.042	0.072	0.589	0.556	Rejected
H11	ITI -> RA	0.513	0.041	12.568	0.000	Accepted

Source: Authors' own work

Top-level management had a positive and considerable influence on EFA-INTN ( $\beta = 0.338$ ,  $t = 8.384$ ,  $p < 0.001$ ), impacting it by funding and promoting the use, so supporting H5. We also found that a strong association between ITI and EFA-INTN was established by H6 ( $\beta = 0.308$ ,  $t =$

$5.911$ ,  $p < 0.001$ ), indicating that IT infrastructure is a crucial factor influencing initial adoption, thus influencing EFA-INTN through a dependable, high-performance, and seamlessly integrated IT system.

Firm size was positively linked with EFA-INTN ( $\beta = 0.442$ ,  $t = 4.409$ ,  $p < 0.001$ ), backing H7. Further, government oversight is found to affect EFA-INTN positively and significantly ( $\beta = 0.132$ ,  $t = 2.775$ ,  $p = 0.006$ ), supporting H8. It is noteworthy that, although the government's IT strategy seems to be working well, it was insignificant ( $\beta = 0.042$ ,  $t = 1.052$ ,  $p = 0.293$ ), suggesting that policy and implementation are not aligned, failing to support H9.

Consequently, all hypothesized relationships between TOE framework variables (ITI, TMS, FS, and GO), and DOI variables (PCX, RA, and CPT), and EFA-INTN were established, revealing considerable predictive power on the formulated hypotheses. Thus, these factors influence the uptake of e-tax filing system.

### Mediation Effects

We checked out the mediation analysis (Hypothesis H11) to determine whether technological factors mediate the influence of ITI on EFA-INTN. This investigation examined both the direct influence of ITI on mediator (RA) and its indirect effect on EFA-INTN. On the basis of (Baron & Kenny, 1986), a multi-stage mediation approach, we first assessed that ITI considerably forecasted the mediator and then evaluated how this mediator influenced EFA-INTN. The results indicated that the indirect influence of ITI through the technology factor (RA) was found to be significant and positive. The indirect effect of ITI ( $\beta = 0.057$ ,  $t = 2.35$ ,  $p = 0.019$ ) on EFA-INTN was found meaningful. These findings (see Table A4 in Appendix 1), substantiate that the technological factor (i.e., RA) partially mediates the relation between ITI and EFA-INTN, showing mediation by the assessed technological factor, spotlighting the connection of the technological factor in the relation between ITI and EFA-INTN.

### Moderating Effects

The research examined whether the relation between perceived complexity (PCX) and e-tax filing adoption intention (EFA-INTN) is moderated by firm size. Examination of the moderating effect showed that, for medium sized firms, perceived complexity was found to diminish the propensity for e-tax filing use intention, suggesting that these firms experience heightened sensitivity to the challenges posed by perceived complexity ( $\beta = -0.107$ ,  $t = 2.435$ ,  $p = 0.015$ ), but this influence was insignificant for larger firms ( $\beta = -0.064$ ,  $p = 0.334$ ).

The result demonstrated that firm size affects the general level of EFA-INTN but the sign and

magnitude of the relation between perceived complexity and EFA-INTN is invariant. Based on our findings, it is important to consider the effect of firm size on EFA-INTN, but also to understand perceived complexity has the same effect regardless of firm size.

The TOE framework states that firms will adopt technologies based on their characteristics, such as scale and available assets. Hence, large corporations often have dedicated IT workforce and have larger budgets to assist in managing their complex IT environments, which makes easier for them compared to SMEs, particularly in light of Ethiopia's low digital literacy and internet maturity score of 3.71 (Wassie *et al.*, 2023).

The conditional assessment conveys that the perceived complexity greatly impacts the intention of medium-sized enterprises to adopt e-tax filing. On the other hand, large firms are less inhibited by complexity due to their large resources, although the total moderating effect was limited.

### Discussion of Key Findings

The study examined the most important factors for medium to large-sized companies in Ethiopia to consider when determining if they would accept an electronic filing system at first. In addition, the research incorporated other views based on trust along with the TOE framework and DOI theory. According to the results, the determination process to adopt the system at the beginning was impacted by a composition of technological, organizational, and environmental elements. As expected by theoretical perspectives, all the following factors contributed to the encouragement of adopting the electronic filing system: relative advantages, compatibility, IT infrastructure, top management support, business size, and oversight by the government. These indicate that businesses in Ethiopia were encouraged to accept the system not just because it existed, but also because of the actual benefits, such as time savings and decreased errors, along with the internal and external capabilities required to implement the system successfully (Premkumar & Roberts, 1999; Rogers, 1995; Thong, 1999).

The positive outcomes of the perceived relative advantages demonstrate that the previous research conducted in developing countries emphasized the need for digital systems versus traditional manual systems (Ambali, 2009; Santhanamery & Ramayah, 2018). The compatibility of the system with the current workflow aided in the acceptance of the system by reducing cognitive barriers, supporting the research completed on technology adoption (Alkandi, 2022; Ghobakhloo *et al.*, 2011).

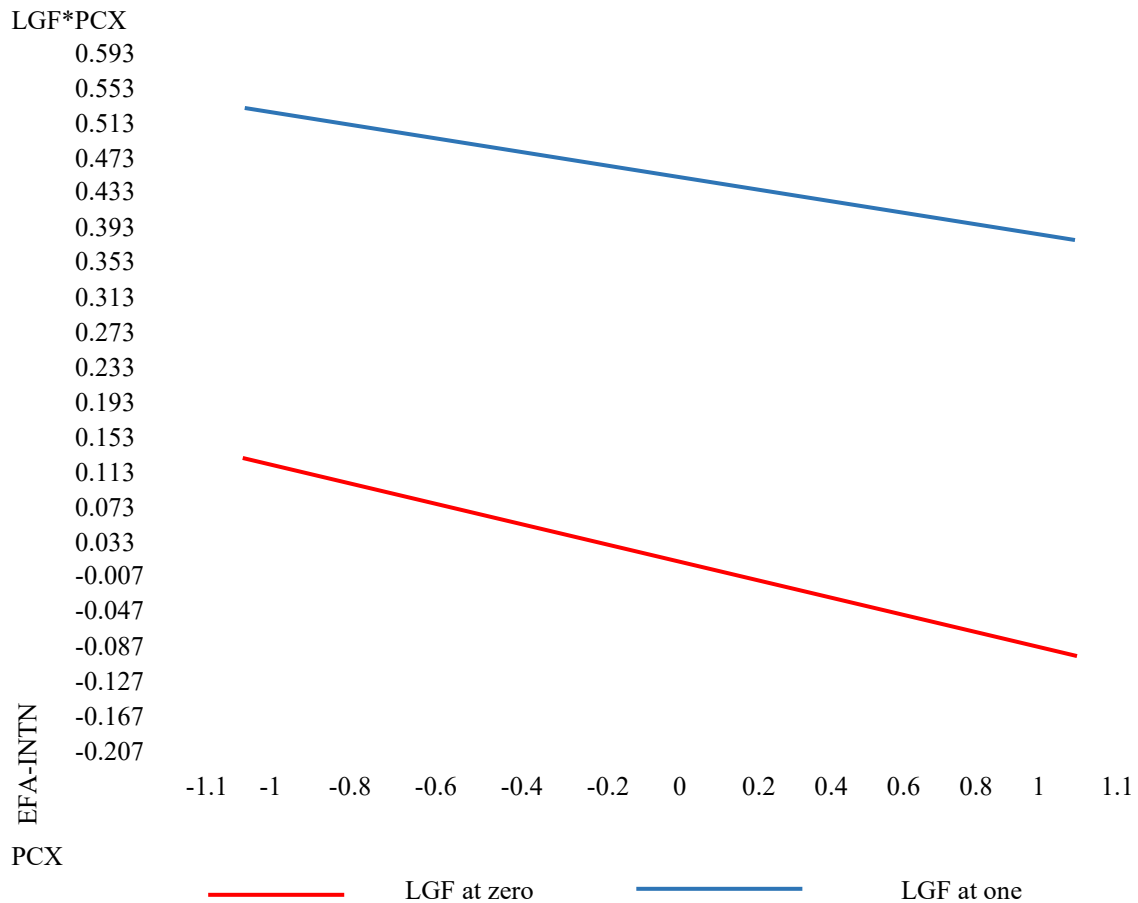


Figure 2: Simple slope analysis

Note: The magnitude of perceived complexity, represented by the horizontal line, is displayed at intervals of 0.2 values to save space without changing the graph's structure.

Source: Authors owns work

An interesting insight revealed by this study was the identification of a dual mechanism mechanism by which IT infrastructure influences e-tax filing adoption intention. The results of the study indicated that both direct and indirect influences through the perception of comparative advantages with statistically significant coefficients ( $\beta = 0.057$ ,  $t = 2.35$ ,  $p = 0.019$ ), demonstrating that a solid digital base can directly support adoption and indirectly increase the perceived benefits to aid in increasing the intention to use the system (Efobi *et al.*, 2019; Qiang, 2024; Yimam *et al.*, 2024).

However, security issues and the perceived complexity of the system were found to be major obstacles to adoption of e-tax filing system. Prior studies have demonstrated that cognitive and risk-related obstacles may hinder growth in the context of low digital proficiency (AlAwadhi & Morris, 2008; Carter *et al.*, 2011; Fatima, 2018; Rogers, 2003; Shao *et al.*, 2015). In order to promote trust in digital platform, robust data security measures

and user-friendly interfaces are essential (Ambali, 2009; Eshetu *et al.*, 2024; Floropoulos *et al.*, 2010; Gefen *et al.*, 2003; Mamade & Dabala, 2021; Pashentsev, 2024). The insignificant effect of the government's IT strategy ( $\beta = 0.042$ ,  $t = 1.052$ ,  $p = 0.293$ ) emphasizing that the government must not only express their support but also implement and enforce policy effectively, underscoring the necessity for tailored governance adjustments (Heeks, 2002; Ndou, 2004).

Furthermore, the study revealed a complex relationship regarding organizational size, where large firms exhibit a better propensity for use because of their resource capacities, avoiding the negative effects of complexity on adoption intention. The study found that, to effectively manage complexity, medium-sized enterprises would benefit from support systems, such as capacity-building and technical assistance (Ondoro, 2021).

### Implications of the Study

This research expands on prior work in Information Systems (IS) literature by utilizing a broader TOE and DOI framework to bridge individual level models like TAM and UTAUT (Veeramootoo et al., 2018) and create a strong combined macro and micro synthesis of these models specifically focused on organizations in Ethiopia (Lingga et al., 2021; Rahman & Pangendra, 2022). Specifically, the addition of perceived risk as a contextual variable identifies a connection between security concerns related to digital taxation and the need to have institutional trust for effective modern taxation (Schaupp & Carter, 2010). Additionally, the research identifies relative advantage as a mediator and firm size as a moderator, creating a detailed multi-level perspective of digital tax adoption (Hesami et al., 2024; Malima et al., 2021).

Empirical findings suggest that while government mandates are important factor for encouraging the uptake of e-tax filing by organizations, there are also other elements that affect organizational behaviour and how the government can stimulate the use of e-tax services. Apart from deploying e-tax infrastructure, the government will need to eliminate any psychological barriers that may impede adoption such as system complexity and compatibility, to benefit from the efficiency and revenue gains of e-taxation. Policymakers should look at the e-tax service as a value proposition to both parties to encourage users to adopt e-tax services (Veeramootoo et al., 2018). Future e-government strategies need to balance technical reliability with strategic communication to ensure taxpayers see value in compliance beyond mere pressure (Kahneman & Tversky, 2013; Pashentsev, 2024).

### Limitations and recommendations for future inquiry

Despite existing restrictions, the study addresses the crucial topic of e-tax filing adoption intention in the setting of a growing economy. Before drawing inferences from the data, these limitations should be taken into account. First, it does not evaluate users' actual e-tax filing behaviour (Hair Jnr et al., 2010; Podsakoff et al., 2003). Adoption behaviours may not always lead to users' real e-tax filing activity (Veeramootoo et al., 2018). Second, while behavioural elements from DOI and contextual constructs from TOE were included in this study, adding quality constructs might boost model strength and merely concentrating on medium and large firms in Ethiopia could raise question about wider fit, hence, exploring varied public sectors and areas may widen applicability (Carter & Bélanger, 2005; Chen & Dimitrova, 2006; Heeks, 2002; Van Dijk, 2006; Venkatesh et al., 2003).

Third, user-reported data in a cross-sectional analysis could be susceptible to common method variance (CMV) and may lead to high associations even while planned and actual efforts are made to avoid CMV. Therefore, a longitudinal study or mixed strategies are suggested (Bhattacharjee, 2001; Gable, 1994).

### Conclusion

The research indicates that the transition of Ethiopian's tax system into a digital format will depend mostly on organization capability and trust in technology. Senior management support, government oversight, and the compatibility of digital taxation with existing technologies are critical elements influencing the adoption of digital taxation; however, while it seems government has emphasized or directed organizations to adopt IT technologies as the main means of accomplishing their e-government objectives, the practical application of government IT strategies do not fully match up with the operational needs of most businesses.

Although large companies have had great success adopting digital technologies, many medium-sized companies are struggling with the challenges of establishing themselves as a trusted organization with the electronic tax system due to significant barriers associated with their size.

The findings of this study provide valuable insights for e-government scholars, emphasizing the creation of targeted policies to reduce barriers for medium enterprises and to enhance security measures to help build trust with the taxpayers.

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Appendix 1. Assessment of measurement instruments

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Table A1: Measuring the discriminant validity of constructs using Fornell–Larcker criterion and HTMT ratio

Discriminant Validity Criterion		CPT	EFA-INTN	GITS	GO	ITI	LGF	RA	SC	PCX	TMS
		Fornell-Larcker criterion									
Heterotrait-Monotrait-ratio (HTMT)	CPT	0.80	0.35	-0.02	0.21	0.30	0.12	0.22	-0.12	-0.03	0.21
	EFA-INTN	0.43	0.81	-0.07	0.56	0.70	0.46	0.56	-0.38	-0.11	0.64
	GITS	0.09	0.10	0.82	-0.02	-0.05	-0.07	-0.14	0.05	0.38	-0.06
	GO	0.26	0.65	0.04	0.90	0.51	0.31	0.61	-0.38	0.05	0.29
	ITI	0.39	0.84	0.10	0.59	0.86	0.35	0.51	-0.25	-0.09	0.53
	LGF	0.14	0.50	0.07	0.33	0.38	1.00	0.37	-0.12	0.02	0.22
	RA	0.26	0.64	0.17	0.67	0.57	0.39	0.78	-0.29	0.00	0.33
	SC	0.18	0.49	0.08	0.49	0.32	0.14	0.35	0.79	0.00	-0.18
	PCX	0.06	0.12	0.47	0.06	0.10	0.03	0.05	0.07	0.89	-0.04
	TMS	0.26	0.81	0.08	0.36	0.69	0.25	0.40	0.26	0.07	0.81
	LGF x PCX	0.04	0.06	0.31	0.07	0.06	0.03	0.03	0.07	0.54	0.05

Source: Authors' own work

Table A2: Confidence intervals bias corrected for Total effects at 95%

Construct Relationships	Original sample (O)	Bias	2.5%	97.5%
RA -> EFA-INTN	0.110	-0.005	0.021	0.202
PCX -> EFA-INTN	-0.107	0.007	-0.189	-0.023
CPT -> EFA-INTN	0.109	0.001	0.040	0.179
SC -> EFA-INTN	-0.139	0.000	-0.222	-0.058
TMS -> EFA-INTN	0.338	0.000	0.256	0.415
ITI -> EFA-INTN	0.251	0.002	0.149	0.347
LGF -> EFA-INTN	0.442	-0.009	0.256	0.652
GO -> EFA-INTN	0.132	0.002	0.036	0.221
GITS -> EFA-INTN	0.042	-0.014	-0.021	0.133
LGF x TCX -> EFA-INTN	0.042	0.002	-0.094	0.190
ITI -> RA	0.513	0.005	0.423	0.584

Source: Authors' Own Work

Table A3: Common Method Bias test result using Harman's single factor test and FCVIF

Total	% of variance	Cumulative %
7.574	25.247	25.247
Construct Relationships		VIF
RA -> EFA-INTN		1.859
PCX -> EFA-INTN		1.201
CPT -> EFA-INTN		1.110
SC -> EFA-INTN		1.187
TMS -> EFA-INTN		1.418
ITI -> EFA-INTN		1.960
LGF -> EFA-INTN		1.216
GO -> EFA-INTN		1.885
GITS -> EFA-INTN		1.210

Table A4: The total and specific indirect and conditional direct effects regarding the mediation and moderation effects						
Effect Types	Construct Relationships	B-value	STDEV	T-value	P-values	Level of Support
Total indirect effects	ITI -> EFA-INTN	0.057	0.024	2.35	0.019	Supported
Specific Indirect Effects	ITI -> RA -> EFA-INTN	0.057	0.024	2.35	0.019	Supported
Conditional Direct Effects	TCX -> EFA-INTN LGF at one	-0.064	0.067	0.965	0.334	Not Supported
	TCX -> EFA-INTN LGF at zero	-0.107	0.044	2.435	0.015	Supported

Source: Authors' own work