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PERCEIVED EFFECT OF E-COMMERCE TAX AWARENESS AND TECHNOLOGY OPTIMISM ON TAX COMPLIANCE INTENTION

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ABSTRACT

Despite the high volume of e-commerce transactions and massive virtual tax revenue generation from different e-commerce trading platforms worldwide, the tax compliance intention remains low, coupled with the complexity of its legal tax provisions, tax awareness and technology optimism. Several administrative efforts and frameworks were recently put in place to address the lingering issues, yet information about e-commerce tax awareness and technology optimism remains the least from most formal and informal sectors' users and operators in developing countries like Nigeria. As such, the study examines the perceived effect of e-commerce tax awareness and technology optimism on tax compliance intention. Specifically, the study examines the influence of university students' e-commerce tax awareness and technology optimism on tax compliance intention. A cross-sectional survey design was used for the study. A questionnaire was self-administered to 372 samples, and 323 valid responses were obtained from undergraduate students with practical e-commerce technology experience. Subsequently, Partial Least Squares Structural Equation Model was used to test the proposed research

model using SmartPLS4. The study found that e-commerce tax awareness and technology optimism positively and significantly correlated with tax compliance intention, among e-commerce platform users in universities. The practical and theoretical importance of understanding the implications of the study was finally highlighted.

Keywords: E-commerce, Tax Awareness, Technology Optimism and Tax Compliance Intention.

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1. INTRODUCTION

Tax compliance intention signifies the proper functioning of a tax authority, which promotes more revenue generation. The tax compliance intention variable looks into the readiness, tendency and decision to comply with tax provisions or not based on people's behavior (Salaudeen and Ejiofor, 2022; Thornton, Aknin, Branscombe and Helliwell, 2019; Utama, Nimran, Hidayat and Prasetya, 2022). Understanding people's behavior that promotes their attitudes is crucial in increasing tax compliance intention (Kupoluyi, Oloyede and Oyedokun, 2022). It further goes a long way in promoting government expenditure for the general benefit of a nation, especially in e-commerce, which promotes the payment of Value Added Tax (VAT) from different virtual transactions around the world.

E-commerce has modernized and enhanced the connections between sellers, manufacturers and consumers in a better way that applies vital tools of financial incentives. Accordingly, the expansion of e-commerce has a direct link to an increase in online sales, tax collections and revenue generation in many countries of the world (Argilés-Bosch, Somoza, Ravenda and García-Blandón, 2020; Baozhuang, Mu, Cao and Gao, 2021; Mu, Ren and Wang, 2022; Niu, Deng and Hao, 2020). Such e-commerce expansion makes it the best consumer choice for logistics delivery over long distances worldwide. Consumers' satisfaction is crucial for the continuous utilization, repurchasing intentions, and success of e-commerce (Artana et al., 2022; Coppola, 2021; Escursell, Llorach-Massana and Roncero, 2021; Xiao, Yuan, Sun and Sun, 2021).

Moreover, e-commerce global trade volume continues to grow annually in many countries and has gained increasing importance between 2000 to 2020 and beyond (Christie, 2021; Escursell et al., 2021; Scarcella, 2020). Scarcella (2020) reported an e-commerce sale of goods estimated at USD 2 trillion annually with projections to reach USD 4.5 trillion by 2021, out of which USD 1 trillion is estimated to be cross-border e-commerce. Correspondingly, Coppola (2021) reported worldwide net sales of 4.28 trillion USD in e-retail sales from over two billion purchases and 5.2 billion unique visitors primarily via mobile devices. Equally, the Covid-19 pandemic around 2020 and beyond had contributed immensely to the accelerated growth, spread, adoption and utilization of e-commerce via the e-commerce platforms globally (Helmy Mohamad, Farouk Hassan and Abd Elrahman, 2022; Kumar, Lim, Pandey and Christopher Westland, 2021; Scutariu, Șuşu, Huidumac-Petrescu and Gogonea, 2022).

E-commerce platforms are used by different users globally. These e-commerce platforms' users cut across various economic sectors, disciplines, and individuals. They include undergraduate and postgraduate students, social media users, retailers, manufacturing SMEs, public online shoppers, government agencies, tax departments, hotel managers, owners of restaurants, and entertainment centers (Al-Ttaffi, Bin-Nashwan and Amrah, 2020; Bestaria, Sinagab and Saudi, 2019; Gupta, Kiran, & Sharma, 2020; Hertati & Safkaur, 2021; Jianjun, Wang and Wu, 2020; Kahiigi and Semwanga, 2020; Pratama and Jin, 2019; Singh and Bharath, 2021; Solichin, Astuti and Mahardhika, 2021; Suartana and Masari, 2019; Yuyan, Fan, Shen and Miller, 2020).

University students also formed part of the global users that embraced e-commerce among the categories of students in the universities utilizing and applying e-commerce platforms for online trading. In support of university students' use of e-commerce, it was found from some studies that university students prefer online shopping using mobile applications to offline markets (Kesuma, Kesuma, Nasution and Epriel, 2020; Nursyirwan and Ardaninggar, 2020). Furthermore, Kesuma et al. (2020) reported that university students use online trading platforms due to the significant changes in their purchase intention owing to promotions, quality of websites, and trust alongside low prices, discounts and special offers from the platforms. Similarly, some researchers reported that university students portray a great willingness to continue adapting and utilizing e-commerce platforms while in school and after school (Beatson et al., 2020; Kesuma et al., 2020; Liao, 2020; Olokundun et al., 2018; Russell, Ariail, Smith and Smith, 2020).

As mentioned above, these studies outline indications that students in universities are also active users of e-commerce platforms, contributing to developing different nations' economies and global international trading owing to their technology optimism. In that regard, Jiang, Sun, Yang and Gu (2022) point out that this optimism about utilizing new business technology has helped many e-commerce users (and students inclusive) to have better online business experiences. Similarly, a rise in the technological optimism of e-commerce users and their usage of online business technologies has cleared the way for the realization of additional tax revenue through the users' intention to comply with tax laws (Baozhuang et al., 2021; Mu et al., 2022; Soon, Derashid and Bidin, 2020). Moreover,

without tax awareness of e-commerce technology, compliance will not exist (Asrinanda, 2018; Lixuan, Smith and Gouldman, 2020). Therefore, tax awareness enhances taxpayers' compliance intention (Asrinanda, 2018).

Unfortunately, some downsides are associated with e-commerce technology for tax compliance intention. For instance, e-commerce technology has not been efficiently utilized for tax filing and returns by many e-commerce users at different levels due to a lack of computer literacy and tax awareness, which led to low tax compliance intention (Asrinanda, 2018; Bestaria et al., 2019; Bornman and Ramutumbu, 2019; Edgley and Holland, 2020; Lestari and Wicaksono, 2017). Comparatively, Humta and Ghafourzay (2021); Lixuan et al. (2020) reported that low tax awareness and conscience are parts of online tax challenges, with many users not knowing the exact way to remit e-taxes. As a result, it is more common in e-commerce, leading to non-tax compliance intention (Lixuan et al., 2020).

Furthermore, prior studies provide that the university students' non-tax compliance intention were due to: negative attitudes, lack of school guidance, inadequate social support, negative behavioral influence, simplicity of social and virtual environment, obsolete government tax policies and implementations (Beatson et al., 2020; Gou and Zhang, 2021; Kesuma et al., 2020; Oyekunle, 2019; Pratama and Jin, 2019; Russell et al., 2020). Similarly, in Nigerian universities, for instance, the adoption of new technologies does not always go smoothly due to the issue of technology optimism among university staff and students (Adegore and Adegbore, 2021; Hamajoda, 2018). As such, according to Zubairu, Oyefolahan,

Babakano, Etuk and Mohammed (2020), Nigeria is low in technology readiness for the digital economy. In support of that, Nigeria was ranked low by United Nations (2021) in terms of readiness for frontier technologies index, based on a global technological wave and innovation ranking, occupying 124th place out of 158 countries involved. Moreover, the country is also ranked 123rd among 132 countries based on knowledge and technology outputs by the Global Innovation Index (2021). These limitations affect the utilization of online technology in compliance with the new e-commerce and tax compliance provisions as contained in the newly established Nigerian Financial Act 2020.

These aforementioned challenges bring about the need to enhance the level of tax awareness and technology optimism among taxpayers in the country. It is because tax awareness promotes tax knowledge (Bornman and Ramutumbu, 2019) and lessens the misconception and misunderstanding of tax policies by taxpayers. Without adequate tax awareness, tax compliance will not exist (Asrinanda, 2018; Lixuan et al., 2020). However, when taxpayers are sufficiently aware of the existing tax policies, they will embrace the online tax policies with great ease, as the online tax declaration and e-tax payments provide the most advanced technological breakthrough in tax administrative procedures and the gradual modernization of taxation. According to Bestaria, Sinagab and Saudi (2019), the online tax system helps public members obtain tax information and ease tax payments. Hence, the digitalized economy and tax systems ensure that multinational firms engaged in online business operations like e-commerce pay taxes to the governments of countries where the economic activity occurs

(Charlemagne Igue and Alinsato, 2021; Lucas-Mas, Oliver, Junquera-Varela and Felix., 2021) due to the level of technology optimism. In that regard, it was reported that technology optimism positively and significantly contributes to tax compliance (Ming Ling and Muhammad, 2006) and has a positive relationship with consumers' intention to use technology-based services (Cruz-Cárdenas, Guadalupe-Lanas, Ramos-Galarza and Palacio-Fierro, 2021), thereby increasing taxpayers' technology readiness.

Yet, several efforts recently put in place could not completely address the lingering issues. As a result, existing studies have also stressed the need for more research on the technology optimism of students as e-commerce users, especially in universities (Haryanti and Pribadi, 2019; Saidu, Jibrin, Shagari, Kabir and Abubakar, 2021). However, limited studies have examined how university students' optimism about new business technologies influences their behavioral intentions (Chao and Yu, 2019). Moreover, on the part of recent studies that examined tax compliance intention in e-commerce, very minimal attention was given to the same issues in the African context (Bani-Khalid, Alshira'h and Alshirah, 2022). The same is true for other developing nations like Nigeria (Abdullah, Naved Khan and Kostadinova, 2021; Etimphd, Jeremiah and Udonsek, 2020; Gupta et al., 2020; Kumar et al., 2021; Opemuti, 2020; Saidu et al., 2021; Villa, Ruiz, Valencia and Picón, 2018; Yaacob and Gan, 2021). Based on these premises, this study seeks to bridge the existing issues and gaps by examining the effect of e-commerce tax awareness and technology optimism on tax compliance intention in universities within Northeast Nigeria.

2. REVIEW OF LITERATURE

2.1 Tax Compliance Theory

There is no theory completely explaining tax compliance behavior or intention. it is because the tax compliance behavior or intention variables are influenced by economic and non-economic elements, including deterrence, social psychology, financial exchange, comparative treatment, political legitimacy, and public confidence in government (Bello and Danjuma, 2021; Krieger, 2021). Nevertheless, the most popular theory is the Income Tax Evasion Theory (ITET) (Bello & Danjuma, 2021; Devos, 2014; Fjeldstad, Schulz-Herzenberg and Hoem Sjursen, 2012; Krieger, 2021). Allingham and Sandmo (1972) founded the ITET. The ITET asserts that tax compliance affects tax rates, fraud fines, and the likelihood of identifying tax evaders (Bello and Danjuma, 2021; Devos, 2014; Lewis, 1982).

The ITET also looked at the relationships between the desire to evade paying taxes and the efforts made to find and stop it (Allingham and Sandmo, 1972; Devos, 2014). Conversely, under low likelihoods of a tax audit, detection and low penalties, the tendency to tax evasion is high among taxpayers and vice versa (Abuamria, 2019; Alm, Cox and Sadiraj, 2019; Devos, 2014; Fjeldstad et al., 2012). The ITET critically examines the economic factor of deterrence, which describes the likelihood of being detected and the consequences to be meted out to defaulters, as well as the psychological component of moral principles, equity, and fairness maintained by taxpayers (Abuamria, 2019; Alm et al., 2019; Devos, 2014; Krieger, 2021).

2.2 E-commerce Platforms and Students' Usage in Universities

E-commerce activities in universities include several websites, institutional portals and social media platforms for virtual interaction, communication and marketing of products and services (Oyekunle, 2019). The ease of use and usefulness of the e-commerce platforms contribute to students' continuous adoption, utilization and intention to make online payments (Ardiansah, Chariri, Rahardja and Udin, 2020; OECD, 2020; Singh and Bharath, 2021). Even though some students may express worries over privacy, consumer protection and security challenges in universities. Undergraduate students are among others in universities that utilize and apply e-commerce platforms for online trading. They use the platforms due to their emerging accounting and entrepreneurial knowledge, business skills, and intention (Beatson et al., 2020; Kesuma et al., 2020; Russell et al., 2020).

Similarly, university students expressed great willingness to utilize the e-commerce platforms during school and after due to their knowledge and skills (Liao, 2020; Olokundun et al., 2018). These knowledge and skills are vital in their future business success and improve their academic performance in universities. Similarly, university students prefer online shopping using mobile applications to offline markets due to the significant changes in their purchase intention (Abdullah et al., 2021; Kesuma et al., 2020; Nursyirwan and Ardaninggar, 2020). In addition, promotions, website quality, trust alongside low prices, discounts, special offers, and dedicated programs for students and the platforms' security were reasons why university students used the e-commerce platforms (Kesuma et

al., 2020; Nursyirwan and Ardaninggar, 2020). Pribadi (2019) reported an average level of university students' e-commerce technology readiness using UNIMART, a designed online shopping service for university students in Indonesia. However, female university students were more involved in online shopping than their male counterparts (Kesuma et al., 2020).

Despite the enormous contribution of e-commerce to university students, e-commerce studies are yet to be fully utilized in universities worldwide. Some business and university students are not participating in the applicable e-commerce practices due to a lack of guidance from schools, insufficient social support, physical and virtual environment, government policies and implementations (Gou and Zhang, 2021; Oyekunle, 2019). There are shreds of evidence of minimal research studies on university issues in e-commerce despite the available data sources and online materials, especially in Nigeria (Atanassova, 2018; Mills, 2019; Oyekunle, 2019). Most of the previous studies in line with university students' utilization of e-commerce platforms were studies on foreign undergraduate universities students (Bestaria et al., 2019; Kesuma et al., 2020; Nursyirwan and Ardaninggar, 2020; Pratama and Jin, 2019; Singh and Bharath, 2021), colleges students (Gou and Zhang, 2021; Liao, 2020) or mixed institutions (Ardiansah et al., 2020).

The empirical contributions from African universities remained very limited (Haryanti & Pribadi, 2019; Saidu et al., 2021). For instance, results from bibliometric analyses indicate that the dominant studies on e-commerce were more from countries like China, the USA, the United Kingdom, Taiwan and India, among other nations (Abdullah et al., 2021; Kumar et al., 2021; Mou and Cui, 2019; Yaacob and Gan, 2021). China, alone

accounts for 50% of the recent total e-commerce studies (Dongyang and Liu, 2021; Kang, Diao and Zanini, 2020; Kumar et al., 2021; Liu, Osewe, Shi, Zhen and Wu, 2022; Luzhao, 2020; Reardon et al., 2021) with very minimal attention given to the same issues in the African context (Bani-Khalid et al., 2022).

2.3 Hypotheses development

2.3.1 Tax Awareness and Tax Compliance Intention

Perceived tax awareness is taxpayers' sincerity, willingness, and desire to fulfil their tax responsibilities (Asrinanda, 2018; Nurlis and Ariani, 2020). An individual taxpayer can understand the purpose, meaning, and justification of paying taxes, and how to implement the tax laws freely and quickly to fulfil the necessary tax obligations (Lestari and Wicaksono, 2017). The work of the taxing authorities, the government, and the people depend on the development of such obligations for paying taxes for both online and offline transactions. The government must raise taxpayer awareness to enhance tax revenue generation (Andreas and Savitri, 2015).

Furthermore, tax awareness can influence taxpayers' intention to comply positively and significantly among individuals. In other words, a taxpayer is more likely to have a good intention to comply with tax requirements if they are more aware of their tax liability. In support of this empirically. Researchers discovered that tax compliance is considerably and favorably influenced by tax awareness in another investigation (Asrinanda, 2018; Ay et al., 2021; Savitri and Musfialdy, 2016). Similarly, some researchers discovered a direct and significant relationship between tax awareness and intention to comply

with the laws (Haryati and Tambun, 2022). Therefore, we hypothesize that:

H1a: University students' e-commerce tax awareness positively and significantly relates to tax compliance intention.

2.3.2 Technology Optimism and Tax Compliance Intention

Perceived technology optimism is a positive view of technology with a firm belief that it provides increased control, flexibility and efficiency to people's lives and work (Na, Lee, and Yang, 2021; Syamfithriani, Mirantika, Daswa, Yusuf and Kurniadi, 2021). It can promote flexibility, control, and work efficiency (Chang and Chen, 2021). Technology optimism is one of the four dimensions of the T.R. Model, including innovativeness, insecurity and discomfort (Mohamed and Raghavan, 2021; Syamfithriani et al., 2021). The unique ability of technology optimism to modify students' perceived behavioral control, attitudes, and social impacts on behavioral intention justifies its usage as a unidimensional construct (Chao and Yu, 2019).

People with high values of optimism and innovativeness contribute to the increase in overall technology readiness and intention (Parasuraman, 2000b; Parasuraman & Colby, 2015). Technology optimism was noted to promote the relationship between the factors determining technology usage and consumer intention (Meng, Kyung-Soo and Oh, 2017; Tsourela and Roumeliotis, 2015). Chang and Chen (2021) found that technological optimism significantly and positively increases more intention to shop online using the intelligent shop. Similarly, Cruz-Cárdenas et al. (2021) in Ecuador, also found technology optimism has a significant and positive relationship with consumers' intention to use technology-based services.

Thus, technology optimism strongly influences the relationship between online business users' behavior and intentions. That is to say; technology optimism has a positive contributing effect in shaping the behavior of taxpayers toward tax compliance intention. Therefore, it is hypothesized that:

H2a: University students' e-commerce technology optimism positively and significantly relates to tax compliance intention

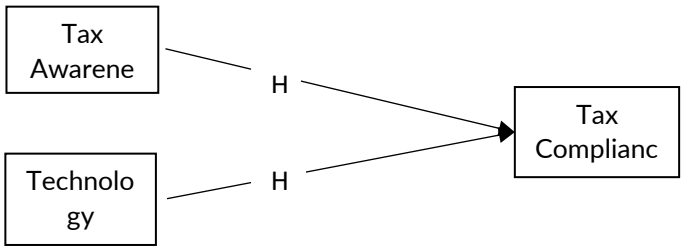

Figure 1: The Research Conceptual Model

3. RESEARCH METHODOLOGY

The research focused on undergraduate university students with practical experience in formal and informal e-commerce platforms. The formal e-commerce platforms are operationalized in the study as the registered and globally recognized cross-border online platforms, while the informal e-commerce platforms are the non-registered e-commerce platforms recognized and embraced by some online business users. A cross-sectional survey design was used for the population that stood at 65,218 undergraduate students within the six (6) state universities in Nigeria's Northeastern states, as

obtained from the data available at the National Universities Commission in February 2022 (National Universities Commission, 2022). A minimum sample size of 266 undergraduate students was obtained using the Anokye (2020) sample size table and was later increased by 40% (106 more participants), as Salkind (2018) suggested. The final sample size was 372. In total, 367 out of the 372 questionnaires were received. After the final data cleaning and screening, 323 valid responses were finally used for the data analysis. The tax awareness items were adapted from Taing and Chang (2020). The tax compliance items were adapted from Pratama and Jin (2019) and Nurlis and Ariani (2020). Finally, the items for technology optimism were adapted from Parasuraman and Colby (2015). Table 2 Under Appendix I provides full details of all the adapted measurement items and their sources.

The questionnaire instrument includes 16 self-direct administered items and two demographic information items adapted from prior researchers on a 5-point Likert scale, ranging from 1=strongly disagree to 5=strongly agree. The instruments were directly distributed to the respondents using Snowballing technique. The researchers chose the snowball technique for this study to ensure that only those with e-commerce experience or who had at one point in time ever made an online product purchase from any e-commerce trading platform. In addition, the researchers consider mixing the measurement items to avoid respondents' illogical responses. Moreover, three negatively stated items were later recorded and reversed to positive statements and values before the final data analysis. It is because experts recommend that researchers include measurement items to check for the preciseness of

words, double-barreled statements, positive and negative statements, and socially acceptable responses, among others (Elangovan and Sundaravel, 2021). Lastly, for the data analysis, an SPSS version 25 and a SmartPLS 4, version 4.0.8.5 were used. The SPSS version 25 was used by the researchers in handling issues of data cleaning and missing data replacement using Series Mean (SMEAN) to obtain the final and valid analysis result as recommended by Collier (2020). SmartPLS 4 was later used by the researchers to assess the research conceptual model and the proposed hypotheses using the Partial Least Squares Structural Equation Modeling (PLS-SEM).

4. RESULTS

Table 1 presents the demographic information of the study's respondents. The numbers of male respondents are 57% much higher than female respondents, who are 43% of the overall valid respondents. Regarding age categorization, 162 (50%) fall within the age bracket of 15-25 years. The second age categories 133 (41%) are for the age limit of 26-35 years. The third categories are 22 (7%) within the age limit of 36-45, while the final age categories are 6 (2%) with an age limit above 45 years. The result clearly shows that the vast majority of the respondents accounting for 50% of the whole respondents, who are undergraduate students, have an age limit ranging between 15-25 years.

Table 1. Demographic Information of the Respondents

Demographic Variables	Categories	Frequency (N)	Percentage (%)
Gender	Male	185	57
	Female	138	43
Age	15 -25 years	162	50
	26–35 years	133	41
	36-45 years	22	7
	Above 45 years	6	2
Total		323	100

4.1 Measurement model Evaluation

The assessment of the PLS-SEM measurement model depicted favorable outcomes. First, all indicators as contained in Table 2 meet the satisfactory requirements of factor loading and reliability, as their outer loadings are above 0.70 (Hair, Black, Babin and Anderson, 2019; Hair, Hult, Ringle and Sarstedt, 2022; Ramayah, Cheah, Chuah, Ting and Memon, 2018). Similarly, all constructs meet the minimum standard for construct reliability, having Cronbach's alpha and composite reliability index values above 0.7 along with a convergent validity, having average variance extracted (AVE) values greater

than 0.5 as contained in Table 2. Thus, all the AVEs exceeded the minimum accepted level of 0.5 as recommended by experts (See Chin, Marcolin and Newsted, 2003; Chin and Marcoulides, 1998). Finally, Table 3 shows that discriminant validities are established based on the HTMT, Fornell-Larcker and Cross loadings criteria (Hair et al., 2022; Sarstedt, Ringle and Hair, 2021).

Table 2. Factor Loadings, construct reliability and convergent validity

Construct /indicators	Outer Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Tax Compliance Intention		0.871	0.907	0.661
TCI1	*0.839*			
TCI2	*0.876*			
TCI3	*0.789*			
TCI4	*0.819*			
TCI6	*0.734*			
Technology Optimism		0.866	0.908	0.713
TEO2	*0.825*			
TEO3	*0.868*			
TEO4	*0.836*			

TEO5	*0.848*			
Tax Awareness		0.722	0.842	0.641
TXA1	*0.760*			
TXA3	*0.820*			
TXA5	*0.820*			

Note: ATT: Attitude; BHC: Behavioral Control; SJN: Subjective Norms; TCI: Tax Compliance Intention; TEO: Technology Optimism; TXA: Tax Awareness.

Table 3. Measurement model evaluation: Discriminant validity

Discriminant validity: HTMT	TXA	TCI	TEO
Tax Awareness			
Tax Compliance Intention	0.846		
Technology Optimism	0.602	0.515	
Discriminant validity: Fornell Larker Criterion	**TXA**	**TCI**	**TEO**
Tax Awareness	***0.801***		
Tax Compliance Intention	0.683	***0.813***	
Technology Optimism	0.48	0.455	***0.844***
Discriminant validity: Cross Loadings	**TCI**	**TEO**	**TXA**
TCI1	***0.839***	0.362	0.603

TCI2	***0.876***	0.379	0.611
TCI3	***0.789***	0.299	0.494
TCI4	***0.819***	0.394	0.543
TCI6	***0.734***	0.411	0.511
TEO2	0.313	***0.825***	0.369
TEO3	0.446	***0.868***	0.437
TEO4	0.401	***0.836***	0.418
TEO5	0.351	***0.848***	0.385
TXA1	0.465	0.391	***0.760***
TXA3	0.528	0.377	***0.820***
TXA5	0.626	0.387	***0.820***

Note: TCI: Tax Compliance Intention; TEO: Technology Optimism; TXA: Tax Awareness.

4.2 Structural model Evaluation

Following the guides proposed by experts (Aguirre-Urreta & Rönkkö, 2018; Henseler, Ringle and Sarstedt, 2015), the researchers used 10,000 subsamples bootstrapping technique to assess the proposed path relationships hypothesized in the research conceptual model using the standard errors, t-statistics, p-values at 95% bias-corrected confidence intervals (BCCI) for assessing the presence of statistical significance or not. The coefficient of determination (R2) measures the proportion of the variance in the dependent variable explained

by the independent variables in-samples. The results in Table 4 and Figure 2 indicate that the structural Model has a direct path coefficient of determination (R2) value of 0.487. In addition, the results shown in Table 5 and Figure 3 further indicate that all the direct path relationships hypothesized are positive and statistically significant. Particularly, tax awareness (β = 0.603, t = 13.991, p < 0.000) and technology optimism (β = 0.165, t = 4.104, p < 0.000) which are both found to have a positive and significant effect on tax compliance Intention. The results have minimum standard errors of 0.043 and 0.040 at a 95% BCCI of [0.511; 0.680] and [0.087; 0.244] with no absolute '0' or 1 for both tax awareness and technology optimism respectively. Thus, the two hypotheses are both supported.

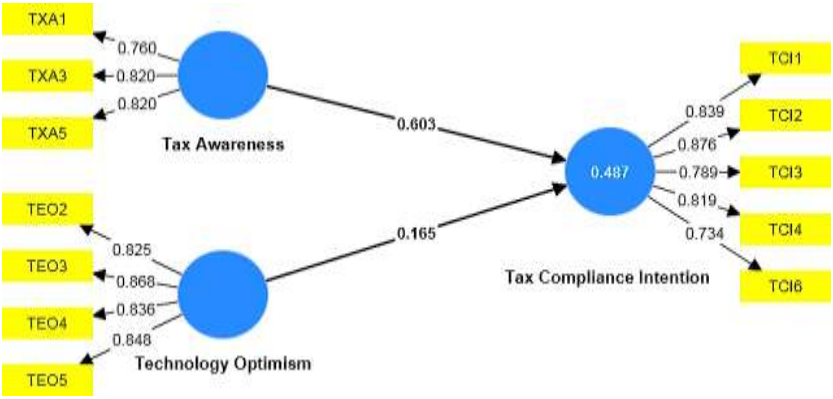

Figure 2. Indirect Path Coefficient and Bootstrapping

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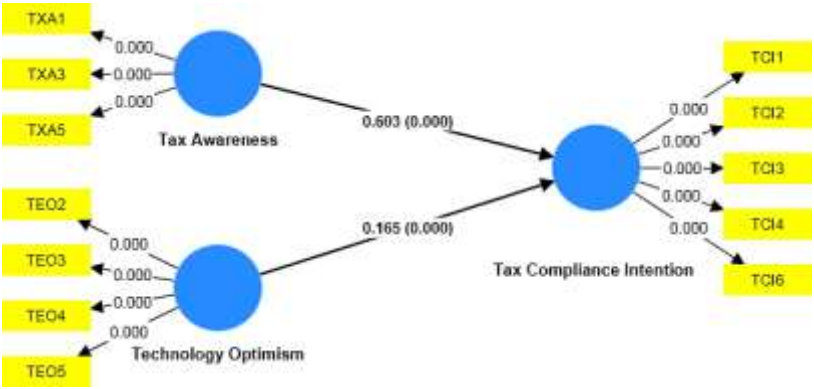

Figure 2. Direct Path Coefficient and Bootstrapping

4.3 The Effect size Predictive Evaluation

The model's effect size (f^2) was also assessed for the study's predictive constructs. According to Hair et al. (2022); Ramayah et al. (2018), the effect size is the value for every predictor established by distinguishing between the selected predictors added and the explanatory power of the structural model. In that regard, Table 6 revealed that the predictive f^2 value for tax awareness was 0.546 while technology optimism was 0.041. Cohen (1988) postulated that the effect size of a predictive variable of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively. Any small effect size has a meaningful effect (Cohen, 1988; Ramayah et al., 2018). That is to say, tax awareness has a large predictive effect size while technology optimism has a small and meaningful effect size. Thus, the two predictive constructs have relative and meaningful effect sizes.

4.4 The Model's Predictive Power Evaluation

The result of the study further indicates the conceptual research model's predictive relevance also known as Q^2predict. According to Hair et al. (2019), Q^2predict assesses whether a model precisely predicts the data not used in assessing the model's parameters. It is a procedure for determining the out-of-sample prediction by estimating a model's accuracy on a training sample and evaluating its overall predictive performance on a holdout sample from 10 different folds (Shmueli et al., 2019). Any predictive value finally obtained above zero (0) is a great sign of a model's predictive power or relevance (Shmueli, Ray, Velasquez Estrada and Chatla, 2016; Shmueli et al., 2019). Interestingly, the result from Table 7 shows that the proposed conceptual model used in the study has an overall Q2predict power of 0.477 at a PLS-SEM-based predictions (PLS-SEM) value of 0.729 and a Linear regression Model (LM) value of 0.546. The PLS-SEM is higher than the LM at a Root-Mean-Square Error (RMSE) difference of 0.183. Thus, the predictive model meets the Q^2predict criterion and so far, established.

Table 4. Coefficient of Determination

Coefficient of determination	Direct Path Coefficient
R-square	0.487
R-square adjusted	0.484

Table 5. Direct Path coefficient and Bootstrapping

Hypotheses	Path Relationship	β	Standard Errors	T statistics	P values	95% BCCI	Support
H_{a1}	TXA -> TCI	0.603	0.043	13.991	0.000	[0.511; 0.680]	Yes
H_{a2}	TEO -> TCI	0.165	0.040	4.104	0.000	[0.087; 0.244]	Yes

Note: β: Path coefficient; BCCI: Bootstrapping at 95% bias-corrected confidence intervals based on 10,000 subsamples.

TCI: Tax Compliance Intention; TEO: Technology Optimism; TXA: Tax Awareness.

Table 6. The Effect size (f^2) Predictive Evaluation

Predictors	f^2	***Remark***
Tax awareness	0.546	Large Effect
Technology optimism	0.041	Small Effect

Table 7. The Model's Predictive Power/Relevance ($Q^2_{predict}$) and Level

Predictors	Overall $Q^2_{predict}$	PLS-SEM RMSE	LM RMSE	Difference	Remark
Tax awareness and Technology optimism	0.477	0.729	0.546	0.183	Presence of Predictive power

Notes: $Q^2_{predict}$: The model's predictive power/relevance; RMSE: Root mean squared error. PLS-SEM: PLS-SEM-based predictions;

L.M.: Linear regression model.

5. DISCUSSION

5.1 Tax Awareness and Tax Compliance Intention

The study first shows the empirical positive and significant effect of tax awareness on tax compliance intention. The finding affirms what previous studies have examined in similar direct path relationships. For instance, a study in Afghanistan by Ay et al. (2021) revealed that tax awareness significantly and positively influences tax compliance intention. Adam et al.'s (2021) study from Indonesia found that tax awareness significantly and positively affected tax compliance intention. A similar result was obtained by Lixuan et al. (2020) where they found that taxpayers with a high degree of religiosity, national identity and strong commitment to social responsibilities had

more tax compliance intention in the United States. Thus, worldwide tax awareness is notably recognized and perceived to increase individuals' willingness to comply with legal tax provisions. On the contrary, AlAdham, Abukhadijeh and Qasem (2016) found a positive but insignificant tax awareness. Most of these findings are primarily inclined toward companies and related e-commerce enterprises. Thus, worldwide tax awareness is notably recognized and perceived to increase individuals' willingness to comply with legal tax provisions. The current finding adds more knowledge by using e-commerce tax awareness to better the understanding of e-commerce users among university students toward their tax compliance intention. It is as opposed to what is previously known in literature.

5.2 Technology Optimism and Tax Compliance Intention

Although there are limited empirical studies examining the direct relationship of technology optimism with tax compliance intention, this study contributes to the body of knowledge by providing statistical evidence to the existing literature in that regard. However, the current study found technology optimism's positive and significant influence on tax compliance intention. The finding was directly sustained by the Technology Readiness Index (TRI) which is a model that measures an individual's generally positive beliefs about new technology (Mohamed and Raghavan, 2021; Parasuraman, 2000a, 2000b; Syamfithriani et al., 2021; Vik, Melås, Stræte and Søraa, 2021). The TRI model posits the overall readiness of users to adopt new technology by considering the user's personality, traits, and beliefs and indicates its ability to increase behavioral intentions (Acheampong et al., 2017).

Moreover, prior empirical evidence indicates that technology optimism often increases e-commerce platform intention to shop online or increase their online compliance intentions. For example, a study in China by Chang and Chen (2021) indicates that technological optimism significantly and positively increases more intention to shop online using the intelligent shop. In a similar study conducted by Cruz-Cárdenas et al. (2021) in Ecuador, they also found technology optimism has a significant and positive relationship to consumers' intention to use technology-based services. In connection with taxation, Ming Ling and Muhammad (2006) from Malaysia found that technology optimism positively and significantly contributes to tax compliance among tax personnel, thereby increasing the workers' technology readiness. So, technology optimism is essential in promoting and increasing the level of e-commerce users' compliance intention and readiness. The finding highlights that technology optimism is vital to e-commerce users in increasing their level of tax compliance intention. Thus, the finding indicates that the more university students adopt e-commerce technology, the more optimistic they are about increasing their level of tax compliance intention.

6. CONCLUSION

The study examines the effect of university students' e-commerce tax awareness and technology optimism on tax compliance intention. However, from the study's outcomes, the researchers concluded that e-commerce tax awareness, and technology optimism positively and significantly correlated with tax compliance intention among e-commerce users in universities. The findings from the current study go a long way as it provides empirical evidence toward comprehending some

predictors that strongly influence tax compliance intention among university students. However, the study is limited to one dimension of technology readiness (i.e., technology optimism), leaving behind the remaining three dimensions of the technology readiness index model: innovativeness, insecurity, and discomfort. Secondly, the study is also limited to the target population of the study. These are the undergraduate students at some state universities, leaving behind the part-time and post-graduate students, and the teaching and non-teaching staff of state, private and federal universities. Future studies can use these empirical gaps for the future studies.

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Appendix

Table 8: The summary of adapted measurement items of the study

Tax	Awareness Measurement Items	Reliability	Sources
1	I am aware of some of the existing e-commerce taxes in my country.	0.8161	Taing and Chang (2020)
2	I know that different e-commerce transactions will require the payment of different taxes.		
3	I know that it is good to pay e-commerce tax to the government.		
4	I have a good e-commerce tax awareness perception		
5	I know that paying e-commerce taxes contributes to the economy of my country.		

Tax	Compliance Intention Measurement Items	Reliability	Sources
1	I intend to use e-commerce platforms even if they deduct taxes from my transactions.	0.7520	Pratama and Jin (2019)

2	I will agree for VAT tax to be included in my e-commerce payments.		
3	Knowing more about e-commerce taxes will increase my tax compliance.	0.7000	Nurlis and Ariani (2020)
4	Lack of information about e-commerce taxes will decrease users' tax compliance.		
5	More e-commerce tax compliance intention is good for my country.		
6	I will disseminate e-commerce tax compliance provisions to my colleagues if I know more about it.		
Technology Optimism	**Measurement Items**	**Reliability**	**Sources**
1	Using e-commerce technology contributes to a better quality of my life.	0.8100	Parasuraman and Colby (2015)
2	E-commerce technology gives me more control over business lives.		
3	I do like the impression of doing e-commerce business.		

4	E-commerce products and services that use modern technologies are more convenient for me.	
5	Using e-commerce helps me build stronger business relationships.	