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Assessing Behavioral Intention to Adopt Online Tax Return in Bangladesh

¹Mustafa Manir Chowdhury, ¹Kulsuma Aktar, ¹Mohammad Toufiqur Rahman, ¹Md. Rizwan Hassan, ²Md. Shahidul Islam and ³Abdul Baes Muhammad Yasir Arafat

¹Department of Business Administration, International Islamic University Chittagong, Bangladesh
²Service Engineering Division, Bangladesh Forest Research Institute, Bangladesh
³Department of Computer Science and Engineering, International Islamic University Chittagong, Bangladesh

Abstract: Tax e-filing, which allows individuals to submit their taxes electronically to the government, is a key e-government service increasingly adopted in developed countries. Bangladesh, a developing nation, has recently introduced online tax filing. This study aims to explore the factors influencing the adoption of online tax returns, focusing on awareness, accessibility, benefits, costs, and their impact on the future of electronic tax filing. Data was collected from January to March 2024 using four distinct questionnaires with a five-point Likert scale, targeting 250 respondents in Chattogram, a major commercial city in Bangladesh, through a purposive sampling technique. The collected data underwent factor analysis, which grouped responses into seven distinct categories. To ensure reliability, Cronbach's Alpha values were calculated using IBM SPSS Statistics 26. A Structural Equation Model (SEM) was then developed in IBM SPSS AMOS 22 to evaluate the ongoing intention to use online tax filing and the factors influencing it. The model was validated through assessments of convergent, discriminant, and model validity. The findings reveal that while the cost of online tax filing negatively affects its adoption, awareness and perceived benefits have a positive impact. However, ease of accessibility and social influences were not significant in encouraging adoption. Additionally, the study found no notable differences in adoption based on gender or professional category. Income level, however, plays a role, with higher-income groups more likely to use online tax filing compared to lower-income groups. Moreover, the use of online tax filing has significantly supported the intention to continue utilizing the service. This study provides valuable insights for policymakers to better understand user behavior and develop strategies to enhance tax collection through online systems.

Keywords: Online, Tax, Return, Adopt, Intention

Introduction

E-government initiatives have been introduced globally to improve public service delivery (Rose and Grant, 2010). E-government refers to the use of Information and Communications Technology (ICT) to enhance the efficiency, effectiveness, transparency, and accountability of informational and transactional exchanges within government entities and between governments, citizens, and businesses, while also empowering citizens through access to information (Alawadhi and Morris, 2008). By providing better access to information, e-government aims to enable citizens and modernize public service delivery.

Many national governments are implementing public service reform and e-government projects, sometimes simultaneously, though often with minimal coordination between the two (Torres *et al*., 2005). In some cases, e-government serves as a tool to achieve public sector reform objectives (Chatfield, 2008). However, electronic filing systems have become a long-term priority for governments in nations like the U.S. and Canada, aimed at streamlining processes and reducing costs. For instance, tax authorities use two-dimensional barcodes to automate data entry, eliminating the need for manual input (Hwang, 2000).

The advent of internet-based filing has transformed the income tax submission process, prompting further

research into e-government systems (Wang, 2003). Over recent years, the focus has shifted toward self-service technologies, including online services such as internet applications (Hwang, 2000), online banking (Curran *et al*., 2003), and e-government platforms (Gilbert *et al*., 2004). This shift reflects the growing adoption of technological innovations and individual behaviors toward these advancements.

E-taxation is a key indicator of e-government adoption in many nations (Bhuasiri *et al*., 2016). The implementation and functionality of online taxation rely heavily on Information Systems (IS), including the Internet and related networks. By adopting e-tax systems, taxpayers embrace technological innovations and modern methods of tax filing (Chen *et al*., 2002). E-taxation mirrors online transactions, which are voluntary behaviors influenced by users' beliefs and their evaluation of the outcomes (Haryani *et al*., 2015). Such evaluations significantly shape users' intentions to adopt e-tax systems, as behavioral intention is strongly linked to actual behavior (Chen and Huang, 2006).

In Bangladesh, the full implementation of an online tax filing system is still in progress, raising questions about how to optimize the system for user convenience in the near future. A critical challenge is determining whether potential users are willing to adopt this new digital system. Thus, this study seeks to investigate whether taxpayers in Bangladesh intend to use the online tax filing system for their tax submissions.

Literature Review

In the United States, electronic tax payment systems were first introduced in 1986. Today, many countries have adopted computerized taxation, with system names differing based on national practices. In global literature, electronic tax filing is often referred to as electronic declaration, online tax payment (United Nations (UN), 2007), or e-tax lodgment. Hossain and Azam (2019) identified several key factors influencing the adoption of electronic tax systems. These include performance expectations, effort expectations, societal influence, trust, security, enabling conditions, and the country's readiness for implementation. The study also highlights three moderating factors: Age, gender, and ICT experience. Their findings provide valuable insights for designing and implementing electronic tax systems, particularly in developing nations like Bangladesh.

Kotnal (2017) further examined taxpayers' perceptions and satisfaction with online income tax filing systems, as well as the factors that drive the adoption of e-tax services. The study found that with adequate support from tax filing systems and assistance centers, individuals can become more comfortable using online tax filing processes. To

enhance acceptance, Kotnal recommended raising awareness of electronic filing through workplace initiatives, local media campaigns, educational programs, and activities tailored for older adults. Haryani *et al*. (2015) emphasized that for an electronic tax filing system to be successfully implemented in developing nations, it must be user-friendly, flexible, secure, and reliable. Haryani *et al*., (2015) further highlighted that developing countries can significantly benefit by formulating strategies to enhance e-government services, particularly electronic tax filing systems. Kabir *et al*. (2021) noted that Bangladeshi taxpayers' adoption of technology-based tax filing systems represents a rational behavioral intention, helping policymakers identify ways to increase tax revenue.

In Bangladesh, Nisha *et al*. (2016) identified several factors influencing taxpayers' willingness to adopt electronic tax filing systems, including favorable conditions, trust, effort expectancy, performance expectancy, and individual innovativeness. These insights also offer practical implications for improving the design and use of e-government services in similar contexts. Additionally, Chen (2010) highlighted the importance of taxpayers' satisfaction with online income tax filing systems, emphasizing the need for high-quality features and efficient payment processing capabilities to meet users' expectations and enhance adoption.

Chen *et al*. (2015) explored various factors significantly influencing user behavior, including trust in technology, trust in government, the use of e-government portals, and prior experiences with government services. The study found that trust in technology, confidence in the government, and previous interactions with government services all shaped users' trust in e-government platforms, directly affecting their confidence in these websites.

Decman *et al*. (2010) noted that while investments in Information and Communications Technology (ICT) often exceed direct cost savings for taxpayers and tax administrations, especially when linked to broader regulatory reforms aimed at improving government performance, ICT offers crucial non-financial benefits. These benefits include increased taxpayer satisfaction, improved transparency, better controllability, and enhanced data processing capabilities. The study underscores the difficulty of long-term planning in the rapidly evolving ICT landscape but emphasizes that these non-financial benefits can offset costs, solidifying ICT's role as a vital tool for improving government efficiency and effectiveness. Chatfield (2008) examined the transformative potential of e-government in enhancing government performance, particularly in public sector reorganization. Using a multi-method approach, including a case study of Japan's National Tax Agency (NTA) and

its "e-Tax" system, the research demonstrated that the "e-Tax" initiative significantly improved the NTA's performance by reducing tax administration and compliance costs for taxpayers. These advancements were attributed to the effective implementation and high adoption rates of the sophisticated "e-Tax" system.

Objective of the Study

The objective of the study is to determine the effect of awareness of E-tax return, E-tax return facility, benefit of E-tax return, cost of E-tax return, socialization of E-tax return to the adoption of online E-tax return and also the outcome of this adoption to the continued intention of E-tax return. Based on the objective and literature, we can develop the following conceptual model (Fig. 1).

Hypothesis

- Hypothesis 1a
    - Null hypothesis
    - There is no effect of awareness of E-tax return to the adoption of online E-tax return
    - Alternative hypothesis
    - There is an effect of awareness of E-tax returns on the adoption of online E-tax returns

- Hypothesis 1b
    - Null hypothesis
    - There is no effect of the E-tax return facility on the adoption of online E-tax returns
    - Alternative hypothesis
    - There is an effect of an E-tax return facility on the adoption of online E-tax returns

- Hypothesis 1c
    - Null hypothesis
    - There is no effect or benefit of E-tax return to the adoption of online E-tax return
    - Alternative hypothesis
    - There is an effect of the benefit of E-tax return to the adoption of online E-tax return

- Hypothesis 1d
    - Null hypothesis
    - The cost of E-tax returns has no effect on the adoption of online E-tax returns
    - Alternative hypothesis
    - There is an effect of the cost of E-tax returns on the adoption of online E-tax returns

- Hypothesis 1e
    - Null hypothesis
    - There is no effect of the socialization of E-tax returns on the adoption of online E-tax returns
    - Alternative hypothesis
    - There is an effect of the socialization of E-tax returns to the adoption of online E-tax returns

- Hypothesis 2a
    - Null hypothesis
    - There is no effect on the gender of the respondent to the adoption of online E-tax returns
    - Alternative hypothesis
    - There is an effect for the gender of the respondent to the adoption of online E-tax returns

- Hypothesis 2b
    - Null hypothesis
    - There is no effect on the yearly income of respondents to the adoption of online E-tax returns
    - Alternative hypothesis
    - There is an effect on the yearly income of respondents to the adoption of online E-tax returns

- Hypothesis 2c
    - Null hypothesis
    - There is no effect on the profession of the respondent to the adoption of online E-tax returns
    - Alternative hypothesis
    - There is an effect on the profession of respondents to the adoption of online E-tax returns

- Hypothesis 3
    - Null hypothesis
    - There is no effect of the adoption of online E-tax returns on the continued intention of E-tax returns.
    - Alternative hypothesis
    - There is an effect of the adoption of online E-tax returns on the continued intention of E-tax returns
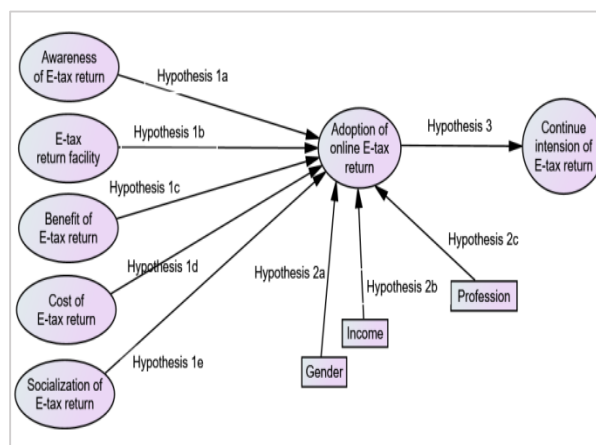

Fig. 1: Conceptual framework

Materials and Methods

In the present study, the factors that influence the adoption of online E-tax returns are awareness of E-tax returns, E-tax return facility, the benefit of E-tax returns, cost of E-tax returns, socialization of E-tax returns and the effect of the adoption of online E-tax return to the continue intension of E-tax return are measured by five-point Likert scale (ranging from 1 = Strongly disagree with the opinion to 5 = Strongly agree with the opinion) in close-ended survey questionnaire from authors experience and literature reviews. Before conducting the survey, the questionnaire was pre-tested with the selected 10 experienced respondents from different groups, and then necessary corrections and modifications were made according to their suggestions. The opinions of 250 respondents were finally selected by purposefully sampling method, via E-mail, WhatsApp, and hand-to-hand from the received opinion data (as some respondents answered all the questions are the same rank and did not answer many questions) after screening and cleaning. The final selected data is coded in MS Excel 2016, IBM SPSS Statistics 26, and IBM SPSS AMOS 22 software for further analysis. Among the selected respondents 176 (70.4%) are male and 74 (29.6%) are female. Also 81(32.4%) respondents are lac less than 10 lac, 64 (25.6%) respondents are 10-20 lac, 51 (20.4%) respondents are 20-30 lac, 42 (16.8%) respondents are 30

lac to 40 lac and 12 (4.2%) of the respondents are more than 40 lac yearly income group. Finally, the respondent's number from businessmen 55 (22%), the technical profession (teacher/doctor/engineer) is 88 (35.2%) and the job holder is 107 (42.8%) profession. The descriptive analysis values of each response variable in the survey response data are calculated. Then Kolmogorov Smirnov test and Shapiro Wilk test are conducted to determine the normality of survey response variable data. Based on the result of the normality test, factor analysis with Cronbach's Alpha value of each factor and Kaiser-Meyer-Olkin measure for sampling adequacy are conducted with all the response variables to classify them into seven-factor as awareness of E-tax return, E-tax return facility, benefit of E-tax return, cost of E-tax return, socialization of E-tax return, adoption of online E-tax return and continue intension of E-tax return.

Results

Descriptive Statistics of Respondents

Table (1) displays the descriptive statistics and normality test results for several factors related to the respondents' awareness of E-tax return, E-tax return facility, benefit of E-tax return, cost of E-tax return, socialization of E-tax return, adoption of online E-tax return and intention to continue using E-tax return.

Table 1: Descriptive statistics and normality test result

Sl. No.	Questionnaire	Variable name	N	Min	Max	Kolmogorov–Smirnov test (Sig)	Shapiro Wilk test (Sig)	Median
1.	Awareness of E-tax return							
1. (a)	Acquainted and involved with online E-tax return	Awareness1	250	1	5	0.238 (0.000)	0.891 (0.000)	4.0
1. (b)	E- A tax return is an online tax return the electronically	Awareness2	250	1	5	0.233 (0.000)	0.888 (0.000)	4.0
1. (c)	E-tax return is an additional approach to returning tax online from anywhere	Awareness3	250	1	5	0.230 (0.000)	0.890 (0.000)	4.0
1. (d)	Acquainted with online E-tax return software and payment method	Awareness4	250	1	5	0.250 (0.000)	0.883 (0.000)	4.0
2.	E-tax return facility							
2. (a)	Internet facility for E-tax return	Facility1	250	1	5	0.225 (0.000)	0.839 (0.000)	4.0
2. (b)	Computer, laptop, mobile, etc. facility	Facility2	250	1	5	0.222 (0.000)	0.843 (0.000)	4.0
2. (c)	Required software package to submit income statement and return	Facility3	250	1	5	0.283 (0.000)	0.795 (0.000)	4.0
2. (d)	Access to the requisite technology to pay return	Facility4	250	1	5	0.206 (0.000)	0.881 (0.000)	3.0
3.	Benefit of E-tax return							
3. (a)	E-tax return is flexible 24/7	Benefit1	250	1	5	0.229 (0.000)	0.896 (0.000)	3.5
3. (b)	No communication or time barrier	Benefit2	250	1	5	0.239 (0.000)	0.895 (0.000)	4.0
3. (c)	Convenient & easy to use	Benefit3	250	1	5	0.221 (0.000)	0.902 (0.000)	3.0

Sl. No.	Questionnaire	Variable name	N	Min	Max	Kolmogorov–Smirnov test (Sig)	Shapiro Wilk test (Sig)	Median
3. (d)	E-tax return is possible to submit return without moving to the tax office	Benefit4	250	1	5	0.199 (0.000)	0.896 (0.000)	3.0
4.	Cost of E-tax return							
4. (a)	The cost of the E-tax return method is higher than the physical submission method	Cost1	250	1	5	0.179 (0.000)	0.915 (0.000)	3.0
4. (b)	E-tax return method is more costly for time-consuming and traveling	Cost2	250	1	5	0.275 (0.000)	0.853 (0.000)	4.0
4. (c)	E-tax return method is more costly for fund transfer than bank payment	Cost3	250	1	5	0.211 (0.000)	0.883 (0.000)	3.0
4. (d)	Resource of E-tax return method is more costly	Cost4	250	1	5	0.226 (0.000)	0.847 (0.000)	4.0
5.	Socialization of E-tax return							
5. (a)	Anxiety regarding social acceptance	Social1	250	1	5	0.233 (0.000)	0.897 (0.000)	4.0
5. (b)	Anxiety regarding family acceptance	Social2	250	1	5	0.247 (0.000)	0.892 (0.000)	4.0
5. (c)	Anxiety regarding quality and sustainability of E-tax return	Social3	250	1	5	0.214 (0.000)	0.889 (0.000)	4.0
5. (d)	Anxiety regarding security and trust of E-tax return	Social4	250	1	5	0.210 (0.000)	0.902 (0.000)	4.0
6.	Adoption of online E-tax return							
6. (a)	Resources are available for online E-tax return	Adoption1	250	1	5	0.278 (0.000)	0.866 (0.000)	3.0
6. (b)	Online E-tax return material is sufficient	Adoption2	250	1	5	0.285 (0.000)	0.869 (0.000)	3.0
6. (c)	Feel comfortable to return tax by online system	Adoption3	250	1	5	0.286 (0.000)	0.863 (0.000)	3.0
6. (d)	Easier to return tax by online system	Adoption4	250	1	5	0.302 (0.000)	0.851 (0.000)	3.0
7.	Continue intention of E-tax return.							
7. (a)	Online E-tax return is more effective	Intension1	250	1	5	0.275 (0.000)	0.802 (0.000)	4.0
7. (b)	Interested in online E-tax return	Intension2	250	1	5	0.247 (0.000)	0.816 (0.000)	4.0
7. (c)	Preferred to return tax by online system	Intension3	250	1	5	0.235 (0.000)	0.832 (0.000)	4.0
7. (d)	Believe that online E-tax returns will be acceptable and will be popular	Intension4	250	1	5	0.248 (0.000)	0.836 (0.000)	4.0

Each item's answer variable on the five-point Likert scale can take on a value between one and five. Every item concerning E-tax return knowledge has a Kolmogorov-Smirnov test statistic value between 0.230 and 0.350 and a Shapiro-Wilk test statistic value between 0.883 and 0.891.

The values for the E-tax return facility range from 0.206-0.283 and 0.795-0.881. Similarly, the values for the benefit of E-tax return range from 0.199-0.239 and 0.895-0.902, while the values for the cost of E-tax return range from 0.179-0.275 and 0.847-0.915. The values for the socialization of E-tax return range from 0.210-0.247 and 0.889-0.902 and the values for the adoption of online E-tax return range from 0.278-0.302 and 0.851-0.869. Finally, the values for the continued intention of E-tax return range from 0.235-0.275 and 0.802-0.836. All of these values were obtained at a significance level of 0.000. Therefore, since the survey answer values do not follow a normal distribution, the median values are used for comparing mean ranks in the non-parametric test. The median values for awareness of E-tax return, E-tax return facility, benefit of E-tax return, cost of E-tax return, socialization of E-tax return, adoption of online E-tax return, and continue intention of E-tax return are 4.0, 3.0 to 4.0, 3.0-4.0, 3.0-4.0, 4.0, 3.0 and 4.0 respectively.

Factor Analysis

Sampling using the Kaiser-Meyer-Olkin factor analysis yielded an adequacy score of 0.789 (p = 0.000). One way to organize survey results into manageable chunks is with the use of factor analysis (Table 2).

Factor loadings ranging from 0.941-0.970 for "socialization of E-tax return," 0.890-0.927 for "awareness of E-tax return," 0.888-0.913 for "adoption of online E-tax return," 0.826-0.910 for "continue intention of E-tax return," 0.751-0.947 for "E-tax return facility," 0.748-0.970 for "benefit of E-tax return," and 0.665-0.828 for "cost of E-tax return," according to the factor analysis table. With factor loadings higher than 0.400, we can see that each component's readings are quite reliable.

With Cronbach's Alpha values greater than 0.7, the following factors vary with E-tax return socialization: Awareness of E-tax return, adoption of online E-tax return, continued intention of E-tax return, E-tax return facility, benefit of E-tax return, cost of E-tax return and 0.980 for each variable. This finding provides strong evidence that the survey's response criteria are trustworthy, accurate, and uniform.

First, the factor variables are defined by (1) E-tax return awareness, which is defined as (a) Familiarity with and involvement with online E-tax returns (Awareness1), (2) E-tax return is the electronic filing of taxes (Awareness2), (3) E-tax return is an additional method of filing taxes online from anywhere (Awareness3) and (4) E-tax return software and payment method (Awareness4). (2) The following are the components of an electronic tax return facility: (a) Access to the internet for filing the return (Facility1), (b) A computer, laptop, mobile, etc., available (Facility2), (c) The software package needed to file the return and income statement (Facility3) and (d) The ability to pay the return using the necessary technology (Facility4). (3) The advantages of filing your taxes electronically are as follows: (a) You may access your returns at any time, day or night (Benefit1), (b) There is no need to worry about communication or time constraints (Benefit2), (c) It is quick and convenient to use (Benefit3) and (d) You can avoid visits to the tax office altogether (Benefit4). (4) Cost of E-tax return is identified as (a) the Cost of the E-tax return method is higher than the physical submission method (Cost1), (b) the E-tax return method is more costly for time-consuming and traveling (Cost2), (c) E-tax return method is more costly for fund transfer than bank payment (Cost3) and (d) Resource of E-tax return method is more costly (Cost4). (5) Socialization of E-tax return is identified as (a) Anxiety regarding social acceptance (Social1), (b) Anxiety regarding family acceptance (Social2), (c) Anxiety regarding quality and sustainability of E-tax return (Social3), and (d) Anxiety regarding security and trust of E-tax return (Social4). (6) Adoption of online E-tax return is identified as (a) Resources are available for online E-tax return (Adoption1), (b) Online E-tax return material is sufficient (Adoption2), (c) Feel comfortable to return tax by online system (Adoption3) and (d) Feel comfortable to return tax by online system (Adoption4). Finally, continued intention of E-tax return is identified as (a) Online E-tax return is more effective, (b) Interested in online E-tax return, (c) Preferred to return tax by online system and (d) Believe that online E-tax return will be acceptable and will be popular.

Based on the above factor analysis result, a structural equation model of the continued intention of E-tax return from the adoption of online E-tax return and its factors (awareness of E-tax return, E-tax return facility, benefit of E-tax return, cost of E-tax return and socialization of E-tax return) is developed (Fig. 2).

Table 2: The results of factor analysis, Cronbach's Alpha, and the Convergent validity test are presented.

Rotated Component Matrix								Cronbach's Alpha	Convergent Validity (AVE)	Square Root of AVE
Component										
	1	2	3	4	5	6	7			
Social2	0.970							0.980	0.930	0.964
Social1	0.964									
Social3	0.944									
Social4	0.941									
Awareness4		0.927						0.975	0.886	0.914
Awareness3		0.926								
Awareness2		0.914								
Awareness1		0.890								
Adoption4			0.913					0.950	0.791	0.889
Adoption3			0.911							
Adoption2			0.908							
Adoption1			0.888							
Intension2				0.910				0.958	0.834	0.913
Intension4				0.892						
Intension1				0.880						
Intension3				0.826						
Facility3					0.947			0.947	0.829	0.910

217

Facility1	0.939			
Facility2	0.933			
Facility4	0.751			
Benefit2		0.970	0.941	0.813	0.902
Benefit1		0.962			
Benefit3		0.950			
Benefit4		0.748			
Cost2		0.828	0.867	0.623	0.789
Cost3		0.813			
Cost1		0.805			
Cost4		0.665			
Extraction method: Principal component analysis				
Rotation method: Varimax with Kaiser normalization				
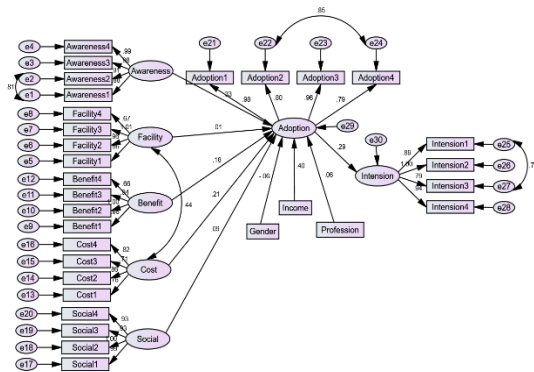
Fig. 2: Model for structural equations

Based on the structural equation model mentioned earlier, the standardized regression weights for various aspects of E-tax return range from 0.88-0.99 for awareness, 0.67-1.00 for E-tax return facility, 0.66-1.00 for benefit, 0.71-0.86 for cost, 0.93-0.99 for socialization, 0.79-0.98 for adoption of online E-tax return and 0.79-1.00 for continue intention of E-tax return, all of which are roughly between -1 and 1. The factor loadings in this scenario are all quite high and have a statistical significance ($p<0.05$). The model also includes substantial correlation values between facility and cost (0.53), e1 and e2 (0.17), e22 and e24 (0.21), and e25 and e27 (0.21).

The model index values observed in the chosen model are as follows: The Comparative Fit Index (CFI) is 0.912, the Incremental Fit Index (IFI) is 0.912 and the Tucker-Lewis Index (TLI) is 0.903. All three of these values are more than 0.9. In this case, the chosen model is well-fitting since the model index values meet all of the survey's standard requirements. Next, we compute the Maximum Shared Variance (MSV) (Table 3) and the Average Variance Expected (AVE) (Table 2) to validate the chosen model and assess its convergent and discriminant validity, respectively.

From Table (2), we can deduce that the following variables contribute to the Average Variance Expected

(AVE) for testing convergent validity: Awareness of E-tax return (0.886), E-tax return facility (0.829), benefit of E-tax return (0.813), cost of E-tax return (0.623), socialization of E-tax return (0.930), adoption of online E-tax return (0.791) and continue intention of E-tax return (0.834). In this case, the model has attained convergent validity as all of the AVE values are higher than 0.5.

According to Table (3), the MSV of E-tax return awareness and online E-tax return adoption is 0.286, which is lower than the square root of AVE for E-tax return awareness (0.914) and the square root of AVE for online E-tax return adoption (0.889), thus indicating discriminant validity. Once again, according to Table (3), the Maximum Shared Variance (MSV) of the E-tax return facility and adoption of online E-tax return is -0.038. This is lower than the square root of AVE for the E-tax return facility (0.910) and adoption of online E-tax return in general (0.889). Furthermore, according to Table (3), the maximum shared variance (MSV) of the E-tax return advantage and the adoption of online E-tax return is 0.231. This value is lower than the square root of the Average Value Expected (AVE) for the E-tax return benefit (0.902) and the AVE for the adoption of online E-tax return (0.889). According to Table (3), the Maximum Shared Variance (MSV) of the two variables, E-tax return cost and adoption of online E-tax return, is -0.143. This value is lower than the square root of the average value (0.789) for E-tax return cost and 0.889 for adoption of online E-tax return. Once again, according to Table (3), the Maximum Shared Variance (MSV) of E-tax return socialization and online E-tax return adoption is 0.151, which is lower than the square root of AVE for E-tax return socialization (0.964) and online E-tax return adoption (0.889). More importantly, according to Table (3), the Maximum Shared Variance (MSV) of both the intention to continue filing electronically and the adoption of filing electronically is 0.288. This value is lower than the square root of the Average Valuation Error (AVE) for filing electronically (0.889) and for continuing to file electronically (0.913). It follows that the discriminant validity has been attained by the chosen model.

Table 3: The outcome of the path coefficient and discriminant validity

Correlation			Estimate MSV	Path Co-efficient			Estimate	P
Adoption	<--->	Awareness	0.286	Adoption	<---	Awareness	0.364	***
Adoption	<--->	Facility	-0.038	Adoption	<---	Facility	0.004	0.928
Adoption	<--->	Benefit	0.231	Adoption	<---	Benefit	0.149	***
Adoption	<--->	Cost	-0.143	Adoption	<---	Cost	-0.233	***
Adoption	<--->	Social	0.151	Adoption	<---	Social	0.076	0.092
Intension	<--->	Adoption	0.288	Intension	<---	Adoption	0.292	***
				Adoption	<---	Gender	-0.123	0.255
				Adoption	<---	Income	0.311	***
				Adoption	<---	Profession	-0.079	0.217

Table 4: Comparison of the use of electronic tax returns by income bracket

Yearly income of the respondent		Adoption1	Adoption2	Adoption3	Adoption4
Less than 10 lac	10 lac to 20 lac	2.30 (1.000)	1.40 (1.000)	5.70 (0.170)	1.16 (1.000)
	20 lac to 30 lac	25.89 (0.000)	18.34 (0.000)	22.81 (0.000)	18.58 (0.000)
	30 lac to 40 lac	33.39 (0.000)	29.33 (0.000)	25.04 (0.000)	27.50 (0.000)
	More than 40 lac	14.13 (0.000)	15.32 (0.000)	5.74 (0.166)	18.70 (0.000)
10 lac to 20 lac	20 lac to 30 lac	35.92 (0.000)	24.46 (0.000)	41.07 (0.000)	24.05 (0.000)
	30 lac to 40 lac	43.78 (0.000)	35.66 (0.000)	43.54 (0.000)	33.13 (0.000)
	More than 40 lac	22.73 (0.000)	22.07 (0.000)	17.08 (0.000)	24.95 (0.000)
20 lac to 30 lac	30 lac to 40 lac	0.41 (1.000)	0.27 (1.000)	0.89 (1.000)	0.274 (1.000)
	More than 40 lac	0.66 (1.000)	4.00 (0.454)	0.170 (1.000)	4.00 (0.454)
30 lac to 40 lac	More than 40 lac	1.49 (1.000)	5.48 (0.192)	1.072 (1.000)	5.48 (0.192)

The following path coefficients were found: Awareness of E-tax returns (0.364, p = 0.000), E-tax return facility (0.004, p = 0.928), benefit of E-tax returns (0.149, p = 0.000), cost of E-tax returns (-0.233, p = 0.000), socialization of E-tax returns (0.076, p = 0.092) and adoption of online E-tax returns (0.292, p = 0.000) as a means to continue using E-tax returns. Additionally, the gender path coefficient to online E-tax return adoption is -0.123 (p = 0.255), the annual income path coefficient to online E-tax return adoption is 0.311 (p = 0.000) and the respondent's professional path coefficient to online E-tax return adoption is -0.079 (p = 0.217).

A sample on their own Table (4) displays the results of a Median Test that compared the adoption of online E-tax returns for different income groups when comparing pairs of years.

From Table (4), it is observed that there is no significant difference in the adoption of online E-tax returns for a yearly income of "less than 10 lac", "10-20 lac" group, which is termed as group 1. Also, there is no significant difference in the adoption of online E-tax returns for yearly income "20-30 lac", "30-40 lac" and "More than 40 lac", which is termed as group 2. However, there is a significant difference in the adoption of online E-tax returns for yearly income groups (group 1 and group 2).

Discussion

With a p-value of 0.000, the structural equation model's regression weight (path coefficient) connecting E-tax return knowledge with E-tax return adoption online

is 0.364. Therefore, there is a positive correlation between E-tax return knowledge and the practice of filing E-tax returns online in Bangladesh (p<0.05). Therefore, regarding the relationship between E-tax return knowledge and online E-tax return acceptance, we reject null hypothesis 1 (a). This means that more people knowing about E-tax returns should lead to more people filing their returns online.

With a p-value of 0.928 and a regression weight of 0.004, the structural equation model predicts that more and more people will use the E-tax return facility to file their taxes online. Therefore, there is no statistically significant relationship between the availability of the E-tax return service and the percentage of Bangladeshis who file their returns electronically (p>0.05). In light of this, we cannot rule out the possibility that the E-tax return capability may lead to the widespread use of electronic filing of tax returns. So, the E-tax return capability isn't a big reason why more people are filing their taxes online. The positive impact of E-tax returns on online E-tax return uptake has a regression weight (path coefficient) of 0.149 in the structural equation model (p = 0.000). Consequently, the p-value is less than 0.05, indicating that the E-tax return's benefits significantly contribute to the adoption of online E-tax returns in Bangladesh. Therefore, the E-tax return's benefits to online E-tax return adoption lead us to reject null hypothesis 1 (c). Consequently, the advantages of E-tax returns should greatly encourage their use.

For the cost of E-tax return to the adoption of online E-tax return, the regression weight (path coefficient) in

the structural equation model is -0.233 (p = 0.000). There is a strong negative correlation between the cost of E-tax returns and the adoption of online E-tax returns in Bangladesh (p-value less than 0.05). Therefore, with regard to the cost of E-tax returns and their adoption of online E-tax returns, the null hypothesis 1 (d) is rejected. Therefore, the expense of filing an electronic tax return should act as a disincentive to using this service.

Socialization of E-tax returns to the adoption of online E-tax returns has a regression weight (path coefficient) of 0.076 (p = 0.092) in the structural equation model. Because the p-value is larger than 0.05, it follows that spreading awareness of electronic tax returns has not led to an increase in their use in Bangladesh. Accordingly, the data does not support rejecting the first null hypothesis (e) that links E-tax return socialization to the use of online E-tax returns. Socializing E-tax returns does not, therefore, substantially increase the use of E-tax returns filed electronically.

The path coefficient (regression weight) for respondent gender in relation to the adoption of online E-tax returns is -0.123 (p = 0.255) in the structural equation model. Based on the results, it can be concluded that there is no significant relationship between the gender of the respondent and the adoption of online E-tax returns in Bangladesh (p-value larger than 0.05). In light of this, we cannot rule out the possibility that respondents' gender has a role in their decision to file their taxes electronically (null hypothesis 2 (a)). Therefore, the use of electronic tax returns is not considerably impacted by the gender of the respondent.

The regression weight (path coefficient) for the respondent's annual income to the adoption of online E-tax return is 0.311 (p = 0.000) in the structural equation model. Accordingly, in Bangladesh, the p-value is less than 0.05, indicating that the respondent's annual income significantly contributes to the adoption of online E-tax return practice. Therefore, in regard to the respondent's annual income and the use of online E-tax returns, the null hypothesis 2 (b) is rejected. Consequently, the respondent's annual income should play a substantial role in encouraging the use of electronic tax returns. When comparing the groups with different annual incomes, the results demonstrate that there is no statistically significant difference in the percentage of people filing their taxes electronically. However, the percentage of people filing their taxes electronically varies significantly between these two income brackets each year.

The regression weight (path coefficient) for the respondent's occupation in relation to the use of online E-tax returns is -0.079 (p = 0.217) in the structural equation model. Consequently, there is no statistically significant relationship between the respondent's occupation and the prevalence of filing electronic tax returns in Bangladesh (p>0.05). Because of this, we cannot rule out the possibility that respondents' occupations have a role in their decision to file their taxes electronically (null hypothesis 2 (c)). Accordingly, the respondent's occupation has little bearing on the prevalence of filing electronic tax returns.

With a regression weight of 0.292 (p = 0.000), the intention to continue using E-tax returns online is reflected in the structural equation model. Accordingly, as the p-value is smaller than 0.05, the continued intention of E-tax return practice in Bangladesh is significantly enhanced by the adoption of online E-tax returns. In order to proceed with the E-tax return's intended online adoption, we can hence reject null hypothesis 3. Consequently, the long-term viability of E-tax returns is highly dependent on the widespread use of electronic filing.

Conclusion

The study concludes that awareness of and the benefits associated with e-tax returns significantly and positively influence the adoption of online tax filing. Conversely, the cost of e-tax returns has a significant negative impact on adoption. However, factors such as the availability of e-tax filing facilities and the socialization of e-tax returns do not show a significant effect on adoption. Additionally, demographic factors like gender and professional category exhibit no notable differences in adoption rates. Income level, however, plays a critical role, with higher-income groups showing greater adoption rates compared to lower-income groups. Notably, there is no significant difference in adoption rates among income groups earning "less than 10 lakh," "10-20 lakh," or "20-30 lakh," as well as those earning "30-40 lakh" and "more than 40 lakh." However, significant differences in adoption are observed between these broader income ranges.

The findings also highlight that the adoption of online e-tax returns has a strong positive impact on taxpayers' continued intention to use the system. To enhance adoption rates, the government of Bangladesh should prioritize promoting the efficiency and ease of use of the e-filing system. A targeted advertising campaign emphasizing the benefits of e-filing, especially during peak tax filing months, could be highly effective in boosting adoption. Additionally, the Bangladesh Income Tax Department should consider developing user-friendly web tutorials or instructional videos to guide taxpayers through the e-filing process, making the system more accessible and easier to use.

Author's Contributions

Mustafa Manir Chowdhury: Developed the hypotheses and did the necessary analysis to prove those.

Kulsuma Aktar: Worked with analysis.

Mohammad Toufiqur Rahman: Worked on the literature review, English command, and grammatical correction.

Md. Rizwan Hassan: Contributed to summarizing the findings and recommendations.

Md. Shahidul Islam: Took responsibility for coordinating to keep the paper coherent.

Abdul Baes Muhammad Yasir Arafat: Developed the concept and theoretical framework.

Ethics

All ethical issues are addressed and there is no conflict of interest among the authors.

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