The Determinants for Accepting and Using e-Government Revenue Application (e-filing)

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Abstract:- The determinants for accepting and using the e-Government revenue applications (e-filing) is a phenomenon most governments, including South Africa are still grappling with, and therefore, an ongoing information systems business leadership research is a key issue. The research problem is that despite the e-Government revenue application being implemented and maintained at a high cost, there is little uptake and optimal use. The e-Government revenue application has greater benefits such as tax calculation accuracy, tax submission done timeously during any time of the day, improving tax efficiency by reducing administration cost. Since the value and the investment is huge, the burning question is then why the accepting and usage of e-Government revenue application by taxpayers not as it should? Information from previous studies are quite on this phenomenon, in the South African context and this then left a knowledge gaps, which this paper bridges. This paper focuses on explaining and exploring the determinants for adopting and using e-Government revenue application as reasons why some of taxpayers accept and use the revenue application while others are not using it are still unknown. Argument is that despite South Africa implemented a cutting-edge system since 2006, taxpayers still queue at its branches for manual submissions. There is a need to understand the determinants for acceptance and usage of e-Government revenue application.

Keywords:- E-Government, revenue application, Tax knowledge, Tax Compliance, Technology acceptance and usage models i.e. Unified Theory of Acceptance and Use of Technology *and Tax Compliance Models*

I. INTRODUCTION

This paper explores the determinants for adopting and using the e-Government revenue application for submission of tax returns. Everyone who is earning an income is required by law to submit tax returns annually. Taxpayers may either file their tax returns via online through the e-Government revenue application (e-filing) or they can physically go to a tax branch office to manually file tax returns.

According to Ishola (2016), tax is a compulsory levy collected by the tax authority from individual taxpayers and organisations in line with the tax laws of a country. *Ibid*, 2016, pointed that a fair system taxation is recommended

and it need to be convenient and efficient. Taxes are payable on any type of earnings (*Ibid*, 2016). Biggest fear of users of information system globally is commonly the concern of sharing personal and confidential information when using any technology via online platforms. Laudon and Laudon (2013), mentioned that there is lots of vulnerabilities to many kinds of threats when huge personal data is kept in an electronic form than when in physical manual paper form.

Chances of unauthorised access to data which is stored electronically is evitable because data misuse can take place at any point where the system can be accessed. It is very critical that the tax authority's website for e-Government revenue application must be highly secured as it is used by many taxpayers whose personal data might be at stake. Advice by Crews (2013), is that users of information system must avoid the usage of free public Wi-Fi as it lacks security from data manipulations by third parties when accessing the system.

For example, the introduction of the Covid-19 pandemic globally, have increased the need for the usage of online platforms for services like the e-Government revenue application, offering of educational class sessions for schools, including tertiary institutions, etc. The implementation of e-Government revenue application in South Africa had moved it upwards on the world rankings on tax processing from position 32 to position 11 (Berger, 2011). It takes 200hours for a company in South Africa to process a tax return while the global average is 268 hours (Berger, 2011).

United States of America was the first to use a system of filing returns through electronically in 1986 (Lai and Choong, 2010). Users are motivated to submit their returns electronically on time and accurately when they are treated fairly (Kirchler, Niemirowski and Wearing, 2006).Taxpayers cooperate willingly when they are fairly treated, rules justifiable, decisions clarified, correct information provided when questions are asked and problems resolved (Kirchler, Niemirowski & Wearing, 2006). A reliably integrated system in economically disadvantage countries is still to be implemented even though e-Government revenue application is accepted globally by citizens (Azmi and Kamarulzaman, 2010). Globally, e-services do not satisfy users of those systems because of scepticism, absence of digital skills, no system trust, complicated outcomes due to inadequate guidelines, etc. (Lee, Kim and Ahn, 2011). Taxpayers without

computer skills might have challenges in submitting their returns electronically (Lee, Kim & Ahn, 2011).

Easiness of using technology is crucial to the one who use such applications, thus user-friendly systems (Wirtz and Piehler 2016). Mustapha (2015), mentioned that successful implementation of e-tax depends on easy to use as a vital determinant while Gilbert, Balestrini & Littleboy (2004), identified taxpayers not preferring e-Government revenue application than the traditional filing of returns if the application is enjoyable and ease to use. User acceptance to use an information system for the functionality supported by the design show their willingness (Dillon and Morris, 1996). Tax system that is not simple to use is a barrier for convenience, clarity and collection economies, system updates must be done continuously to be simplified (Marcus, 2007).

➤ *e-Government*
Gupta, Dasgupta & Gupta (2008) defines e-Government as the application of information system. According to United Nations [UN] (2005), e-Government is explained as a usage and application of information system for service delivery to citizens. Leitner, 2003; Beynon & Davies (2005), stated that electronic services are the tools provided by a government to make its democracy, transparency, and accountability better including its performance. Carter & Belanger (2005), mentioned that e-Government promotes simplicity of access for essential government services by its citizens.

Pardo *et al.* (2016), stated the vision of e-Governance being to establish improved public services offered for by governments to attain its objectives efficiently and effectively. According to United Nations (2016b), electronic government provide provides adequate services to people as an important tool encourage citizens to participate in raising issues pertaining to services provided.. Government administrations globally invest large sum of money annually in e-Government projects (World Bank 2016). Accepting and using the e-Government by citizens (G2C) remains low globally across the world (Shalhoub 2006; World Bank 2016).

Main reasons for lower adoption rate of e-Government have were observed to be security, trust, risks involved and individual privacy (Shalhoub 2006; Zafiropoulos, Karavalisis and Vrana 2012). South African government implemented e-Government revenue applications also known as e-filing in 2006 via its tax authority being the South African Revenue Services (SARS), to enable electronic tax form submission for all taxpayers to utilise when doing tax returns (SANews, 2013).

➤ *Accepting and using information system*
Fu, Farn & Chao (2006) describes information system adoption by users being psychological state of mind regarding user's voluntary intention to use ICT. Perceived easy to use is the willingness a person have for believe the use of certain application will not require human effort to

action the task to be done (Davis, 1991). Effortlessness in using a technology to perform a task is a user's subjective perception. Factors for perceived ease of use are: easiness, readable, simple language, comparable information and effortless when moving to the first page (Davis, 1991). Perceived easiness of using information system affect person's perception for learning and usage of technology (Venkatesh, 2000).

➤ *Electronic filing as an e-Government tool for services*
Electronic filing is an application suitable for submission of returns to tax authority via the internet platforms (Barodiva and Bhargava, 2015). Electronic filing of tax return is a tool used by government deliver services to the community via an online platform (Fu, Farn, and Chao, 2006). The e-Government revenue application improves efficiency tax payments and quick refunds processing (Santhanamery and Ramayah, 2015). Accurate calculation of tax is the important benefit of the e-Government revenue application because proof of submission is acknowledged immediately by the tax authority (*Ibid.*, 2015). Tax administrative costs and workload decreases due to e-Government revenue application usage (Azmi & Kamarulzaman, 2010; Santhanamery & Ramayah, 2015). Electronic filing user must have basic computing skills and knowledge of information system for internet browsing.

e-Government revenue application use internet platforms where physical paper return is not required (Wasao, 2014). E-tax automates tax processes for submitting tax return with a aim of advancing efficiency (Fu *et.al.,* 2006; Dowe, 2008; Fenwick and Browstone, 2002).

➤ *Benefits of e-Government revenue application*
Auto-calculation of tax in computing minimises human errors and improves efficiency for processing (Santhanamery and Ramayah (2015). Authorities do not manually capture the tax returns which minimises mistakes during tax return processing (Santhanamery and Ramayah (2015). Tax return processing costs, safekeeping and handling are minimised (Azmi and Kamarulzaman, 2010). Taxpayers submit their returns at any time, which is convenient, and they system give notification immediately confirming transaction done. (Kumar and Anees, 2014).

➤ *Concerns about the e-Government revenue application*
Ideally, fair tax system is necessary and should be simplified, enforceable and support economic prosperity for the community it serves (Slemrod and Bakija, 1996). It is inevitable for taxpayers' personal information to be subjected to security risks as e-filing uses internet platform (Hoffman, Novak and Peralta, 1999). For a taxpayer to file tax return successfully, they need to have basic computing skills as well as the knowledge of information technology to be able to browse the internet (Wirtz and Piehler, 2016).

Taxpayers are afraid of using the revenue application due to threats to their private information, forgery and identity theft (De Castro, Cordero, De Chavez, Gabia, Mortel, Yortas, Manongsong & Pateña, 2015). Taxpayers adopting and using e-Government revenue application are affected by the security threat fear for their personal information and that prevent them from using it (Lu, Hsu and Hsu, 2005). Perceived lack of security lowers the confidence of taxpayers from adopting and using the revenue application (Moorthy, Samsuri, Hussin, Othman & Chelliah, 2014; Santhanamery & Ramayah, 2015).

Factors influencing citizens when using e-Government revenue application are trust and transaction security (Rehman, Esichaikul and Kamal, 2012). Taxpayers' attitudes are influenced by their compliance behaviours as it represents their opportunity for positive or negative action (Ajzen, 1993). Taxpayers' perceived risks influence their intension to use the electronic filing (De Castro, Cordero, De Chavez, Gabia and Mortel, 2015). Information system developers must thoroughly address system design, good online service and privacy assurance to encourage users to continue using e-services (Chen, Jubildo, Capistrano & Yen, 2015).

➢ *e-Government revenue application challenges*

Taxpayers incur tax compliance cost like internet usage or the use of a tax consultant who submits returns on his/her behalf even though tax return submission is free (Lu, Hsu and Hsu, 2005). Citizens need to have basic computing and internet skills to file returns via electronic filing (*Ibid*, 2010). As electronic operate on internet platforms, users incur data cost for accessing the revenue application via the internet and if they don't have data the only option will be to file their tax returns manually (Gilbert *et al.,* 2004). When tax season approaches deadline taxpayers may experience system slow response due to network traffic as many people access the e-Government revenue application at the same time (Azmi and Kamarulzaman, 2010).

Acceptance and usage of the online tax is influenced by computer literacy level and internet infrastructure accessibility (Auyat, 2013). The adoption and usage of an e-tax is influence by taxpayer's confidence with online filing and lack of computer literacy that affect them psychologically (Muhangi, 2012). Taxpayers might be afraid of using the e-Government revenue application on because of lacking computer experience that increases anxiety and stress when using technology (Muhangi, 2012). Taxpayers might have a perception that the system is unreliable if it cannot properly carry large information during busy period and that will decrease their intensions of adopting and using it (Nakiwala, 2010).

One of the challenges with regard to revenue application is that user needs to remember password every time when accessing the system (Azmi and Kamarulzaman, 2010). Introduction of e-Governance is a challenge for many governments globally as difficulties might occurs in the initial stage and during system upgrade of the e-

Government sites (Kroukamp, 2005). Security of personal information collected and stored by government might be compromised if its security is breached on their websites (*Ibid.*, 2005).

Lack of facilities and internet access lower the level of access to the electronic services the poor communities (OECD, 2003). Illiterate taxpayers are likely not to use technology services due to lack of computer skills and general education standard (Kroukamp, 2005). Taxpayers who are physically challenged should find it simpler navigate through e-Government websites, so governments must ensure accessibility of their e-services to all citizens (*Ibid.*, 2005). Government as the service provider must embark on awareness campaign to educate people about the advantages e-Governance to improve citizens' confidence and persuade them to use the system (*Ibid.*, 2005).

Source	Definition
Gupta, Dasgupta and Gupta, 2008	Electronic government is a known technology used for providing services.
United Nations, 2005	E-Government is the application of information system to provide services to the citizens.
Leitner, 2003; Beynon and Davies 2005	E-Government services are tools for improving democracy, transparency, and accountability.
Carter and Belanger, 2005	Electronic services promotes acces and simplify the provision of essential services to people.
Fu, Farn, and Chao, 2006	Technology adoption refers to a person's psychological state for voluntarily deciding to use information system.
Barodiva and Bhargava, 2015	Electronic filing is an application for filing returns va the internet.
Wasao, 2014	Electronic filing is a process f submitting returns electronically with no need to submit physical tax return form.
Fu, Farn and Chao, 2006	Electronic filing is a tool service delivery via an online platform.

Table 1:- Authors' describing e-Government, technology adoption and revenue application

II. SURVEY OF SCHOLARSHIP

Theoretical models that were developed in previous studies for exploring and explaining the determinants for technology acceptance and usage being the Unified Theory of Acceptance and Use of Technology (UTAUT) and Tax Compliance models. Existing literature have no known model developed which outline the determinants to consider for adopting and using e-Government revenue application as well as reasons why some taxpayers adopt and use it in the context of South African conditions. This study develops a model that can be practically applied as a solution to the challenges of accepting and using the e-Government revenue application by integrating these previous theories. An e-Government revenue application (e-filing) is administered by the South African tax authority where individuals and organisations earning an income need to use when submitting their tax returns.

This study focuses on individual taxpayers and gives insights into what really drives them to adopt and use the revenue application as well as factors inhibiting its adoption and usage. This study contributes theoretically, methodologically, practically and contextually by doing exploration through the UTAUT and Tax Compliance theories as lenses for exploring and explaining the determinants influencing the acceptance and usage of the e-Government revenue application. A questionnaire was used to collect data for analysis where opinions and views of satisfactorily sample size of taxpayers using e-Government revenue application as well as those who are not using it were captured. Developed model in this study explores the level to which each determinant significantly predict and explain the acceptance and usage of e-Government revenue application in the context of South Africa. The tax authority may practically use the developed model to ensure that most taxpayers optimally use the e-Government revenue application.

➢ Table 2 below depicts authors explaining factors predicting technology acceptance and usage

Table 2 below depicts elements which were assessed in different settings and found being significant factors influencing technology adoption and usage. This study tested these elements to assess their relevancy to the conditions of South Africa.

Factors predicting technology acceptance and usage	Title/Description	From which Model	Author/s
Perceived ease of use	Perceived usefulness, perceived ease of use and user acceptance of information technology. MIS Quarterly, 13(3), pp. 319-340.	PEOU	Davis, F.D. (1989).
Perceived usefulness	Perceived usefulness, perceived ease of use and user acceptance of information technology. MIS Quarterly, 13(3), pp. 319-340.	PU	Davis, F.D. (1989).
Performance Expectancy	User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly,* 27, 425-478.	UTAUT	Venkatesh, V., Morris, M. G and Davis, G. B (2003).
Effort Expectancy	User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly,* 27, 425-478	UTAUT	Venkatesh, V., Morris, M. G and Davis, G. B (2003).
Social Influence	Information technology acceptance by individual professionals: a model comparison approach. *Decision Sciences,* 32.	A Model Comparison Approach	Chau, Y. K and Hu, J. H (2001).
Performance Impact	Task-technology fit and individual performance *MIS Quarterly;* Jun 1995; 19, 2; ABI/INFORM Global pg. 213-236.	TTF	Goodhue, D.L and Thompson, R. L (1995)
Tax Behaviour	Detection Probability and Taxpayer Compliance: A Review of the Literature. J. Acc. Lit. 11: 1-46.	Tax Compliance Model	Fischer CM, Wartick M, Mark M (1992).
Behavioural Intention	The theory of planned behaviour. Organisational behaviour and human decision processes, 50(1), pp. 179-211.	TPB	Ajzen, I. (1991).
	Belief, Attitude, Intention and Behaviour: AN *Introduction to theory and Research*. Reading, MA: Addison-Wesley.		
		TRA	Fishbein, M and Ajzen, I (1975).
Information quality	The DeLone and McLean model of information systems success: A ten-year update. Journal of Management Information Systems, 19(4), 9–30.	IS Success Model	DeLone, W. H., & McLean, E. R. (2003).
Education	"User acceptance of information technology: toward a unified view", MIS Quarterly, Vol. 27 No. 3, pp. 425-478.	UTAUT	Venkatesh, V., Morris, M., Davis, G. and Davis, F. (2003),

Table 2:- Authors on factors predicting technology acceptance and usage

➢ Table 3 below depicts authors explaining factors that are technology enablers and disablers for acceptance and usage.

Table 3 below depicts constructs which have been discovered to significantly enables and disables technology adoption and usage after being tested in various settings globally. The determinants list for that inhibit or enables the adoption and usage of technology is endless, so frequently assessed elements were chosen.

Technology Enablers and Disablers	Description	From which Model	Author
Facilitating Conditions	"User acceptance of information technology: toward a unified view", MIS Quarterly, Vol. 27 No. 3, pp. 425-478.	UTAUT	Venkatesh, V., Morris, M., Davis, G. and Davis, F. (2003),
Compatibility	Acceptance of electronic tax filing: a study of taxpayer intentions. Information & Management, 43, pp. 109-126.	A Study of Taxpayer Intensions	Fu, J.R., Farn, C.K. and Chao W.P. (2006).
Trust	The role of security and trust in the adoption of online tax filing. Transforming Government: People, Process, Policy, 5(4), pp. 303-318.	Transforming Government, People, Processes and Policy	Carter, L., Schaupp, L.C., Hobbs, J. and Campbell, R. (2011a).
	The U.S. e-file initiative: an investigation of the antecedents to adoption from the individual taxpayers' perspective. E - Service Journal, 7(3), pp. 219.	An investigation of the antecedents to adoption from the individual taxpayers' perspective.	Carter, L., Schaupp, L.C. and McBride, M.E. (2011b).
Computer Self-efficacy	The adoption of electronic tax filing systems: an empirical study. Government Information Quarterly, 20(1), pp. 333-352.	An Empirical Study	Wang, Y.S. (2002).
Tax General Knowledge	The Association of Chartered Certified Accountants, ACCA, London. www.accaglobal.com.	The Management of Tax Knowledge.	Hasseldine, J., Holland, K. and Rijt, P.V. (2009)
	Problems and solutions. *ACCAMADIA* , *Journal of Faculty of Accountancy, Faculty of Accountancy, UiTM Shah Alam* 11(2): 6-35.	Tax illiteracy in Malaysia	Barjoyai, B (1992).
Perceived Risk	A Perceived Risk Facets Perspective. Int. J. Hum. Comput. Stud. 59(1): 451-474.	Predicting e-Services Adoption	Featherman M.S and Pavlou P.A (2003).
	The role of trust, perceived risk, and their antecedents," Decision Support Systems (442), 2008, pp. 544-564.	"A trust-based consumer decision-making model in electronic commerce	Kim, D. J., D. L. Ferrin, and Rao, R (2008).

Table 3:- Authors for technology enablers and disablers

III. THEORITICAL FRAMEWORK

➢ **The Unified Theory of Acceptance and Use of Technology** was created to be a solution to the challenges and contradictions created by the eight theories that where integrating to develop the UTAUT model (Venkatesh, Morris and Davis, 2003). The aim of this theory is to understand behavioural intention of using technology and the subsequent actual usage attitude as the dependent variable. The UTAUT theory consist of these elements: performance expectancy, effort expectancy, social influence, and facilitating conditions.

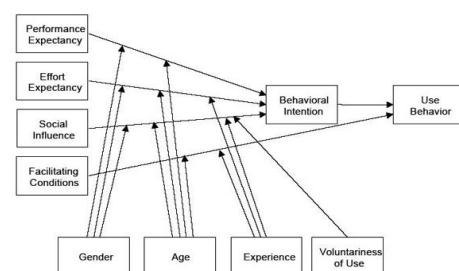● *The Unified Theory of Acceptance and Use of Technology*

Fig 1:- Flow diagram of UTAUT process
Source: Venkatesh, Morris, Davis and Davis, 2003

➢ **The Tax Compliance Model (TCM)** emphasize that variables for demographics influence compliance of taxpayer by their effect on tax evasion attitudes, perceptions and opportunities. The TCM model have the following elements: tax compliance behaviour, demographic (e.g.- age, gender and education), tax evasion options (e.g. level of income, source of income and position), attitudes and perceptions (e.g. tax system fairness and peer influence) and tax system (e.g. complexity of the tax system, detection chances, penalties and tax rates)
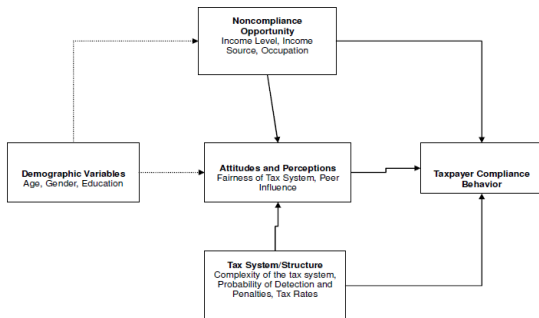
• *Tax Compliance Model (TCM)*

Fig 2:- Flow diagram of the Tax Compliance Model
Source: Fischer, Wartick and Mark, 1992.

Technology adoption and usage theories being UTAUT and Tax Compliance were applied independently in various settings, however, in these studies these models have been integrated to address the research problem. These prior theories were used independently from each other in previous studies. Integration of these theories assisted in developing solutions to address the identified problem and gaps being unique to the conditions in South Africa.

IV. CONCEPTUAL RESEARCH MODEL

The developed conceptual model for acceptance and usage of the revenue application in this study gives a solid foundation for analysis work done to which is based on tested hypothesis suitable for exploration. The conceptual model was constructed with the combination of elements from UTAUT and Tax Compliance models. Conceptual structure statements offer basic theory of what the study is about together with reasons why this phenomenon take place (Bickman and Rog, 2008). Conceptual model is a graphic business model giving details about the key factors, ideas or variables that needs exploration regarding the relationships between them (Miles *et al.,* 1994)**.**

Explored hypotheses regarding the conceptual research model has elements sourced out of UTAUT and Tax Compliance models. Theory can't be proven by multiple outcomes because if one instance refuting that findings it means then that the theory demonstrate it as false (Popper, 1968). Theory is established by comparing observable data and hypotheses with more than two constructs explain the relationships (Popper, 1968) The UTAUT and TCM theories cannot be used in isolation to

address the challenges of technology adoption and usage in South Africa context as they might be irrelevant, hence they were integrated in this study.

➢ *Hypotheses*

Behavioural intention (BI) for accepting revenue application is the dependent variable.
Hypotheses per each element:
H1: *Effort Expectancy affecting behavioural intention to use the revenue application.*
H2: *Social Influence affecting behavioural intention to use the revenue application.*
H3: *Facilitating conditions affecting intention to use the revenue application.*
H4: *Behavioural Intention affecting the revenue application usage.*
H5: *Tax Compliance behaviour affecting behavioural intention to use the revenue application.*
H6: *Tax Compliance behaviour affecting revenue application acceptance and usage.*

➢ *The Conceptual Research Model for Acceptance and Usage of e-Government Revenue Application*
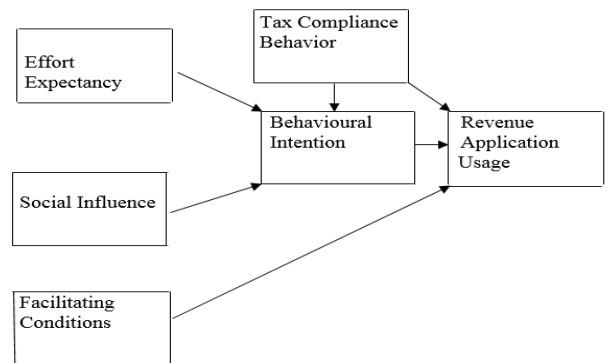

Fig 3:- The flow diagram of The Conceptual Model for adoption and usage of revenue application

V. METHODOLOGY

This study is based on critical reality with regard to epistemological position, it indicates that existence of reality exist beyond what is seen or observed. This study took subjectivism stance with regard to ontological position, it indicated that social phenomena occur based on the ideas and subsequent actions of social participants (Easterby-Smith, Thorpe and Lowe, 2006). Reality beyond what is observed in relation to the adoption and usage of the e-filing is required for understanding what drive taxpayers' to use or not use e-filing. This paper took a positivistic stance that implies that research outcomes are presented as objective facts and verified truths (Crotty, 1998). Research strategy in this study is a positivist using a quantitative method for data collection. Sampling technique adopted in this study was a simple random and sample frame was South African taxpayers submitting returns annually. A questionnaire was administered for collection of primary data that was analyzed using the structural

equation modelling (SEM), confirmatory factor analysis (CFA), path modelling and Smart PLS software.

Research Process	Methods	Reason
Research Philosophy	Positivist	Objective facts and established truth
Research Strategy	Quantitative	To reach many participants
Data Collection	Survey (Questionnaire)	Easy to administer
Sample Frame	Taxpayers (manual & e-filers)	Only individuals submitting tax returns
Sample Technique	Simple Random Sampling	All participants have a chance of being selected
Unit Analysis	Individuals	Individuals available everywhere in the country
Data Analysis	Structural Equation Modelling	Statistical technique for studying relationships between latent variables (or constructs)

Table 4:- depicts the summary of Methodology

VI. DISCUSSIONS OF RESULTS

A. Structural Equation Modelling Approach

Structural Equation Modeling (SEM) was applied for this paper for data analysis. SEM is a technique used for assessing relationships between elements(Schermelleh-Engel, Klein & Moosbrugger, 2017). Prior authors believed in creating theoretical concepts and use two or more structural equations to validate proposed causal relationships (Bollen, 1989; Brewer *et al.*, 2015; Byrne, 2016; Hair *et al*, 2016; Henseler *et al*., 2015 and Hair *et al*., 2017). SEM performing same functions as regression analysis with an additional benefit being the ability to measure relationship on elements and account for measurement error at the same time (Hox, *et al.*, 2017). SEM is a well know technique used for data analysis being able to address numerous modelling challenges relating to the indigeneity among elements (Preacher, Zhang & Zyphur, 2016).

B. Structural Equation Modelling, A Component based Approach

Statistical analyses where done on the Measurement and structural models using the Smart PLS software. Discussions below are relating to the variables descriptive statistics and reliability of the model. The Structural Equation Modelling, Confirmatory Factor Analysis and Path Modelling assessed in this study are discussed below. Model Fit was assessed by applying Confirmatory Factor Analysis (CFA) as well as reliability and validity of the scales used in the questionnaire. Scales validity was established by comparing the shared variance together with the average variance extracted (AVE). Path Modelling (PM) was achieve by testing Model fit and hypothesis. Significant statistical relationships between the elements

was assessed using the bootstrap resampling method. Evidence on the reliability and validity of the assessment model is presented below in table 5.

C. Measurement Model Assessment
➢ Summary of Measurement Model Assessment (Confirmatory Factor Analysis)

Conceptual model has eight elements, which are Behavioural Intension, Effort Expectancy, E-filing Usage, Facilitating Conditions, Social Influence and Tax Compliance Behaviour. Results of testing elements for reliability and validity are shown in table 5 below.

Research constructs	Scale Items		Item-to-Total Correlation Value	Cronbach's Alpha Value	Composite Reliability Values	Average Variance Extracted (AVE)	Factor Loadings
	Mean	SD					
BI – BI1	2.452	1.071	0.675				0.845
BI2	2.283	1.066	0.755	0.847	0.908	0.766	0.895
BI3	2.226	1.062	0.717				0.885
EE – EE1	2.393	1.113	0.675				0.808
EE2	2.497	1.066	0.625				0.769
EE3	2.854	1.029	0.718				0.795
EE4	3.042	1.128	0.72	0.888	0.914	0.639	0.794
EE5	2.94	1.1	0.724				0.799
EE6	2.863	1.126	0.758				0.83
EU – EU1	2.168	1.067	0.666				0.817
EU2	2.357	1.062	0.784				0.922
EU3	2.438	1.196	0.6	0.828	0.897	0.745	0.791
FC – FC1	2.464	1.263	0.526				0.732
FC2	2.818	1.225	0.71				0.827
FC3	3.186	1.186	0.625				0.73
FC4	2.777	1.11	0.593	0.812	0.868	0.57	0.758
FC5	2.735	1.051	0.552				0.722
FI2	2.440	1.196	0.789				0.866
FI3	2.883	1.187	0.713				0.813
FI4	2.682	1.119	0.778				0.889
FI5	2.518	1.126	0.789				0.877
SI – SI1	2.503	1.094	0.661				0.818
SI2	2.414	1.051	0.767				0.885
SI3	2.768	1.144	0.655				0.76
SI4	2.497	1.118	0.772	0.866	0.903	0.653	0.862
SI5	2.744	1.165	0.581				0.701
TCB – TCB1	2.804	1.138	0.739				0.825
TCB2	2.685	1.135	0.686				0.792
TCB3	2.985	1.048	0.708				0.794
TCB4	2.985	1.045	0.766				0.845
TCB5	2.955	1.024	0.727	0.875	0.906	0.619	0.815
TCB6	2.589	1.008	0.487				0.631

Table 5:- Scale Accuracy Analysis

Note: BI = Behavioural Intension; EE = Effort Expectancy; EU= Efiling Usage; FC = Facilitating Conditions; SI = Social Influence; TCB = Tax Compliance Behaviour; SD= Standard Deviation; CR= Composite Reliability AVE= Average Variance Extracted

* Scores: 1 – Strongly Disagree; 3 – Moderately Agree; 5 – Strongly Agree

➢ Reliability and Validity tests in Confirmatory Factor Analysis

Guidance in determining reliability and validity were sourced from previous studies conducted by Devine & Hughes, 2016; Canivez, 2016; Willoughby *et al*., 2017). Reliability indicates variance amount in an item as an element rather than to the error (Chau, 1997). Discriminant

and convergent validity assessed using Average Variance Extracted (Crego *et al.*, 2015).

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
BI	0.847	0.908	0.766
EE	0.888	0.914	0.639
EU	0.828	0.897	0.745
FC	0.812	0.868	0.57
SI	0.866	0.903	0.653
TCB	0.875	0.906	0.619

Table 6:- Measurement Instrument Assessment (Confirmatory Factor Analysis)

➤ *Testing for Reliability*
• *Cronbach's Alpha (CA)*

Measurement scale was evaluated applying Cronbach's alpha coefficient composite reliability (CR) to verify the internal consistency in checking the reliability of the measurements. Cronbach's alpha coefficient over 0.6 is a recommended reliable values (Diedenhofen and Musch (2016). Instrument reliability was measured with Cronbach alpha and all values are above the accepted threshold of 0.6, as indicated in Table 6 and indicating that all assessment instruments are reliable.

• *Composite Reliability (CR)*

Composite reliability index over 0.7 is recommended (Diedenhofen and Musch (2016). Facilitating Conditions has the smallest composite reliability (CR) value of 0.868 and Effort Expectancy has the highest composite reliability value of 0.914 in this study. Composite reliability exceeded the threshold of greater than 0.7 for all values in this study as indicated in Table 6.

• *Average Variance Extracted*

Variance in indicators was determined by applying the average variance extracted indicated by the latent variable. An element with AVE value that is greater than 0.5 is considered reliable (Wilcox, 1996). All variables fall within the acceptable threshold of 0.5 according to AVE results in Table 6.

AVE is calculated manually with this formula:
AVE = $\Sigma\gamma yi2/[\Sigma\gamma yi2 + \Sigma\varepsilon i]$.

All scales were internally consistent and reliable as per extracted constructs reliabilities and the average variance according to results shown in table 6.

• *Convergent Validity*

The level that an element converges in its indicators by explaining the items' variance is measured by the convergent validity (Zelkowitz and Cole, 2016). Item-total correlation and factor loading measures verifies convergent validity (Crego *et al.*, 2015; Hair *et al.*, 2016). Factor loading estimates over 0.5 are shown in table 5 indicating convergent validity. The lowest representing Tax Compliance Behaviour (TCB6) show the lowest factor

loading of 0.631 while E-filing Usage (EU2) have the highest factor loading of 0.922.

• *Discriminant validity*

Correlation matrix is applied to measure the discriminant validity (Chinomona, (2011). Discriminant validity was confirmed as the value for correlation between variables is recommended to be below 1.0 and inter-correction values for all variables are below 1.0 as indicated in Table 7. All measurement in this study meets the recommended threshold as per results obtained and the highest being value is 0.761. Average variance extracted value was compared to their Highest Shared Variance (HSV) to assess the discriminant validity which was confirmed (Hox, et al., 2017).

	BI	EE	EU	FC	SI	TCB
BI	1					
EE	0.445	1				
EU	0.761	0.509	1			
FC	0.538	0.697	0.569	1		
SI	0.439	0.555	0.551	0.607	1	
TCB	0.587	0.71	0.619	0.723	0.581	1

Table 7:- Correlation Matrix

Discriminant validity is obtained through comparison of Average Variance Extracted (AVE) and Highest Shared Variance (HSV). Discriminant validity exist when AVE is greater than HSV. Table 8 indicates results that showing all AVEs being greater than the HSVs of the elements that confirm the discriminant validity.

Variable	Average Variance Extracted (AVE)	Highest Shared Variance (HSV)	Decision
BI	0.766	0.579	Discriminant Validity confirmed
EE	0.639	0.504	Discriminant Validity confirmed
EU	0.745	0.579	Discriminant Validity confirmed
FC	0.57	0.522	Discriminant Validity confirmed
SI	0.653	0.368	Discriminant Validity confirmed
TCB	0.619	0.522	Discriminant Validity confirmed

Table 8:- Comparison between AVE and HSV Results

D. Model Fit Summary- Measurement Model

Three categories of Model fit analysis outcome are absolute fit indices, incremental fit indices and parsimony fit indices. The CMIN or the Chi-square ($\chi2/df$), Normed Fit Index (NFI), Goodness-Of-Fit Index(GFI), Root Mean Square Error of Approximation (RMSEA), Tucker Lewis Index (TLI), Comparative Fit index (CFI) and Incremental

Fit Index (IFI) indices were extracted from the analysis result obtained. The Chi-square (CMIN/DF) threshold of 3 is acceptable, however, in table 9 it was found to be 2.124 (Chinomona (2011).

Acceptable threshold level of 0.900 is recommended for the CFI, however, in this study it was found to be 0.908 (Hooper, Coughlan and Mullen (2008). GFI acceptable threshold of at least 0.9 is recommended and GFI was found to be 0.914 (Baumgartner and Hombur, 1996). Relative fit index (RFI) value of 0.9 is recommended and in this study it was found to be 0.906 (McDonald and Ho, 2002). Normed fit index (NFI) threshold is acceptable at a value of 0.900 and it was found to be 0.903 (Bentler and Bonett, 1980).

The incremental fit index (IFI) 0.909 was realised and it exceeds the recommended value of 0.900 (Bollen, 1989). The Tucker-Lewis Index (TLI) acceptable threshold is 0.900 and in this study it was found to be 0.915 (Hooper *et al.,* 2008). The root mean square error of approximation (RMSEA) thresholds is acceptable at 0.08 and it was found to be 0.069 in this study. Results shows all model fit indices being at recommended levels as indicated in the Table 9.

Model Fit Indices	Acceptable Threshold	Current Study Threshold	Decision: Acceptable/Un acceptable
Chi-Square Value:χ2/(df)	<3	2.124	Acceptable
Comparative Fit Index (CFI)	> 0.900	0.908	Acceptable
Goodness of Fit Index (GFI)	> 0.900	0.914	Acceptable
Incremental Fit Index (IFI)	> 0.900	0.909	Acceptable
Normed Fit Index (NFI)	> 0.900	0.903	Acceptable
Tucker Lewis Index (TLI)	> 0.900	0.915	Acceptable
Random Measure of Standard Error Approximation (RMSEA)	< 0.080	0.069	Acceptable

Table 9:- Model Fit Summary- Measurement Model

➢ *Structural Model Assessment and Hypotheses Testing*

The structural model indicates EE, TCB and SI having an effect on the behavioural intention while FC, BI and TCB having a positive effect on EU. Hypotheses assessing model fit were tested after Path analysis was conducted. Path analysis was assessed to establish the magnitude of hypothesised causal connections between the elements. Model fit path analysis outcomes are presented in table 10 as: χ2/df = 2.811; CFI=0.903; IFI = 0.907; NFI= 0.933; TLI = 0.906; RMSEA = 0.078. The results indicated all model fit indices being within the recommended levels.

Model Fit Indices	Acceptable Threshold	Current Study Threshold	Decision: Acceptable/Una cceptable
Chi-Square Value:χ2/(df)	<3	2.811	Acceptable
Comparative Fit Index (CFI)	> 0.900	0.903	Acceptable
Incremental Fit Index (IFI)	> 0.900	0.907	Acceptable
Normed Fit Index (NFI)	> 0.900	0.933	Acceptable
Tucker Lewis Index (TLI)	> 0.900	0.906	Acceptable
Random Measure of Standard Error Approximation (RMSEA)	< 0.08	0.078	Acceptable

Table 10:- Model Fit Summary- Structural Model

➢ *Structural Model Assessment (Path Analysis)*

Measurement of the hypothesised structural model is done first before examining the causal relationships between latent variables by path analysis (Henseler, Hubona and Ray, 2016). Some latent variables directly or indirectly affect other latent variables in the model resulting in estimated outcomes that explains the relationship of these latent variables as it is emphasised by structural equation modelling (Lefcheck, 2016; Hair *et al.,* 2017). Table 11 presented the estimated results obtained through hypothesis testing. Table 11 indicates if a hypothesis is rejected or accepted and shows the hypotheses, path coefficients and t-statistics. Significant relationship indicators are t >1.96 while a higher path coefficients means stronger relationships between the latent variables (Chinomona, Lin, Wang and Cheng, 2010).

Hypothesized Relationship	Hypotheses	Path Co-efficient	T-Statistics	P-value	OUTCOME
EE → BI	H1	0.015	0.569	0.000	Significant & Supported
SI → BI	H2	0.144	1.789	0.074	Supported but insignificant
FC → EU	H3	0.115	1.775	0.076	Supported but insignificant
BI → EU	H4	0.586	11.084	0.000	Significant & Supported
TCB → BI	H5	0.494	4.603	0.000	Significant & Supported
TCB → EU	H6	0.192	3.623	0.000	Significant & Supported

Table 11:- Path Analysis Results

Note: BI = Behavioural Intension; EE = Effort Expectancy; EU= e-filing Usage; FC = Facilitating Conditions; SI = Social Influence; TCB = Tax Compliance Behaviour

Table 11 shows the outcomes of the six hypotheses that were assessed in this study. All hypotheses were positive. After testing H2 and H3, insignificant results were obtained as the p-value is over 0.05 (0.074, 0.076).

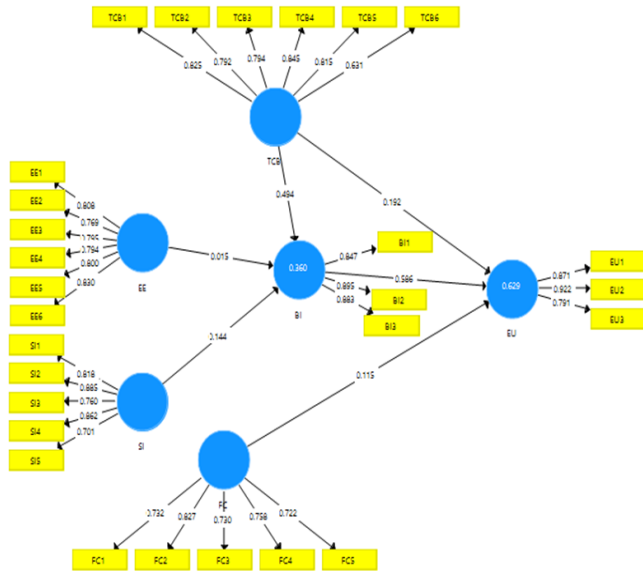➢ *Structural Equation Modelling (SEM)*

Fig 4:- Flow diagram of Structural Equation Modelling

Path coefficients presented in figure 4 shows the significant levels being measured with the p-values and t-statistics from the six hypotheses tested. Hypotheses significance are recommended at a 95% or higher level of significance (≥ 95%) and p-value at ≤ 0.05 (Hastie *et al.,* 2009); Hair *et al*., 2010). The t-statistics with a threshold of greater than 1.96 are acceptable for the relationship purpose. Hypotheses and path coefficients are presented first followed by the t-statistics and p-values showing the significant levels of the relationships and lastly the column showing the decision of accepting or rejecting the proposed hypotheses. A strong relationship between the dependent and the independent variables is indicated by the path coefficients (Hsu, 2008). Four hypotheses were found to have significant level at p<0.05 after testing the probability value which is also known as p – value.

Four out of the six hypotheses were statistically significant with the exclusion two being H2 and H3 which were positive but not significant. Strong relationship was between Behavioural Intension (BI) and Efiling Usage (EU) with β=0.586; t=11.084; p=0.000 followed by a relationship amongst Tax Compliance Behaviour (TCB) and Behavioural Intension (BI) with β=0.494; t= 4.603; p=0.000.The third strong relationship is Tax Compliance Behaviour (TCB) and E-filing Usage (EU) having = β 0.192; t= 3.623; p=0.000 while in the fourth place is the relationship amongst Social Influence (SI) and Behavioural Intension (BI) with = β 0.144; t= 1.789; p=0.074. Weak relationship is amongst Facilitating Conditions (FC) and E-filing Usage (EU) with = β 0.115; t= 1.775; p=0.076 and the weakest relationship is amongst all hypotheses was

amongst Effort Expectancy (EE) and Behavioural Intension (BI) having = β 0.015; t= 0.569; p=0.000.

➢ *Summary of the results for this study*

Results after testing hypotheses as per data analysed indicates path coefficients of H1, H2, H3, H4, H5 and H6, to be 0.015, 0.144, 0.115, 0.586, 0.494 and 0.192 respectively. Results from this study shows all six latent variables having positive relationships. Behavioural Intension and E-filing Usage had the strongest relationship with path coefficient value of 0.586 while relationship amongst effort expectancy and behavioural intension being the weakest with a path coefficient of 0.015. Testing confirming reliability and validity of the measurement was done. Relationships between the constructs as per hypotheses in this study were assessed using Smart PLS software for SEM.

VII. STUDY RESULTS AND INTERPRETATIONS

Results and interpretations for this study are presented below. **Hypothesis one** results shows a positive and significant relationship among Effort Expectancy (EE) and Behavioural Intension (BI) having = β 0.015; t= 0.569; p=0.000. These results are consistent with findings from previous studies that discovered effort expectancy correlating with behavioural intention (Agarwal and Prasad, 1999; Thompson *et al.,* 1991; Venkatesh et al., 2003). These outcomes are indicating effort expectancy having a positive impact behavioural intension, thus taxpayers need an easy to use system. Results from testing **hypothesis two** confirmed a positive but insignificant relationship amongst social influence and behavioural intension with = β 0.144; t= 1.789; p=0.074. Results from this study confirm claims that taxpayers use online application that are preferred by their peers, friends and family members (Venkatesh and Davis, 2000). Social influence plays an important role for influencing users to accept information system, so revenue application designers must develop strategies to ensure that users get a value for using the electronic filing. Results after testing **hypothesis three** shows a positive but insignificant relationship amongst facilitating conditions E-filing Usage as per = β 0.115; t= 1.775; p=0.076. These outcomes confirm findings from prior study discovering that focusing on facilitating conditions only does not automatically predict revenue application usage as factors affecting information system usage are plenty (Fu et al., 2006). Revenue Application is used at any time of a day and tax authority must ensure the availability of support personnel to attend to system challenges from users. Results for testing **hypothesis four** shows a strongest positive and a significant relationship amongst behavioural intension and E-filing Usage as per β=0.586; t=11.084; p=0.000. These outcomes confirm findings from previous studies stating that even if all factors affecting actual use of information system are in place, decision to use technology is not guaranteed. (Agarwal and Prasad, 1999). **Hypothesis five** testing indicates a strong positive and significant relationship amongst Tax Compliance Behaviour and Behavioural Intension as per β=0.494; t= 4.603; p=0.000. These outcomes are similar to findings by Marziana,

Norkhazimah and Mohmad (2010), for discovering taxpayers' attitude and perception regarding tax system fairness being a vital factor significantly influencing tax compliance behaviour. Integrity, credibility and trustworthiness of government affect taxpayers' decision to adopt revenue application. **Hypothesis six** testing indicates a positive and significant relationship amongst Tax Compliance Behaviour and E-filing Usage as per= β 0.192; t= 3.623; p=0.000. This study results concur with claim from previous study showing a tax compliant behaviour and E-filing Usage having a positive relationship (Fischer *et al.,* 1992). These outcomes mean that ethical taxpayers submitting tax returns correctly and on time are likely to use the revenue application platforms than less ethical taxpayers. Tax compliance behaviour changes over time, continuous monitoring by authority is needed.

VIII. A MODEL FOR ACCEPTING AND USING REVENUE APPLICATION

Figure 5 below shows a model for accepting and using the revenue application after the conceptual model was amended according to constructs testing which were done.

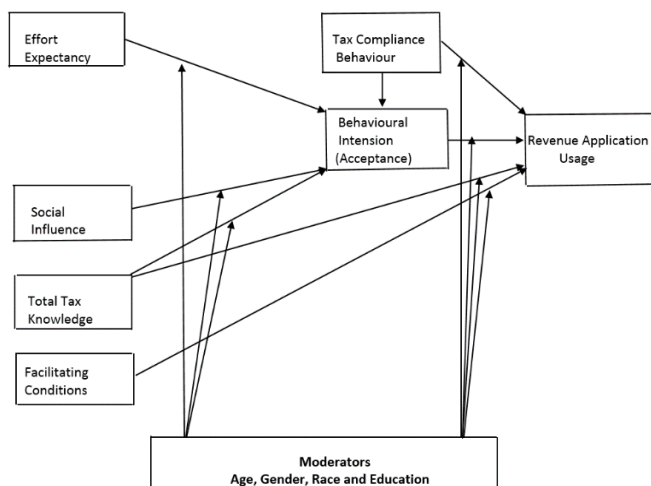> *A Model for Accepting and Using Revenue Application*

Fig 5:- A Model for Adoption and Usage of Revenue Application

The model for accepting and using revenue application being developed in this paper has the following constructs as tested results: Behavioural Intension, Revenue Application Usage, Effort expectancy, facilitating conditions, social influence, tax compliance behaviour and total tax knowledge. Most of these elements were validated in this study except total tax knowledge that is an additional element for this model. It can be conclusion that these elements are the determinants for the accepting and using the revenue application. Additional construct being total knowledge was used when reviewing the conceptual model, higher education is linked to a higher possibility of tax compliance in previous literature. Taxpayers with tertiary education comply tax obligations than their counterparts without tertiary education.

IX. CONCLUSION

Model fit summary presented in table 10 shows all model fit indices being, chi-square value, comparative fit index, incremental fit index, normed fit index, tucker Lewis index and random measure of standard error approximation, having values greater than the recommended levels. Path analysis outcomes show four hypotheses being supported and significant excluding H2 and H3 that are positive but insignificant. Reliability and validity tests in confirmatory factor analysis (CFA) respectively indicates outcomes verifying reliability and validity of measurement. This study confirmed factors for accepting and using revenue application to be effort expectancy, facilitating conditions, social influence, behavioural intension and tax compliance behaviour. Tax authorities can consider to practically apply the model developed in this study to achieve an optimal usage of the revenue application. Research problem was that despite South Africa having excellent revenue application, queues at its tax branch offices are still observable being for taxpayers submitting manual tax returns. This study shared more inside information for exploring reasons why other taxpayers accept and use the revenue application while others do not. This study has come up with a solution to the research problem by developing a model for accepting and using the revenue application. Reasons relating to why taxpayers are using the revenue application while others are not using it are now known as per results from this study. Tax authority need to focus on these factors to influence taxpayers to optimally use the revenue application.

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