




The Adoption of Web-Based Learning in the Teaching and Learning of Accounting in South African Secondary Schools

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ABSTRACT

Teachers face several challenges when adopting web-based learning to teach Accounting in South African schools. Therefore, a need exists for support and capacity building of Accounting teachers to effectively implement web-based collaborative learning in South African schools. This study sought to investigate the factors that affect the use of Web-Based Learning (WBL) in the teaching of Accounting subject in the Capricorn District within the Limpopo Province, South Africa. A mixed-method approach framed within a pragmatic paradigm was adopted for this research study. However, only the quantitative data was presented herein. The investigation was conducted with the participation of 104 participants comprising accounting subject teachers and head of departments (i.e., convenience sampling). The data was collected from the participants using a web-based survey questionnaire. To analyse the data, used descriptive research approach and SPSS version was employed. The Technology Acceptance Model and the Theory of Reasoned Action were adopted as theoretical frameworks to investigate factors affecting the use of WBL in the teaching of accounting subject in selected schools. The study's findings revealed that perceived usefulness and perceived ease of use, subjective norm or social influence, attitudes toward computer usage, and self-confidence affect the use of WBL in the teaching and learning of Accounting in the investigated schools. Moreover, the findings confirmed the hypothesis that was developed in this study.

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Publication History

Received: 1st August, 2024
Accepted: 6th January, 2025
Published online:
5th March, 2025

Keywords: *Adoption, Web-Based learning, Technology acceptance model, Accounting, Theory of reasoned action.*

INTRODUCTION

Web-based learning (WBL) involves the use of technology in the teaching and learning process. The application of technology in accounting education has made it possible for students to receive instruction and feedback tailored to their individual levels of understanding.¹ In this regard, WBL provides new opportunities for teaching and learning, including offering opportunities for more student-centred teaching, reaching more learners, and better teacher-to-teacher and student-to-student

¹ Valentina Arkorful and Nelly Abaidoo, "The Role of E-Learning, the Advantages and Disadvantages of Its Adoption in Higher Education," *International Journal of Education and Research* 2, no. 12 (2014): 397–410.

communication. Bell et al. assert that WBL systems allows for an instruction method that is geared towards progress top quality related to instruction and students' academic achievement.²

Further, Bismala and Manurung has reported that WBL encourages self-learning and gives learners a feeling of comfort in use and interaction thus promoting greater flexibility n learning time.³ This is in addition to motivating students and enhancing their academic performance. Related to this, WBL activates contact amongst the teacher, the tutor, and other teachers. Apart from serving as a great communication medium for teachers and learners, it allows for curriculum to be designed and tailored to the needs of learners.

Calderón et al. postulates that WBL is more student-centred with its reduced need for teacher talk.⁴ This allows learners to actively engage with the content and each other without the need for constant input or extensive verbal instructions from the teacher. Most importantly, WBL can significantly decrease teacher preparation time thus allowing teachers to focus their efforts on content creation, instruction, student support, and other high-value activities. Also, through WBL platforms, learners can access anywhere and anytime a wide range of additional resources beyond the course materials. Learners can access a wealth of supplementary information (e.g., e-books and interactive course materials), self-assessments, and previous examination papers as well as other active engagements and interactions anywhere in the world within and beyond the classroom setting.⁵ While WBL offers several benefits to both learners and teachers compared to traditional classroom learning, traditional classroom learning has its own merits such as physical interaction, hands-on learning, and development of social interaction and teamwork skills. A blended learning strategy incorporating elements of both WBL and traditional classroom learning facilitates and encourages interaction amongst learners and appears to provide learners with a well-rounded educational experience.⁶

For accounting education, the importance of a range of soft skills, including communication skills, interpersonal skills, critical thinking skills, and problem-solving skills, as well as the technical skills recognised, so experience of accounting skills in real life business environment is very important.⁷ However, a gap between the classroom and the real world remains. The traditional method of teaching extracts concepts, principles in an abstract and decontextualized form, ignoring the interdependence of situation and cognition.⁸ Such knowledge gained in the classroom is not retrieved in real life contexts. Therefore, WBL provides teachers with direct access to pedagogical resources, information about the curriculum and methodological guidelines, and it shows the real-life contexts.

Despite the benefits of WBL, its adoption by teachers remains a challenge in most developing countries, including South Africa. Ezeanyanike claims that teachers in African countries (e.g., South Africa and Nigeria) experience challenges regarding the creation of a classroom environment that engages learners in active learning, practices collaborative teaching and peer teaching, and makes use of a wide range of technological tools that

² Emma Bell, Alan Bryman, and Bill Harley, *Business Research Methods* (Oxford university press, 2022).

³ Lila Bismala and Yayuk Hayulina Manurung, "Student Satisfaction in E-Learning along the COVID-19 Pandemic with Importance Performance Analysis," *International Journal of Evaluation and Research in Education (IJERE)* 10, no. 3 (September 1, 2021): 753, <https://doi.org/10.11591/ijere.v10i3.21467>.

⁴ Antonio Calderón, Lourdes Meroño, and Ann MacPhail, "A Student-Centred Digital Technology Approach: The Relationship between Intrinsic Motivation, Learning Climate and Academic Achievement of Physical Education Pre-Service Teachers," *European Physical Education Review* 26, no. 1 (February 3, 2020): 241–62, <https://doi.org/10.1177/1356336X19850852>.

⁵ Assion Lawson-Body et al., "Students' Acceptance of E-Books: An Application of UTAUT," *Journal of Computer Information Systems* 60, no. 3 (May 3, 2020): 256–67, <https://doi.org/10.1080/08874417.2018.1463577>.

⁶ Mohammad Usama et al., "Web-Based vs. Mixed Mode Instruction Utilizing e-Learning via LMS: A Comparative Study," *International Journal of Information and Education Technology* 14, no. 4 (2024): 612–19.

⁷ Valentina Dolce et al., "The Soft Skills of Accounting Graduates: Perceptions versus Expectations," *Accounting Education* 29, no. 1 (January 2, 2020): 57–76, <https://doi.org/10.1080/09639284.2019.1697937>.

⁸ Kate H. Choi and Yue Qian, "The Rise of the Childless Single in South Korea," *Journal of Family Theory & Review* 15, no. 3 (September 21, 2023): 526–41, <https://doi.org/10.1111/jftr.12507>.

support effective and quality learning.⁹ These teachers seem adamant to change their traditional way of teaching, which is teeming with academic performance challenges. Some of the challenges experienced by accounting teachers are directly linked to the traditional teaching methods they employ. Traditional methods encourage passive learning whereby learners simply absorb delivered by the teacher information with very limited opportunities for learner-teacher interaction. The only available opportunity for learner participation is through summative assessments (e.g., written exercises, assignment questions, tests, or examination), which are typically administered by the teacher to evaluate student learning at the end of the lesson or learning unit. Passive learners are more likely to actively process and retain information. This practice is devoid of critical thinking teaching and does not, therefore, develop the critical thinking skills of learners.¹⁰ Silva et al. reckons the challenges experienced in the teaching of accounting subject are centred around lack of acquiring the subject knowledge, cultivating critical thinking skills among learners, and transferring the accounting concepts in natural business settings.¹¹

Related studies indicate that the plethora of challenges experienced by teachers in the adoption of WBL is neither limited to the accounting subject nor school-level education. Despite these challenges, many institutions of higher learning around the world, including Jordanian universities, have made significant strides in making WBL an integral part of their education system.¹² The adoption of WBL has received mixed reactions from instructors and learners alike. Some learners were not convinced of the teaching benefits of WBL and could therefore not cope with the application of WBL. As a result, the learning process was changed to WBL for selected individuals. Having said that, significant challenges regarding the adoption and implementation of WBL systems such as, but not limited to, the high cost of implementation, remain.¹³

Challenges reported by other researchers which relate to the adoption and implementation of WBL include lack of information and technologies (ICT) tools to conduct teaching and learning within a classroom context and a lack of skills to integrate Accounting using technology to support teaching and learning.¹⁴ Moreover, the lack of skills and knowledge were viewed as the main challenge facing teachers' use of web-based learning.¹⁵ Among others, low levels of confidence, lack of training, time constraints as well as the lack of technical and infrastructure supports are contributory factors affecting the adoption and implementation of WBL.¹⁶

⁹ Phoebe A Ezeanyanike, "Assessing Benefits of Collaborative Learning Environment for Quality Higher Education in Nigeria," *Journal of Educational and Social Research*, September 1, 2013, <https://doi.org/10.5901/jesr.2013.v3n6p85>.

¹⁰ Rosliana Rosli et al., "Reported Adverse Drug Reactions in Infants: A Nationwide Analysis in Malaysia," *Frontiers in Pharmacology* 8 (February 10, 2017), <https://doi.org/10.3389/fphar.2017.00030>.

¹¹ Marisa Silva et al., "European Guidelines for Constitutional Cytogenomic Analysis," *European Journal of Human Genetics* 27, no. 1 (January 1, 2019): 1–16, <https://doi.org/10.1038/s41431-018-0244-x>.

¹² Lukasz Gruszczynski, "The COVID-19 Pandemic and International Trade: Temporary Turbulence or Paradigm Shift?," *European Journal of Risk Regulation* 11, no. 2 (June 7, 2020): 337–42, <https://doi.org/10.1017/err.2020.29>; Marco Torsello and Matteo M Winkler, "Coronavirus-Infected International Business Transactions: A Preliminary Diagnosis," *European Journal of Risk Regulation* 11, no. 2 (2020): 396–401.

¹³ Hashem Alshurafat et al., "Factors Affecting Online Accounting Education during the COVID-19 Pandemic: An Integrated Perspective of Social Capital Theory, the Theory of Reasoned Action and the Technology Acceptance Model," *Education and Information Technologies* 26, no. 6 (November 26, 2021): 6995–7013, <https://doi.org/10.1007/s10639-021-10550-y>.

¹⁴ Molefi Motsoeneng and Nosihle Veronica Sithole, "An Intervention Strategy to Enhance Technical Vocational Education and Training Entrepreneurship Education Lecturers' Knowledge of Content and Teaching," *EUREKA: Social and Humanities* 6 (2022): 48–57.

¹⁵ Claudiu Coman et al., "Online Teaching and Learning in Higher Education during the Coronavirus Pandemic: Students' Perspective," *Sustainability* 12, no. 24 (2020): 10367.

¹⁶ Muluk Dilip Dnyaneshwar, "Distribution of Periodical Market Centres in Pune District of Maharashtra," *International Research Journal of Multidisciplinary Studies* 3, no. 6 (2017): 1–8; B J Adegbenro and T M Gumbo, "Exploring the Conceptual Relationship between Teachers' Procedural Functional Knowledge and Pedagogical Content Knowledge," *South African Journal of Higher Education* 29, no. 5 (2015): 29–47; Stošić Lazar, "The Importance of Educational Technology in Teaching," *International Journal of Cognitive Research in Science, Engineering and Education* 3, no. 1 (2015): 111–14.

Despite several factors being identified in other contexts, factors that affect the adoption of WBL in the teaching and learning of Accounting in the Capricorn District of Limpopo, South Africa, have not been identified. Moreover, studies on the use of WBL in the teaching of accounting in secondary schools are few; hence, the reason for undertaking this study.

THEORETICAL FRAMEWORK

Fishbein and Ajzen's Theory of Reasoned Action (TRA) and Davis's Technology Acceptance Model (TAM) provide a theoretical basis for measuring beliefs and attitudes on the use of WBL by Accounting teachers in the study area.¹⁷

In their theoretical model, Fishbein and Ajzen postulate that a person's actual behaviour is based mainly on pre-existing attitudes and behavioural intentions.¹⁸ Therefore, a person's intention to perform a behaviour is the main predictor of whether or not they will actually perform that behaviour. The intention is in turn moulded by two factors, namely: (a) the person's attitude towards a given behaviour (i.e., whether they evaluate it positively or negatively) and (b) the subjective norms associated with the behaviour in question (i.e., perceived social pressure to perform or not to perform the behaviour).¹⁹

Ajzen and Madden have pointed out that a person's attitude is determined by his/her perception about the expected consequences of performing the behavior and the assessment of those consequences, and hence, if a person's intent is strong, then it is expected that the behavior will be actually performed.²⁰ Therefore, the primary concern is to identify the underlying factors of the formation and change of behavioural intent.

The TAM is an adaptation of the TRA because it is based on the core concept of the TRA, namely behaviour is best predicted by the intention to perform that behaviour, to the domain of technology acceptance formulated by Davis.²¹ The main distinguishing characteristic of TAM is that it is specifically designed to model the acceptance of technology. Also, while TRA explores the general attitudes and social norms, TAM is narrowed down to technology-related beliefs and attitudes. In this regard, the TAM suggests that a person's intention to use new technology is influenced by two main constructs, namely: (a) perceived usefulness; and (b) perceived ease of use. User's attitude and belief as proposed by TAM is perceived to be an important factor, which influences the use of new technology. People who have positive attitudes toward information technology (IT) will have higher acceptance of the use of the technology in question, compared to people who have negative attitudes toward that technology. Many empirical studies have been carried out in support of TAM.²² To gain a better understanding of the factors affecting the adoption of WBL by Accounting teachers, this study expanded the TAM by adding other constructs (i.e., subjective norm and self-confidence) to the TAM. For purposes of this study, it is important

¹⁷ Icek Ajzen and Martin Fishbein, "A Bayesian Analysis of Attribution Processes.," *Psychological Bulletin* 82, no. 2 (1975): 261; Fred D Davis, "Technology Acceptance Model: TAM," *AI-Suqri, MN, Al-Aufi, AS: Information Seeking Behavior and Technology Adoption* 205 (1989): 219..

¹⁸ Icek Ajzen and Martin Fishbein, "A Bayesian Analysis of Attribution Processes.," *Psychological Bulletin* 82, no. 2 (March 1975): 261-77, <https://doi.org/10.1037/h0076477>.

¹⁹ Ok Kyung Ham et al., "Behavioral Characteristics and Cardiovascular Disease Risks Associated with Insomnia and Sleep Quality among Middle-aged Women in South Korea," *Research in Nursing & Health* 40, no. 3 (2017): 206-17; Juyeon Ham et al., "Subjective Perception Patterns of Online Reviews: A Comparison of Utilitarian and Hedonic Values," *Information Processing & Management* 56, no. 4 (2019): 1439-56.

²⁰ Icek Ajzen and Thomas J Madden, "Prediction of Goal-Directed Behavior: Attitudes, Intentions, and Perceived Behavioral Control," *Journal of Experimental Social Psychology* 22, no. 5 (September 1986): 453-74, [https://doi.org/10.1016/0022-1031\(86\)90045-4](https://doi.org/10.1016/0022-1031(86)90045-4).

²¹ Davis, "Technology Acceptance Model: TAM," 219.

²² Davis, "Technology Acceptance Model: TAM"; Elena Karahanna, Detmar W Straub, and Norman L Chervany, "Information Technology Adoption across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs," *MIS Quarterly*, 1999, 183-213; Viswanath Venkatesh, Fred Davis, and Michael G Morris, "Dead or Alive? The Development, Trajectory and Future of Technology Adoption Research," *The Development, Trajectory and Future of Technology Adoption Research (April 27, 2007)*. Venkatesh, V., Davis, FD, and Morris, MG "Dead or Alive, 2007, 267-86.

to explore the definitions of the following constructs: perceived usefulness; Attitude and behavioural intention; and Self-confidence and subjective norm.²³

Perceived usefulness

Davis as well as Lanlan et al. defined perceived usefulness as "the degree to which individuals believe that using a particular system can improve their job performance."²⁴ After examining factors that predict students' continual usage intention of WBL content management systems in Tanzania, Lwoga found perceived usefulness to be a key determinant of user satisfaction, which in turn predicted continual usage intention of students within the e-learning system.²⁵

In this study, TAM was used to analyse the effect of related constructs on Accounting teachers' intention to adopt WBL. Considering the above, the study postulates that:

- **H1:** Perceived usefulness positively related to the teachers' behavioural attitude to adopt web-based learning.
- **H2:** Perceived ease of use is positively related behavioural intention to adopt web-based learning

Attitude and behavioural intention

Attitude and behavioural intention to use and adopt the technology act as the mediating variables of TAM. Attitude is defined as a disposition of individuals for organizing thoughts, feelings, and behaviours towards a psychological object.²⁶ Positive teacher attitudes is considered as an important predictor of successful teaching practices. Attitudes are changed through the provision of new information to those concerned because their negative or positive attitudes may have been based on incomplete information.²⁷

TAM attempts to clarify the relationship between people's beliefs, attitudes, intentions, and behaviour. Tlou posits that the behavioural intention is a joint function of a person's attitude towards behaviour.²⁸ It could be used to assist to the explain teacher-learner interactive behaviour in a learning setting or environment. In their theoretical model, Fishbein and Ajzen 1975 suggested that a person's actual behaviour could be examined by considering his or her previous intention along with the beliefs that the person would have for the given behaviour.²⁹ Behavioural intention could be determined by considering both the attitude that a person has towards the actual behaviour, and the subjective norm associated with the behaviour in question.

Ham et al. defined the attitude towards a given behaviour as a person's positive or negative feelings about performing the actual behaviour, suggesting the attitude of a person towards a specific behaviour.³⁰ According to the TRA, behavioural attitude and subjective norm influence behavioural intention. The TRA provides a useful model that could explain

²³ Joo-Yong Lee et al., "Disease-Causing Mutations in Parkin Impair Mitochondrial Ubiquitination, Aggregation, and HDAC6-Dependent Mitophagy," *Journal of Cell Biology* 189, no. 4 (2010): 671–79.

²⁴ Davis, "Technology Acceptance Model: TAM"; Zhang Lanlan, Aidi Ahmi, and Oluwatoyin Muse Johnson Popoola, "Perceived Ease of Use, Perceived Usefulness and the Usage of Computerized Accounting Systems: A Performance of Micro and Small Enterprises (Mses) in China," *International Journal of Recent Technology and Engineering* 8, no. 2 (2019): 324–31.

²⁵ Edda Lwoga, "Critical Success Factors for Adoption of Web-Based Learning Management Systems in Tanzania," *International Journal of Education and Development Using ICT* 10, no. 1 (2014).

²⁶ Fred N. Kerlinger, *Liberalism and Conservatism: The Nature and Structure of Social Attitudes* (Taylor & Francis, 2022).

²⁷ Spyros Kokolakis, "Privacy Attitudes and Privacy Behaviour: A Review of Current Research on the Privacy Paradox Phenomenon," *Computers & Security* 64 (2017): 122–34.

²⁸ Emmanuel Rammule Tlou, "The Application of the Theories of Reasoned Action and Planned Behaviour to a Workplace HIV/AIDS Health Promotion Programme" (University of South Africa Pretoria, South Africa, 2009).

²⁹ Martin Fishbein and Icek Ajzen, "Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research," 1977; Davis, Fred D, "Theory and Results." PhD dissertation, Massachusetts Institute of Technology, 1985.

³⁰ Ham et al., "Behavioral Characteristics and Cardiovascular Disease Risks," 206-217.

and predict the actual behaviour of accounting teachers. This study, therefore, postulates that: behavioural attitudes toward WBL positively relate to the intention to use it.

Technology use will be high if users believe that using the system will improve their job performance and if they think, the system is easy to use. Several key variables from TAM have been considered relevant in predicting teachers' perceptions toward e-learning such as perceived usefulness, perceived ease of use and attitude. External variables in TAM have also made it possible to include many other variables deemed relevant to suit researchers' local context and settings.³¹ As such, TAM provides a useful framework for analysing the effects of external variables towards users' attitude (and by extension behavioural intention) to explaining technology acceptance and usage. Based on the above assertions, this study therefore hypothesises that:

- **H3:** Behavioural attitude towards web-based learning is positively related to the teachers' intention to adopt web-based learning.

Self-confidence and subjective norm

In this study, the variables of self-confidence and the subjective norm were added to the TAM model and was used to investigate factors affecting the adoption of WBL in the teaching of Accounting within study area. Specifically, the effect of self-confidence and subjective norms on the use of WBL by Accounting teachers was investigated. In the context of Information Systems (IS), self-confidence means an individual's ability to use computer systems to fulfil tasks.³² Self-confidence is the most important predictor directly affecting the use of IS.³³

Subjective norm refers to the presence of social influences to perform or not perform something.³⁴ Subjective norms are known to play a crucial role in shaping teachers' behavioural intentions. For example, the role of subjective norms in inspiring teachers to effectively use ICT in teaching has been reported.³⁵ Other factors that play a significant role in teachers' use of ICT pertains to the availability of relevant software, accessibility of suitable websites, and technical support.³⁶ Lanlan et al. claim that a person does not fully perform or does not at all perform a behaviour or action that is purely intrinsic, unless an extrinsic impulse is initiated.³⁷

Al-Suqri and Al-Kharusi have proposed that if individuals think that highly esteemed persons believe that they should perform certain behaviours, these individuals may choose to perform it even if they do not hold a positive attitude toward the behaviour in question or its consequences.³⁸ This type of social influence is termed subjective norm within the theoretical framework of.³⁹ Subjective norms assert that, "the person understands that most

³¹ Mei L. Cheok et al., "Teachers' Perceptions of E-Learning in Malaysian Secondary Schools," *Malaysian Online Journal of Educational Technology* 5, no. 2 (2017): 20-33.

³² Lanlan, Ahmi, and Popoola, "Perceived Ease of Use, Perceived Usefulness and the Usage of Computerized Accounting Systems: A Performance of Micro and Small Enterprises (Mses) in China."

³³ Lanlan, Ahmi, and Popoola, "Perceived Ease of Use, Perceived Usefulness and the Usage of Computerized Accounting Systems: A Performance of Micro and Small Enterprises (Mses) in China."

³⁴ Lanlan, Ahmi, and Popoola, "Perceived Ease of Use, Perceived Usefulness and the Usage of Computerized Accounting Systems: A Performance of Micro and Small Enterprises (Mses) in China."

³⁵ Francisco Rejón-Guardia, Ana Isabel Polo-Peña, and Guillermo Maraver-Tarifa, "The Acceptance of a Personal Learning Environment Based on Google Apps: The Role of Subjective Norms and Social Image," *Journal of Computing in Higher Education* 32, no. 2 (August 6, 2020): 203–33, <https://doi.org/10.1007/s12528-019-09206-1>.

³⁶ Khalid A. Bingimlas, "Barriers to the Successful Integration of ICT in Teaching and Learning Environments: A Review of the Literature." *Eurasia Journal of Mathematics, Science and Technology Education* 5, no. 3 (2009): 235-245.

³⁷ Lanlan Zhang, Ahmi Aidi, and Popoola Oluwatoyin MJ, "Perceived Ease of Use, Perceived Usefulness and the Usage of Computerized Accounting Systems," 324-331.

³⁸ Mohammed N. Al-Suqri and Rahma M. Al-Kharusi, "Ajzen and Fishbein's Theory of Reasoned Action (TRA) (1980)." In *Information Seeking Behavior and Technology Adoption: Theories and Trends*, pp. 188-204. IGI Global, 2015.

³⁹ Icek Ajzen, and Martin Fishbein, "A Bayesian Analysis of Attribution Processes," 261.

people who are important to him think s/he should or should not perform the behaviour in question”.⁴⁰

Whereas Grimes and Marquardson contend that subjective norms are directly and significantly related to one's thoughts of using the system, Quanga and Van Haa is of the view that with subjective norms stakeholder influence means that learners choose to study e-Learning because those around them, such as relatives or friends, also use the system.⁴¹ To overcome the challenges to successful, effective, and efficient implementation of educational technology, stakeholders should be set sight from teachers.⁴² Moreover, it has also been pointed out that subjective norm has a major effect on the usefulness of E-Learning. Based on the above-mentioned assertions this study postulates that:

- **H4:** Self-confidence is positively related to users' intention to adopt web-based learning.
- **H5:** Subjective Norm is influential on users' intention to adopt web-based learning

RESEARCH METHODOLOGY

This research employed a descriptive research approach, which is a basic research method that examines the situation as it exists in its current state. The descriptive research approach aims to describe a population, situation, or phenomenon accurately and systematically. While it can answer the what, where, when, and how questions, it is not applicable to the why question. In this study, the descriptive approach followed and embraced the positivism paradigm.

Sampling procedures

Convenience sampling was used in this study to select the HODs and teachers of accounting subject from secondary schools within the Capricorn District of the Limpopo Province of South Africa. In Statistics, the sample size is the measure of the number of individual samples used in an experiment.⁴³ The sample population of this research study consisted of (N=104) Accounting teachers and HODs selected from 25 secondary schools employed in the District.

Data collection

Data were collected through questionnaires. Data from questionnaires were expected to provide a clear reflection of the experiences of HODs and Accounting teachers, a significant analysis of respondents' views, practices, and experiences into the substance of discourse by determining patterns and illuminating significances. The first part of the questionnaire consisted of demographic questions about the participants.

Variables such as the positions of participants in the school and location of the school were also included. While the second section was dedicated to questions on perceived usefulness, the third section elicited responses on perceived ease of use. The fourth and fifth sections focused respectively on subjective norm and the attitude of teachers towards the use of WBL in the teaching of Accounting. The last and final section was meant to solicit teachers' self-confidence regarding the use of WBL in the teaching of Accounting.

⁴⁰ Icek Ajzen, and Martin Fishbein, "A Bayesian Analysis of Attribution Processes," 261.

⁴¹ Mark Grimes and Jim Marquardson, "Quality Matters: Evoking Subjective Norms and Coping Appraisals by System Design to Increase Security Intentions," *Decision Support Systems* 119 (April 2019): 23–34, <https://doi.org/10.1016/j.dss.2019.02.010>; Hanh Thi Hai Nguyen et al., "Factors Influencing Students' Intention to Use E-Learning System: A Case Study Conducted in Vietnam," *International Journal of Emerging Technologies in Learning (IJET)* 15, no. 18 (September 25, 2020): 165, <https://doi.org/10.3991/ijet.v15i18.15441>.

⁴² Jo Tondeur et al., "Responding to Challenges in Teacher Professional Development for ICT Integration in Education," *Educational Technology & Society* 19 (July 1, 2016): 110–20.

⁴³ Ajay S Singh and Micah B Masuku, "Sampling Techniques & Determination of Sample Size in Applied Statistics Research: An Overview," *International Journal of Economics, Commerce and Management* 2, no. 11 (2014): 1–22.

Save for the demographic questions, the five-point Likert scale was used in all the sections to quantify the opinions and attitudes of the participants towards the various questionnaire statements. Throughout the study, strict ethical considerations, such as informed consent, honesty, transparency, and confidentiality, were adhered to with a view to protect participants' rights and ensure the validity and integrity of the research. Furthermore, the university where the researchers were conducting their research granted ethical clearance for the study.

Validity and reliability

Validity and reliability are deemed important to produce high-quality research findings. Validity, a major consideration in research, expresses the degree to which a research study measures what it is intended to measure.⁴⁴ In this regard, the first step in this study involved an enhancement of the quality of the questionnaires. Secondly, to minimise the potential for peer pressure and groupthink, separate survey questionnaire venues were arranged for teachers and HOD's. In addition, to maintain an unbiased environment and encourage independent thinking, sittings in the venues were arranged such that they allowed for privacy and separation between participants, instead of having them seated together.

Content validity refers to the representativeness or sampling adequacy of the content of a measuring instrument. Almanasreh et al. allude to the fact that content validity answers whether the content of the measure represents the universe of the content of the concept measured.⁴⁵ Based on this, the researcher used 104 (79 teachers and 25 HoDs) respondents to answer the questionnaires. Although both face and content validation of a measurement is judgmental, the criterion for judgment is different.⁴⁶ While each item measured was determined in the evaluation of face validity, content validation was determined by whether any left-out items should be included in the measurement for its representativeness of the concept. After collecting the data, the responses of the respondents were grouped according to the type of questions they were asked or their level. Thereafter, the data was analysed using the 5-point Likert scale. Lastly, the experts in the field of E-learning and/or WBL were asked to review the research instruments and the data.

Reliability refers to the degree to which the results obtained by a measurement and procedure can be replicated.⁴⁷ Bolarinwa has stated that although reliability makes an important contribution to the validity of a questionnaire, it is not a sufficient condition for validity.⁴⁸ Reliability also refers to the consistency or stability of a study instrument. To ensure reliability of this research, descriptive research was used to generate questionnaire items based on the thoughts of members of the study population. Terms, concepts, and themes were generated through the descriptive research study. As an additional measure to ensure reliability, a pilot survey instrument was developed and applied.⁴⁹ After the questionnaire was developed, the first draft was given to the advisor to scrutinise its clarity and simplicity. Based on the feedback obtained, some items of the instrument were changed and others modified. Thereafter, the questionnaire was distributed to the respondents (teachers and HoDs) who were selected by using a purposive sampling technique. After the questionnaires were collected, modifications were made on the items based on the hints

⁴⁴ Lütfi Sürücü and Ahmet Maslakci, "Validity and Reliability in Quantitative Research," *Business & Management Studies: An International Journal* 8, no. 3 (2020): 2694–2726.

⁴⁵ Enas Almanasreh, Rebekah Moles, and Timothy F. Chen, "Evaluation of Methods Used for Estimating Content Validity," *Research in Social and Administrative Pharmacy* 15, no. 2 (February 2019): 214–21, <https://doi.org/10.1016/j.sapharm.2018.03.066>.

⁴⁶ Raewyn Connell, "Just Education," *Journal of Education Policy* 27, no. 5 (2012): 681–83.

⁴⁷ Segun Oluwaseun Olabode, O I Olateju, and A A Bakare, "An Assessment of the Reliability of Secondary Data in Management Science Research," *International Journal of Business and Management Review* 7, no. 3 (2019): 27–43.

⁴⁸ Oladimeji Akeem Bolarinwa, "Principles and Methods of Validity and Reliability Testing of Questionnaires Used in Social and Health Science Researches," *Nigerian Postgraduate Medical Journal* 22, no. 4 (2015): 195–201.

⁴⁹ Khin Thandar Aung, Rafiza Abdul Razak, and Nor Nazrina Mohamad Nazry, "Establishing Validity And Reliability of Semi-Structured Interview Questionnaire in Developing Risk Communication Module: A Pilot Study," *Edunesia : Jurnal Ilmiah Pendidikan* 2, no. 3 (June 30, 2021): 600–606, <https://doi.org/10.51276/edu.v2i3.177>.

obtained from the pilot study. The pilot results revealed that the Cronbach’s alpha index was moderate but had an acceptable range of (0.66). On this basis, it was concluded that the conducted research was reliable.

Data analysis

The researcher used SPSS version 28.0 statistical analysis to analyse the data. Furthermore, the SPSS Descriptives procedure was used to compute descriptive statistics for Likert scale variable such as the mean, mode, standard deviation.⁵⁰ The five-point Likert scale was used with numerical value 1 being assigned to Strongly Agree and 5 representing Strongly Disagree. This approach allowed for the tendency of the composite scores to be ascertained. Seventy-nine (79) Accounting teachers and 25 Accounting Head of Departments participated in the survey on a voluntary basis. The descriptive statistics, Cronbach Alpha, mean, mode, and standard deviation comprised the descriptive data, which in turn informed the interpretation of the research findings.

PRESENTATION OF FINDINGS

The study was conducted to determine the factors that affect the adoption of WBL in the teaching and learning of Accounting in the Capricorn District, Limpopo Province, South Africa. The results are summarised in Table 1. Results relating to each of the constructs are discussed in more detail thereafter.

Table I: Ifactors affecting the adoption of web-BASED learning in the teaching of accounting subject in the capricorn district

Constructs	Items	Mean	Standard deviation	Level of influence
Perceived Usefulness (PU)	3	13.17	1.769	Very Influential
Perceived Ease of Use (PEOU)	3	11.38	1.968	Influential
Subjective Norm	3	9.5	1.902	Influential
Attitude	3	14.01	1.5	Very Influential
Self- Confidence	3	13.61	1.671	Very Influential

Perceived usefulness (PU)

Three items measured participants’ perceptions regarding the usefulness of WBL. Most of the respondents (84.23%) view WBL as a tool that makes the teaching of Accounting easy, while 94.24% of the respondents believe that WBL would assist them to cover the curriculum on time. In addition, 91.43% of the respondents find WBL to be a useful platform that can be used to improve the teaching of Accounting. Perceived Usefulness appears to be a significant factor in predicting participants’ intention to adopt WBL. Alsabawy et al. has reported that PU is critical in the acceptance of WBL.⁵¹

Table 1 summarizes the results of the descriptive analysis with an interpretation of the result for the Perceived Usefulness based on mean and standard deviation. The factor was interpreted as significantly influential in the intention of Accounting teachers to adopt and use this tool. It has been demonstrated that PU has a significant influence and therefore affects the use of WBL in the teaching of Accounting. Therefore, the H1 hypothesis, Perceived Usefulness was positively related to the teachers’ behavioral attitude to adopt WBL is supported by the data.

⁵⁰ Javier Suárez Álvarez et al., “Using Reversed Items in Likert Scales: A Questionable Practice,” *Psicothema*, 30, 2018.

⁵¹ Ahmed Younis Alsabawy, Aileen Cater-Steel, and Jeffrey Soar, “Determinants of Perceived Usefulness of E-Learning Systems,” *Computers in Human Behavior* 64 (November 2016): 843–58, <https://doi.org/10.1016/j.chb.2016.07.065>.

Perceived ease of use (PEOU)

Three items were used to measure the respondents' perceptions regarding the ease of using WBL to teach Accounting, that is, how would PEOU affect the use of WBL in the teaching of Accounting-to-Accounting teachers and HODs' intention to use this tool. Most of the respondents (61.547%) surmise that using a WBL platform to teach would be easy for them. While 10.58% of the respondents believe that WBL does not require a lot of mental effort, 65.38% believed that using WBL would make it easy for them to cover the curriculum.

The total score for the PEOU factor was 1.968 (see Table 1), which indicates the significant influence PEOU has on the Accounting teachers' and HODs' intention to adopt and use WBL. These results seem to suggest that the user experience is the first step in the adoption of a technology. Therefore, if users find WBL easy to use and submit that it saves them time and effort, then a positive correlation to their behavioral intention to adopt and use it is established. If the tool is easy to use, and users do not have to be reliant on other users for assistance to use the application, the number of users would increase. Therefore, the H2 hypothesis, whereby PEOU is positively related to behavioural intention to adopt WBL, is confirmed.

Subjective norm

Three items were used to measure the respondents' perceptions regarding using WBL to teach Accounting and how subjective norms would affect the use of WBL in the teaching of Accounting. Most of respondents (38.46%) share the view of Usama et al. suggesting that the people they deem important influence their use of WBL.⁵² Moreover, 17.31% of the respondents also believed that people who influence them think they should use WBL. A total of 20.19% of the respondents believe that people whose opinions they value prefer that they use WBL. The total score for the subjective norm factor is 1.902 (see Table 1), indicating that subjective norm is influential towards Accounting teachers' and HODs' intention to adopt and use WBL. Therefore, it can be concluded that subjective norm is positively related to teachers' behavioral intention to adopt WBL and the H5 hypothesis is therefore supported.

Attitude

Three items measured perceptions on attitudes in terms of using WBL is a good idea 25% of respondents agreed with the statement and 75% strongly agreed. With regards to the idea of loving to use web-based learning in the teaching of accounting, 72.12% of the respondents are receptive to the use of WBL while 75% of respondents strongly agreed that using WBL is a good idea. Regarding the statement "If it is necessary for them to use web-based learning in the teaching of accounting". 4.81% survey respondents indicated that their attitudes are Neutral. While 35.58% of surveyed respondents Agree with this notion. While on the other hand, 59.62% of surveyed respondents Strongly Agreed with this statement. Thus, it was also established through the framework that attitude had a significant effect on WBL measuring at a (1.5) range score. Therefore, the hypothesis (H3), behavioral attitude towards WBL positively related to the teachers' intention to adopt web-based learning was confirmed.

Self-confidence

In terms of finding out how confident respondents were regarding how comfortable they feel to use WBL to teach accounting, 0.96% disagreed with the notion, while 4.81% was neutral.

However, 57.69% agreed 36.44% while strongly agreed. In terms of finding out how confident respondents were regarding their capabilities to use web-based learning in the teaching of accounting. 0.96% (n=1) respondents strongly disagreed, while 1.92% respondents

⁵² Usama et al., "Web-Based vs. Mixed Mode Instruction Utilizing e-Learning via LMS: A Comparative Study," 612-619.

was neutral. However, 44.23% respondents agreed with this notion. In addition, 52.88% (n=53) respondents strongly agreed. In terms of finding out how confident surveyed respondents were regarding whether using WBL puts them on par with global standards of teaching, the results showed that 1.92% of surveyed respondents were neutral, 13.44% of surveyed respondents agreed, while a staggering 84.67% of surveyed respondents strongly agreed with this notion. Self-confidence also showed that, it has a significant influence on the use of WBL (1,671). It can therefore be concluded that the hypothesis (H4), postulated that self-confidence is positively related to the intention to adopt WBL.

It can be concluded that Attitude, Self Confidence, and Perceived Ease of Use (PEOU) are the factors that have a significant influence on WBL in the teaching of Accounting Subjects in the Capricorn District, followed by SN and PU.

DISCUSSION

The results showed that attitude is the most influential construct for the adoption of WBL by Accounting teachers in the Capricorn District. The results indicate that the respondents approve the use and adoption of WBL for teaching and learning Accounting in schools. This positive attitude towards WBL affect the respondents' decision-making and the intention to use WBL in Capricorn District schools. Attitude can therefore be seen as one of the factors that influence the Accounting teachers' and HODs' willingness to adopt and use of WBL to teach Accounting in Capricorn District schools. Ultimately, the findings imply that having a positive attitude towards WBL influences the intention to use and adopt this technology to teach Accounting in schools. The findings appears to corroborate the view held by Alhubaishy and Aljuhani, which highlights the major role played by attitude in the decision to use a tool or technology.⁵³

Similar findings were also found by Kent and Giles, who established that attitude towards computer usage affect teachers to use WBL in the teaching and learning of Accounting.⁵⁴ As a matter of course, teachers' attitudes and beliefs are crucial factors when determining the role and effectiveness of technology in classrooms. These findings underscore the long-held view that attitudes and beliefs about both educational technology and pedagogy in general would ultimately influence how teachers implement technology.⁵⁵ Hatzigianni and Kalaitzidis have also revealed that variations in technology usage reflect important differences in teachers' beliefs about the utility of technology in the educational process.⁵⁶

Attitude and behavioural intention to use the technology act as mediating variables of TAM. Attitude is defined as a disposition of individuals for organising thoughts, feelings, and behaviours towards a psychological object and a positive teacher attitude is considered an important predictor of successful teaching practices. Attitudes could change through the provision of new information to those concerned because their negative or positive attitudes may have been based on incomplete information.⁵⁷ Therefore, behavioural attitude towards the adoption and use of WBL in Capricorn District schools is positively related to the teachers' intention to use it.

The research revealed self-confidence to be the second most influential factor for Accounting teachers to adopt WBL. The results indicate that the respondents are completely confident in the usage of WBL in the classroom. This stems from the belief that teachers'

⁵³ Abdulaziz Alhubaishy and Abdulmajeed Aljuhani, "The Challenges of Instructors' and Students' Attitudes in Digital Transformation: A Case Study of Saudi Universities," *Education and Information Technologies* 26, no. 4 (July 16, 2021): 4647–62, <https://doi.org/10.1007/s10639-021-10491-6>.

⁵⁴ Andrea M Kent and Rebecca M Giles, "Preservice Teachers' Technology Self-Efficacy," *SRATE Journal* 26, no.1(2017):9–20.

⁵⁵ Maria Hatzigianni and Ioannis Kalaitzidis, "Early Childhood Educators' Attitudes and Beliefs around the Use of Touchscreen Technologies by Children under Three Years of Age," *British Journal of Educational Technology* 49, no. 5 (2018): 883–95.

⁵⁶ Hatzigianni and Kalaitzidis, "Early Childhood Educators' Attitudes and Beliefs around the Use of Touchscreen Technologies by Children under Three Years of Age."

⁵⁷ Kokolakis, "Privacy Attitudes and Privacy Behaviour: A Review of Current Research on the Privacy Paradox Phenomenon."

usage of WBL ensures adherence to and alignment with global standards of teaching. This notion appears to be the number one factor that motivates and leads the teachers to want to use and adopt WBL for purposes of teaching Accounting. An additional contributory factor was the teachers' strong belief in their capabilities to use WBL for teaching Accounting.

Furthermore, the findings prove that this set of beliefs influence the respondents' self-confidence, which in turn influences them to use of WBL to teach Accounting. Meaning that if, the respondents felt capable of using WBL they would most definitely use it to teach Accounting Subject. The findings revealed that self-confidence has a significant role and influence in the adoption and use of WBL by Accounting teachers and HODs. If respondents were more confident about using WBL, they would most likely to use it.

Based on the findings, self-confidence appears to be a factor commanding significant influence on the adoption and use of WBL in the teaching of Accounting Capricorn District schools. Given an abundance of educational technologies, it is important that teachers feel comfortable and confident about their ability to use them effectively.⁵⁸ Meanwhile, Hoirudin reported that teachers feeling that they do not have the necessary competencies when using technology, feeling less in control of the class.⁵⁹ When designing and planning their lessons, such teachers are therefore inclined to use less technology and are unlikely to explore new opportunities that utilise technology. Relatedly, Luong and Kim identified two contributing factors to teachers' low self-confidence in using technology.⁶⁰ The researchers found that, firstly, limited computer instruction could lead to teachers' low confidence level when initiating computer activities, resulting in high anxiety about using computers. Secondly, poor motivation has the potential to result in insufficient knowledge when using instructional technology even if computers are provided in the classroom for teaching and learning purposes.⁶¹

Lanlan et al. investigated the effect of self-confidence and subjective norms on the use of WBL by Accounting teachers.⁶² The author defined self-confidence in the context of IS to mean "an individual's ability to use computer systems to fulfil tasks." Furthermore, Lanlan et al. retorted: "Self-confidence is the most important predictor that directly affects the use of information systems."⁶³ Lanlan et al. has also demonstrated that teachers' willingness to adopt the use of WBL in the teaching of Accounting is influenced by self-confidence.**Error!**

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The result revealed PEOU as the third factor influencing Accounting teachers' and HODs' behavioural intention to adopt and use WBL. The results suggests that user experience is the first step in the adoption of WBL. Should a user find the WBL easy to use and reduces the time and effort required, their behavioural intention would be positively influenced to adopt and use them. If the tool is easy to use without any assistance or reliance from other persons, the number of users would increase. Thus, PEOU is an essential factor influencing the use of WBL in the context of Capricorn schools. This finding is in line with previous studies conducted by Liu et al. as well as Shanab and Haider, which also

⁵⁸ Samantha Adams Becker et al., "NMC Horizon Report: 2017 Higher Education Edition.," *New Media Consortium*, 2017.

⁵⁹ H. Hoirudin, "The Correlation Between Computer Literacy Skill And Reading Comprehension Of English Education Study Program Students At Tridinanti University Palembang" (Universitas Tridinanti, 2021).

⁶⁰ Thanh-Thao Luong and Eunyoung Kim, "A Constructivism-Based Training Course for Hospitality and Tourism Instructors in Vietnam to Improve Their Self-Confidence in Synchronous Online Teaching," *Interactive Technology and Smart Education* 19, no. 3 (2022): 360–89.

⁶¹ Adeneye Olarewaju Awofala et al., "Attitudes toward Computer, Computer Anxiety and Gender as Determinants of Pre-Service Science, Technology and Mathematics Teachers' Computer Self-Efficacy," *Digital Education Review*, no. 36 (December 31, 2019): 51–67, <https://doi.org/10.1344/der.2019.36.51-67>.

⁶² Lanlan, Ahmi, and Popoola, "Perceived Ease of Use, Perceived Usefulness and the Usage of Computerized Accounting Systems: A Performance of Micro and Small Enterprises (Mses) in China."

⁶³ Lanlan, Ahmi, and Popoola, "Perceived Ease of Use, Perceived Usefulness and the Usage of Computerized Accounting Systems: A Performance of Micro and Small Enterprises (Mses) in China."

found PEOU to be an important factor in determining intention to use.⁶⁴ Lodhi et al. professed that PEOU has a direct and positive influence and effects on the intention to use the technology system, and their results were corroborated by other researchers.⁶⁵ In addition, Chang et al. claim that PEOU positively motivates the intention to adopt a technology.⁶⁶

In addressing the objective how others' opinions and beliefs influence the teachers' use of WBL in the teaching of Accounting, the quantitative data revealed that most respondents (50%) have a neutral view towards this statement. The ambivalence displayed by the respondents implies that most respondents are unaware of whether or not the opinions of those they value influence their use of WBL. Additionally, this statement evoked some level of uncertainty because most respondents thought their responses depended on other factors.⁶⁷ Despite these uncertainties, 42% of the respondents admitted to being influenced by other people's opinions when it comes to the use of WBL in the teaching of Accounting. This was based on factors such as social influence and social trust. Moussaïd et al. define social influence as "the process by which individuals adapt their opinion, revise their beliefs, or change their behaviour as a result of social interactions with other people."⁶⁸ In contrast, Claridge defines social trust as being a "normative and related to morals and faith in others rather than information and experience with specific individuals."⁶⁹ It is therefore unquestionable that social trust affects the subjective norm and that it can be considered as one of the factors that influence the use of WBL in the teaching of Accounting at schools.

CONCLUSION

This study sought to investigate the factors that affect the use of Web-Based Learning (WBL) in the teaching of Accounting subject in the Capricorn District within the Limpopo Province, South Africa. The results reveal that PU is a significant factor in predicting participants' intention to adopt WBL in Capricorn District schools. This is because PU was found to be significantly influential on teachers' intention to adopt and use WBL in the teaching and learning of Accounting. A Taiwanese study conducted by Hung et al. also reported PU as a critical factor in the acceptance of WBL.⁷⁰ In the same breadth, Awofala et al. found a reasonably positive relationship between the teachers' classroom technology use and their perceived computer competencies in addition to self-efficacy, technological backing, and access technology.⁷¹ The ease of adopting IT solutions in E-learning classes and the perceived usefulness of E-learning classes are major factors determining the acceptance of this form of teaching by lecturers.⁷² Web-based learning or e-learning usefulness in the classroom determine the acceptance of e-learning by teachers.

Implications for research and practice

⁶⁴E K^{††} Liu, W Q^{††} He, and C R Yan, "'White Revolution' to 'White Pollution'—Agricultural Plastic Film Mulch in China," *Environmental Research Letters* 9, no. 9 (2014): 091001; Emad Abu Shanab and Shatha Haider, "Major Factors Influencing the Adoption of M-Government in Jordan," *Electronic Government, an International Journal* 11, no. 4 (2015): 223, <https://doi.org/10.1504/EG.2015.071394>.

⁶⁵ Rab Nawaz Lodhi and R. K. Malik, "Impact of Electricity Shortage on Daily Routines: A Case Study of Pakistan," *Energy & Environment* 24, no. 5 (September 1, 2013): 701–9, <https://doi.org/10.1260/0958-305X.24.5.701>.

⁶⁶ Edmund K M Chang, Yanjuan Guo, and Xiaoming Xia, "CMIP5 Multimodel Ensemble Projection of Storm Track Change under Global Warming," *Journal of Geophysical Research: Atmospheres* 117, no. D23 (2012).

⁶⁷ Mark Roschewski et al., "Inhibition of Bruton Tyrosine Kinase in Patients with Severe COVID-19," *Science Immunology* 5, no. 48 (2020): eabd0110.

⁶⁸ Mehdi Moussaïd et al., "Social Influence and the Collective Dynamics of Opinion Formation," *PLoS ONE* 8, no. 11 (November 5, 2013): e78433, <https://doi.org/10.1371/journal.pone.0078433>.

⁶⁹ Tristan Claridge, "Exploring the Limits of Social Capital," *Institute for Social Capital, Brisbane, 2022*.

⁷⁰ Shin-Yuan Hung, Chia-Ming Chang, and Shao-Rong Kuo, "User Acceptance of Mobile E-Government Services: An Empirical Study," *Government Information Quarterly* 30, no. 1 (2013): 33–44.

⁷¹ Awofala et al., "Attitudes toward Computer, Computer Anxiety and Gender as Determinants of Pre-Service Science, Technology and Mathematics Teachers' Computer Self-Efficacy."

⁷² Alsabawy, Cater-Steel, and Soar, "Determinants of Perceived Usefulness of E-Learning Systems."

Based on the findings of this research, self-confidence is deemed to possess significant influence on the adoption and use of WBL in the teaching of Accounting in Capricorn District schools. Self-confidence of teachers has also been reported to be a major factor in the adoption of WBL around the world. Apart from self-confidence, perceived usefulness was determined as a significant factor in predicting participants' intention to adopt WBL the Capricorn District schools. WBL usefulness in the classroom has also been found to determine the acceptance of WBL by teachers around the world.

Results of this study will provide guidance to stakeholders (education departments, teachers, curriculum advisors, schools, and learners) when adopting and using web-based learning for purposes of teaching and learning Accounting in South African schools. In addition, the findings of this study have the potential to contribute to the education policy and development of future curriculum and strategies for improving learners' academic performance in Accounting.

Limitations for future research

This study was limited to Accounting teachers and Heads of Departments (HODs) of selected secondary schools in the Capricorn District, Limpopo Province of South Africa. Owing to logistical limitations as well as time and budget constraints, essential stakeholders such as parents of the learners, circuit managers, members of School Governing Bodies (SGBs), and other stakeholders capable of enhancing the quality validity and reliability of the study, could not be accommodated in this study.

AI Acknowledgment

- Generative AI or AI-assisted technologies were not used in any way to prepare, write, or complete essential authoring tasks in this manuscript.

Informed Consent Statement:

The research ethics committee of the institution approved the study.

Conflicts of Interest:

The authors declare no conflict of interest.

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