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Pandemic to Endemic: Changing Learning Styles as Coping Mechanism

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Abstract

Professional accountancy students face challenges as examinations are conducted by professional bodies separate from their learning institutions. As covid-19 enters the endemic stage, the transition from online distance learning (ODL) back to traditional face-to-face learning raises learning behaviours and preferences issues. This quantitative research on professional accounting students at Universiti Teknologi Mara (UiTM), aims to provide a perspective and critical evaluation of students' learning preferences and its implications on the appropriate teaching and learning pedagogy. The partial least square structural equation modelling (PLS-SEM), a multivariate method, is used to find path models with latent constructs to identify the influencing factors of ACCA students' examination performances. It is found that ODL classes do not significantly change students' learning style. It can be deduced that students are comfortable with ODL and traditional classes. Generally, the learning profile of the student population in this study indicates that the ability to adapt is still lacking and this may be a localised scenario. In Malaysia, to address this may require a comprehensive review of the education system that can develop students to become independent and active learners with high self-motivation.

Keywords: professional accountancy qualification, learning preference, learning style, pedagogy.

1. I. INTRODUCTION

Students studying for professional accountancy examinations often face challenges as they undergo the learning process from the curriculum independently, and are assessed by the professional bodies that are separate from their learning institutions. This poses additional challenges especially when attending ODL classes. The transition of the education system back to traditional face-to-face as the covid-19 enters the endemic stage raises issues relating to learning behaviours and preferences.

Lessons should be learned from the experiences of covid-19 pandemic to ensure education is not disrupted. Students' learning behaviour during ODL may have changed

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their learning preferences. The education system should design and implement some evidence-based actions aiming to facilitate the recovery of the lost portion during the pandemic (Tadesse & Muluye, 2020). The system must be rigorous to deliver quality education and to support students' ongoing ability to engage and interact meaningfully in the learning process. The mode that a faculty should be in is not resumption, but rather re-envisioning and re-imagining the design and delivery of the curriculum during these unprecedented times (Neuwirth et al., 2021).

Learning institutions' change-making frame should be flexible to suit students' learning preference. University teachers' experience in the unplanned and forced version of ODL should be used to bridge the gap between online and in-person teaching, emphasising on alignment of pedagogisation rather than digitalisation of higher education (Rapanta et. al., 2021).

The association of chartered certified accountants (ACCA), a global professional body, admits membership from candidates passing their examinations and logging-in the relevant experiences. Candidates are working adults or full-time students who enrol themselves at external learning institutions such as UiTM, Malaysia.

Drawing on several years' reflections of teaching delivery and students' performance, this quantitative research on professional accounting students at UiTM aims at providing a perspective and critical evaluation of their learning preferences and the implications of an appropriate teaching and learning (T&L) pedagogy. The outcome of this study may be used to design the appropriate T&L delivery moving forward.

1.1. Problem Statement

The global shift to the endemic stage of covid-19 from the pandemic stage has allowed the education system to revert to traditional face-to-face T&L. During the pandemic stage, students were suddenly forced to cope with ODL classes within the constrained learning environment. These challenges affect students' performance and learning preferences. These challenges are further exacerbated by factors such as curriculum and assessment that are beyond the control of learning institutions.

Students' learning behaviour during the two years of ODL may have changed their learning preferences. The education system transitioning back to the traditional face-to-face T&L requires learning institutions to understand and anticipate ways to manage this behaviour and the students' learning preferences. According to Lewin's force field analysis, the need for change, due to high pressures of both external and internal environment, assumes the consideration on how to reduce resisting forces, while driving forces are stronger (Capatina et al., 2017). Data is collected through a structured questionnaire then analysed using a quantitative approach using structural equation modelling to understand students' learning preferences.

The study also seeks to examine whether the effectiveness of ODL affects students' performance. The ideal model of organising students, based on the covid-19 experiences, is perhaps a combination of both online and face-to-face learning opportunities (Zhao & Watterston, 2021). The outcome of this study may be able to trigger a re-think of the appropriate T&L delivery moving forward.

1.2. Research Objectives and Questions

Insert Table 1 here.

1.3 Significance of Study

This study attempts to understand issues and challenges faced by professional accountancy qualification students in transitioning to face-to face learning. Consequently, the institutions of higher learning may be able to manage students' learning behaviour

and anticipate students' learning needs and preferences. On a larger scale, this understanding can contribute towards a more effective T&L pedagogy to facilitate the cognition of these learners.

Table 1
Research Objectives and Research Questions

	Research Objectives		Research Questions
RO1	To examine students' learning preference for professional accountancy programme for classes post covid-19 pandemic study session	**RQ1**	Do students' prefer going back to traditional face to face classes as compared to ODL classes during post covid-19 pandemic study session?
RO2	To examine students' perception of ODL effectiveness for professional accountancy programme delivery	**RQ2**	Do students perceive ODL as effective for professional accountancy programme delivery?
RO3	To examine whether students' learning styles change during ODL classes	**RQ3**	Do ODL classes change students' learning style?

1.4. Scope and Limitations of Study

Data collected relates to students' examination performance for ACCA examinations when they solely attended the online classes. Questionnaires are administered to students sitting for papers at intermediate (skill) and advanced (strategic) levels at UiTM Selangor, Malaysia. UiTM's student population for this programme is 500 students. According to Krejcie and Morgan (1970), the minimum sample size is ideally 217. The sample size in this study is 140 students which is a representative sample of the population of students who have gone through both the face-to-face and the ODL classes for the ACCA programme. There are different entry routes to the ACCA programme, so the duration of study varies for different students. Some complete their studies in four years, and others complete their study within one year. The latter means that these students complete their ACCA just by attending ODL classes, therefore not the target group of this study.

II. LITERATURE REVIEW

The recent covid-19 triggered an abrupt change in the teaching delivery worldwide when the movement control order was introduced. In order to minimise disruption to the education system, online T&L replaces the traditional face-to-face delivery. Fast forward three years, as covid-19 pandemic transition to endemic, the spotlight is back on the teaching delivery reverting back to the traditional face-to-face. Covid-19 pandemic has the potential to be a once in a generation opportunity for real change as its global effect provides the opportunity for educators and learners to come together to rethink the education actually needed as opposed to the current inflexible and outdated model (Zhao & Watterston, 2021). Rapanta et. al. (2021) conducted an expert interview of several senior university lecturers to evaluate the need for pedagogical changes in the post-covid education for higher learning institutions mainly on the adoption of emergency digital remote teaching which was not supposed to be problematic as remote digital education such as distance and blended learnings had a wide implementation among universities prior to the pandemic. However, there are other issues pertaining to the operation of online distance learning becoming the concern especially when it comes to degradation of students' performance and inclination for cheating behaviours (Daniels

et al., 2021). Thus, there are suggestions that in order for online digital remote learnings to be successfully implemented, the need for the changes in teaching pedagogy is necessary. This change should start with the upper management and should not necessarily be a total revamp; what is beneficial should stay and what is bad should be improvised.

2.1. Organisational Change

The urgent shift from the traditional delivery to online delivery during covid-19 pandemic is a forced reaction of the educationists and teachers. This necessitates learning institutions to provide the institutional support to develop more suitable pedagogy models and strategies.

Lewin's theory of change examines and proposes the change at institutional level where the transition above creates a momentum needed to transform because once a change is known, and its urgency felt, the level of acceptance is elevated (Tran & Gandolfi, 2020). Tran and Gandolfi (2020) examine the change implementation of leadership style in an academic division of a Vietnamese university in creating a better environment for lecturers where they can work together constructively to improve their teaching practices and thus learning outcomes. Rashid and Yadav (2020) posit that greater digitalisation of educational services and communication may become a norm post-pandemic.

The case study by Iglesias-Pradas et al. (2021) show an increase in students' academic performance in emergency remote teaching, and support the idea that organisational readiness such as technical infrastructure and support, flexible structures that facilitate decision-making and empower instructors, the availability of informal communication channels, and development of digital skills of faculty members have a positive effect when adapted rapidly during a crisis or change of paradigm. The level of success of a higher learning institution in responding to sudden transformations also depends on the familiarity of instructors with online learning and supporting technologies, and the compatibility of the new situation with the instructional methods that they have been using over the years (Iglesias-Pradas et al, 2021).

Lewin's change theory states three stages of change that an organisation goes through; unfreeze, change or move, then re-freeze (Kaminski, 2011). covid-19 has unintentionally forced the behaviour change of those affected, causing the unfreeze stage of the change. The shift in the T&L delivery in the second stage involves a process of change–in thoughts, feelings, behaviour, or all three, that is in some way more liberating or more productive than doing things the old way. The study seeks to confirm it in the case of sudden change and whether this could be an opportunity to introduce a more appropriate T&L delivery. Refreezing stage, that is the final stage, consists of establishing the new structure as the "standard operating procedure". The technology used for online classes during covid-19 may naturally extend to post covid-19 as part of the pedagogy. However, certain aspects such as flexibility, empowerment, professionalisation and strategic decision making by learning institutions, teachers and learners should be first considered before "teaching and learning with technologies" can be broadly utilised for innovative and effective blended or 'simply' technology-enhanced forms of teaching and learning (Rapanta et al., 2021).

In the context of post-pandemic T&L, the change theory is demonstrated in the study by Singh et al. (2021) which finds that the pandemic experience gives rise to the opportunity of future implementation of online software platforms for every type of learner. They find that these platforms allow hybrid or blended learning methodologies

which are becoming more advanced all the time with increased Cloud-Based potential, enhanced synergy, and more creativity by the instructors and students. This is supported by Guppy et al. (2022) in their study where college and university students and educators anticipate clear changes in digital learning post-pandemic, but few envision dramatic, revolutionary change in either virtual teaching or learning. Nevertheless, they believe that plans for moving forward successfully need to be attuned to the views of faculty, students, and instructional designers.

2.2. Learning Behavior and Learning Preferences

UiTM's student population are mainly full-time students, who immediately after completing their secondary education, enrol for full-time studies and sit their exams as scheduled by ACCA. A specific pedagogy design that considers students' learning behaviour and learning preferences may be relevant for them to achieve their education outcomes.

Concepts of pedagogy reflect societal values and beliefs about learning, and usually draw from two main paradigms: traditional notions of learning as a biological, cognitive acquisition of uncontested knowledge, or alternatively notions of learning as a cultural and social construction within communities of practice (Shah & Campus, 2021). Therefore, education is about developing a learner's potential, involving T&L processes that factor in the social and culture such as classroom interactions and practices, not just technical matters of the subject knowledge and delivery strategies.

A learner's inclination to receive information is reflected by their learning preferences. Fitkov-Norris and Yeghiazarian (2021) find that convergence between study behaviour and learning preferences was not ubiquitous but context specific. Bayrak (2022)'s study of the associations between the preferences, readiness, and satisfaction of freshman learners after taking online courses finds that satisfied students prefer online learning and vice versa. These are students who have high levels of satisfaction, learner control, and motivation for learning, and experience no internet connection problems. According to Bayrak (2022), an examination of learner preferences after taking online courses is an essential indicator for evaluating policies calling for mandatory online course experience as the students would relate their preferences to their experiences during the course. Due to the digital technology used, harmonious integration of physical and digital tools and methods is essential for the sake of more active, flexible and meaningful learning (Rapanta et al., 2021).

Srivastava and Shah (2022) identify the differences in undergraduate and postgraduate students' learning styles and conclude that it is useful for students to increase their self-awareness to understand their own personal learning styles, while also looking into what behaviours need to be inculcated to perform well in the coursework. ACCA's trait of managing its own examination separate from the institution that delivers the T&L thus increasing responsibility on students to be independent learners who can manage their own study progress and regulate their own learning. Smyth et al. (2017) state that learning behaviour is flexible, context-dependent and subject to a host of influences and learning approaches, roughly dichotomised into those that prioritise understanding (deep learning) and those that prioritise efficiency, often at the cost of mastery (surface learning). ACCA examines students' skill and competency thus requiring students' learning behaviour to apply cognition in their study. Cognition is the process of developing knowledge and understanding in the mind (Turaeva, 2021). Shi and Qu (2022) analyse the effects of five cognitive ability values on academic achievement; memory ability, representational ability, information processing ability, logical reasoning

ability, and thinking conversion ability. Their results show that cognitive ability can have a significant positive effect on academic achievement, while self-discipline plays a partially mediating role between cognitive ability and academic achievement. The effect of self-discipline on academic achievement changes as the level of planning increases i.e. when students make more study-plan the academic achievement is higher. Self- discipline and study plan are factors that demonstrate learning behaviour. Haningsih and Rohmi (2022) find the hybrid learning model is the most appropriate for the students post-covid-19 pandemic and the proportion for each mode in the hybrid learning model should be adjusted to the characteristics, direction, educational orientation, ability, readiness, and autonomy of the students at each undergraduate and postgraduate study level.

2.3. Social Cognitive Theory

The application of learning theories and how they may be translated into classroom application of T&L specific to professional accountancy study is not prevalently discussed. Social cognitive theory (SCT) seeks to explain how students behave and perform in different learning situations to acquire knowledge in a social framework (Al-Dokhny et al., 2021). SCT develops from Bandura's social learning theory which is based on how people learn through observing others (Devi et al., 2017). Al-Dokhny et al. (2021)'s study uses SCT to understand the critical factors that affect student intentions to use distance education platforms especially in terms of understanding the factors affecting their ease of use, which is also an issue of their desired usefulness. Qutisha et al. (2022) investigate students' participation in programming labs during covid-19 at Hashemite University and found a strong link between student interaction and their academic success. Records of attendance sheets, in-class interaction, assignment delivery, and utilisation of e-learning platforms were used as measures of students' participation.

Behavioural competencies, social competencies and cognitive skills are acquired through observational learning, something which may be lacking during online learning. In the context of education, the reciprocal relationship between student-teacher, learning environment, and students' behaviour are all interacting determinants that influence one another bidirectionally (Bandura, 2001).

2.4. Connectivism Theory

In the presence of a technology-connected learning environment, there is a question whether or not digital learning is embraced in the same way campus-based education is. According to connectivism theory, the perspective of learning is on the dynamics of networks, environments and ecologies that support a continuous learning process (Boyraz & Ocak, 2021). Learners can benefit from a wide range of information available on the web. Consequently, a potential learning issue for individual students is the ability to filter and discern this information to add knowledge to specific subject matter that they are currently learning thus rendering traditional learning more relevant for non-independent learners. The development of connectivism was a further evolution of traditional learning approaches by connecting learning to both internal and external dimensions of life inseparable from the enabling technological innovations and also the social process of learning, including the social interaction during learning and the learning communities (Corbett & Spinello, 2020). If there is concern of students' inability to autonomously direct their own learning and master critical literacies may be resolved as students become more accustomed to working in social networks and digital technologies, initial concerns about their capacity to flourish in such environments become less warranted (Downes, 2019).

Technology has triggered the evolution of social networks resulting from connections between people, communities and content, into a cognitive agent of learning due to the popularisation of social software (Brandao & Algarvio, 2020). The new realities of technological development and society organised in a network means that existing learning theories are insufficient to understand the characteristics of the individual. This may be addressed by the connectivism learning theory albeit its effectiveness may be lessened by social factors. Sharma and Alvi (2021) in their review of related literature identify disadvantages of ODL in comparison to traditional learning in terms of social presence, social interaction, and satisfaction, and found that e-learning is perceived as lacking in social interaction, social presence, and effective synchronised communication. Whereas benefits of ODL include convenience and ease of time, an easy understanding of critical concepts and subjects and gives opportunities to work while learning.

The ideal model of organising students, based on the covid-19 experiences, is perhaps a combination of both online and face-to-face learning opportunities (Zhao & Watterston, 2021). Sharma and Alvi (2021) study learners' perception of web-assisted learning methods in comparison to blended learning methods implemented in the educational institution in the pre-covid times. Their finding reveals that students perceived blended e-learning as a more attractive proposition than the web assisted learning and they deduce that this is due to low preparedness with regards to using online systems or the lack of internet facilities/resources. Mathew and Chung (2020) study the students' perception of ODL during the covid-19 pandemic and how ODL can be managed to be more effective to learners. The most preferred are the asynchronous methods on the basis that students can replay the lessons at any other time needed.

Neuwirth et al. (2021) state that the mode that a faculty should be in is not resumption, but rather re-envisioning and re-imagining the design and delivery of the curriculum during these unprecedented times. In order to continue to maintain rigour and deliver quality education as well as support students' ongoing ability to engage and interact meaningfully as part of the learning process, change-making frame needs to be adapted accordingly.

III. RESEARCH METHODOLOGY

This is a quantitative study on T&L of students sitting for professional accountancy qualification. The study analyses data collected from a sample representing a students' population of accounting students at UiTM who have enrolled in the ACCA programme and have sat for their ACCA examinations before and during covid-19.

3.1. Research Questions and Hypotheses Development

Literature on related areas are reviewed as a basis to develop hypotheses and guide the quantitative research design to establish the relationship between factors; teaching delivery, learning mode, level of participation and digital tool effectiveness, with students' performance.

The conceptual framework is developed to establish the relationship of the factors above moderated by gender, learning preferences and cognition. Two mediating variables are identified; level of revision and level of interaction. Figure 1 below describes the above relationships.

Figure 1
Conceptual Framework

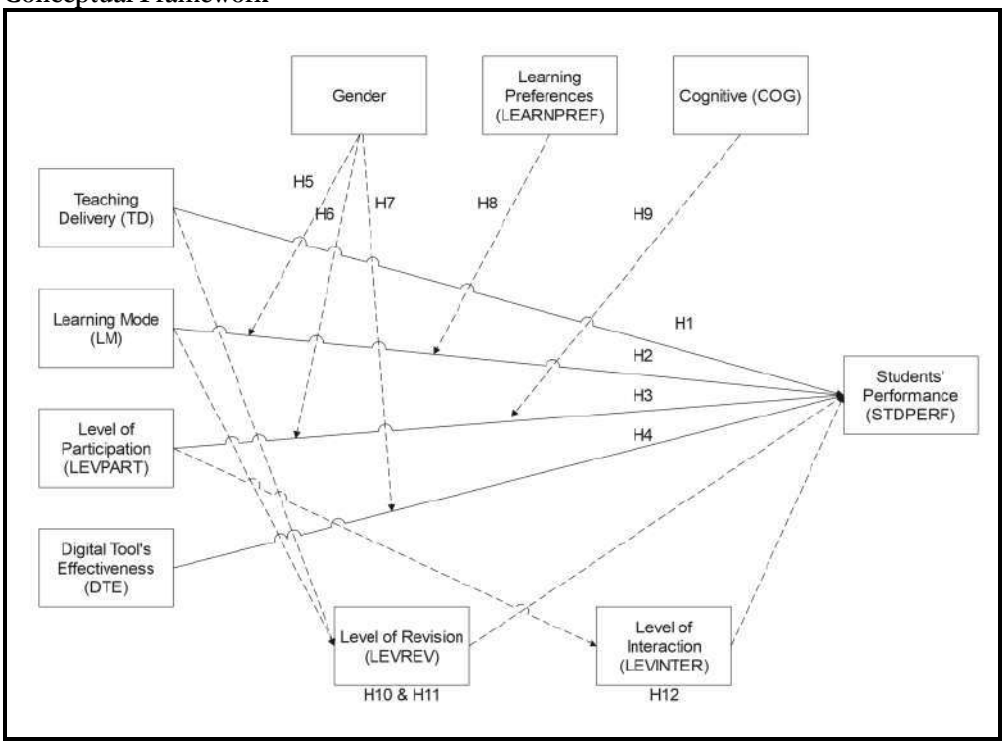


Table 2
Research Questions and Hypotheses

Research Questions		Hupotheses	
RQ1	Do student prefer going back to traditionel face to face classes as compared to ODL classes during post covid-19 pandemic study session?	**H_2**	Learning Mode has significant influence towards Student's Performance
		H_3	Level of Participation has significant influence towards Student's Performance
		H_5	Gender significantly moderates the relationship between Learning Mode and Student's Performance
		H_6	Gender significantly moderates the relationship between Level of Participation and Student's Performance
		H_8	Learning of Preferences significantly moderates the relationship between Learning Mode and Student's Performance
		H_{12}	Level of Interaction significantly mediates the relationship between Level of Participation and Student's Performance
RQ2	Do student perceive ODL as effective for professional accountancy programme delivery?	**H_1**	Teaching Delivery has significant influence towards Student's Performance
		H_4	Digital Technology Effectiveness has significant influence towards Student's Performance
		H_7	Gender significantly moderates the relationship between Digital Technology Effectiveness and Student's Performance

To be continued Table 2

Research Questions		Hupotheses	
RQ3	Do ODL classes change students' learning style?	**H_9**	Cognition significantly moderates the relationship between Level of Participation and Students' Performance
		H_{10}	Level of Revision significantly mediates the relationship between Teaching Delivery and Students' Performance
		H_{11}	Level of Revision significantly mediates the relationship between Learning Mode and Student's Performance

3.2. Data Collection and Sample Size

The data for this research are primary data collected through questionnaires to find the factors influencing ACCA students' performance in UiTM. The sampling procedure used for this research was non-probability sampling, that is purposive sampling technique by exercising judgement based on prior experiences.

Development of the questionnaire is based on the examination of various determinant scales highlighted in the literature. The questionnaire is divided into two parts. Section A contains participants' personal data, including name, gender, age, and ACCA papers taken. Section B includes perception scales on teaching delivery, learning mode, learning participation, digital technology effectiveness, learning preferences, cognitive, level of revision, level of interaction. A seven-point Likert scale is adopted for this research; strongly disagree is rated as 1, and strongly agree is 7. According to Krejcie and Morgan (1970)'s sample size calculator, for a population of 500 students, the minimum sample size is ideally 217. The sample size in this study is 140 students which is a representative sample of the population of students who have gone through both the face-to-face and the ODL classes for the ACCA programme.

The data on respondents' actual examination performance is available from UiTM's results system as the dependent variable.

3.3. Development of the Questionnaire

The research framework involves eight constructs, directly or indirectly affecting student's performance. They are teaching delivery, learning mode, level of participation, digital technology effectiveness, learning preferences, cognitive, revision level and interaction level. These construct measures are developed by referring to the item scales based on literature review relating to students' performance.

3.4. Data Analysis Method

The partial least square structural equation modelling (PLS-SEM) using SmartPLS software is the data analysis method for this research. It is a multivariate method to find path models with latent constructs, a widely utilised structural equation modelling technique in social science research (Hair et al., 2019). The conceptual model is examined to determine if the latent variable, i.e the construct, is measured by the items, as well as the relationship between the constructs. Straub (1989) proposed a two-step procedure for testing both the inner and exterior model. In the first step, the measurement model or outer model is evaluated. The second step involves evaluating the inner model that employs multiple regression to examine the relationship between the constructs.

PLS-SEM is a form of SEM that employs a causal-predictive methodology. This approach prioritises prediction when estimating statistical models with causal explanation-providing structures (Hair et al., 2017). PLS-SEM is extensively accepted in

numerous social science fields, including marketing management (Hair et al., 2012). Using a reduced sample size with PLS-SEM is acceptable where the population's nature determines the situation in which small sample sizes are acceptable (Sarstedt et al., 2022). In this case, the sample closely represents the population characteristics.

IV. RESULTS AND DISCUSSIONS

4.1. Data Analysis and Inference

The questionnaires are administered online to find the factors influencing ACCA students' performances in UiTM, Malaysia. The questionnaire was distributed from July 2022 to August 2022 and 140 responses were captured. The sample profile of the respondents is depicted in Table 3 whereby 62.9% are female and 54.3% represent the age group of 22 to 24 years.

Table 3
Respondents' Profile

Demographic Attributes		Frequency	Percentage (%)
Gender	Female	88	62.9
	Male	52	37.1
Age	Less than 22 years	57	40.7
	22-24 years	76	54.3
	More than 24 years	7	5.0

4.2. Convergent Validity and Reliability

Since the measurement model also assesses construct validity, convergence validity has been attained. The question of whether a construct correlates with related variables but not unrelated constructs is known as convergent validity (Amora, 2021). According to Hair et al. (2013), each item's factor loading should ideally be more than 0.5 and associated to its corresponding latent construct variable. All the items in this study have more than 0.5 factor loading.

The Cronbach's alpha (CA), Composite Reliability (CR), and Average Variance Extracted (AVE) are examined in order to determine whether the constructs surpass the acceptable reliability and validity benchmark. Table 4 shows the results of the CA, CR and AVE. Loadings for CA and CR are above 0.708 that is the acceptable item reliability and can be regarded as more than 50% of the indicator's AVE explained by the construct (Hair et al., 2019). Hence all items surpassed reliability and validity measure.

Table 4
The Realiability and Validity of the Construct

Constructs	Cronbach's Alpha (CA)	Composite Reability (CR)	Average Variance Extracted (AVE)
Teaching Delivery (TD)	0.943	0.844	0.702
Learning Mode (LM)	0.791	0.816	0.671
Digital Tools' Effectiveness (DTE)	0.870	0.712	0.563
Learning Preferences (LEARNPREF)	0.935	0.932	0.561
Cognition (COG)	0.874	0.893	0.581
Level of Interaction (LEVINTER)	0.752	0.758	0.574
Level of Partisipation (LEVPART)	0.852	0.964	0.587
Level of Revision (LEVREV)	0.843	0.731	0.528
Students' Performance (STUDPERF)	0.940	0.781	0.641

Notes: * accept CA and CR>0.70, and accept AVE>0.50 (Hair et al., 2019)

4.3. Discriminant Validity

Discriminant validity is part of constructs validity (Voorhees et al., 2016). It explains how one latent variable discriminates from another latent variable (Rimkeviciene et al., 2017). It is evaluated using Fornell and Larcker's criterion (Fornell & Larcker, 1981), whereby the discriminant validity is measured by hetrotrait-monotrait ratio (HTMT). As per Table 5, each construct has a clear distinction from others as they are below the acceptable level of 0.90, thus establishing the outer model fit. Discriminant validity can also be calculated by comparing the loading for each measurement item and the cross-loading of other items (Ab Hamid et al., 2017). The comparison results show that the items loaded on their respective latent variable are higher than the cross-loading of other items.

Table 5
Discriminant Validity using Fornell and Larcker's Criteria

	COG	DTE	GENDER	LM	LEARN-PREF	LEV-INTER	LEV-PART	LEV-REV	STUD-PERF
COG									
DTE	.601								
GENDER	.280	.240							
LM	.503	.399	.198						
LEARN-PREF	.651	.621	.180	.418					
LEV-INTER	.891	.638	.253	.544	.737				
LEV-PART	.775	.688	.262	.464	.640	.797			
LEV-REV	.709	.608	.269	.439	.492	.794	.626		
STUD-PERF	.479	.464	.111	.231	.852	.862	.506	.303	
TD	.639	.615	.123	.000	.694	.651	.635	.522	.891

Note: * acceptable HTMT value <0.90

4.4. Path Analysis and Hypotheses Result

The proposed conceptual framework is empirically examined using smartPLS to test the twelve hypotheses. Table 6 depicts the results showing that the final model is an acceptable fit, with eight hypotheses accepted and four rejected. The accepted and rejected hypotheses are based on p-value less than 0.01, 0.05, and 0.10, but not more than 0.10. Hence, the accepted hypotheses are H_1, H_3, H_4, H_5, H_6, H_7, H_8, and H_{12}, while the rejected hypotheses are H_2, H_8, H_{10}, and H_{11}.

The moderating effect of gender, learning preference and cognition are analysed through H_5, H_6, H_7, H_8, and H_9. As per Table 6, those hypotheses except for H_9 are accepted, indicating that gender and learning preference significantly moderate the relationship between determinants and students' performance. However, cognition does not significantly have a moderating effect. The beta value of those hypotheses suggest that gender weakens the relationship between learning mode, level of participation, and digital tool effectiveness towards students' performances. However, learning preferences strengthen the relationship between learning mode and students' preferences.

The mediating effect of level of revision and level of interaction are analysed through H_{10}, H_{11} and H_{12}. These hypotheses result indicate that level of revision does not significantly mediate the relationship between learning mode and teaching delivery to student's performance. However, level of interaction does positively and significantly mediate the relationship between level of participation and students' performances.

Table 6
Path Analysis and Hyphotheses Results

	Path	Beta	Sample Mean	StdDev	T-Value	P-Value	Decison
H_1	TD → STDPERF	.362	.341	.148	2.446	.014**	Accepted
H_2	LM → STDPERF	.016	.003	.027	.582	.561	Rejected
H_3	LEVPART → STDPERF	.453	.473	.145	3.118	.002*	Accepted
H_4	DTE → STDPERF	-.079	-.078	.024	3.267	.001*	Accepted
H_5	LM*GENDER → STDPERF	-.039	-.037	.023	1.716	.086***	Accepted
H_6	LEVPART*GENDER → STDPERF	-.063	-.058	.028	2.291	.022**	Accepted
H_7	DTE*GENDER → STDPERF	-.066	-.059	.036	1.824	.068***	Accepted
H_8	LM*LEARNPREF → STDPERF	.079	.079	.032	2.463	.014**	Accepted
H_9	LEVPART*COG → STDPERF	-.018	-.020	.029	.630	.529	Rejected
H_{10}	TD(MED)LEVREV → STDPERF	-.121	-.090	.114	1.064	.287	Rejected
H_{11}	LM(MED)LEVREV → STDPERF	.158	.078	.150	1.053	.292	Rejected
H_{12}	LEVPART(MED)LEVINTE → STDPERF	.249	.260	.040	6.236	0.000*	Accepted

Notes: accept hypothesis at *sig. p<0.01, **sig. p<0.05 and ***sig. p<0.10.

4.5. Results' Discussion

This PLS-SEM is used to identify the influencing factors of ACCA students' examination performances. The following empirical analysis highlights the significance of the findings.

Hypothesis 1 is accepted as the p-value was less than 0.05, meaning that teaching delivery (TD) is significant and positively influences (β= 0.362) students' performance (STDPERF). This indicates that lecturers who focus on improving their delivery methods, or use different lecturing styles may be able to enhance the effectiveness in terms of students' performance. This claim is also supported by the previous research findings by Asgari et al. (2021) and Ma and Lee (2021).

Hypothesis 3 is accepted as p-value is less than 0.01, meaning that level of participation (LEVPART) is significant and positively influences (β= 0.453) the students' performance (STDPERF). This indicates that when students actively participate through discussions, questions, or collaborative tasks, they are more likely to connect with the subject matter, clarify some doubts, and be able to grasp the knowledge. This argument is supported by the previous research findings by Ali et al. (2021) and Amerstorfer and von Münster-Kistner (2021) who state that cognitive engagement comprises all kinds of thinking activities related to the involvement and participation in academic tasks, for example, paying attention; acquiring, processing, and storing information; as well as retrieving information from memory.

Hypothesis 4 is accepted as p-value is less than 0.01. Digital tool effectiveness (DTE) is significant and negatively influences (β= -0.079) students' performance (STDPERF). The result indicates that over-reliance on digital tools without clear alignment to the learning objectives can lead to superficial engagement, reducing critical thinking, and fragmented comprehension. This justification is supported by Bozkurt et al. (2023) and Van Schoors et al. (2023).

Hypothesis 5 is accepted as p-value is less than 0.1. Gender weakens (β= -0.039) the relationship between learning mode (LM) and student's performance (STDPERF). This indicates that a specific gender may face limitations to resources, representation in

conversations, or fair appraisal in contexts where uneven treatment or unconscious biases exist. Individuals' potentials are confined by society norms rather than their genuine skills, which can lead to low self-confidence, low interest, and eventually poor academic success. This argument is supported by Campbell (2020) and Hosseini and Sharifzad (2021).

Hypothesis 6 is accepted as p-value is less than 0.05. Gender weakens the relationship between level of participation (LEVPART) and students' performance (STDPERF). This shows that a specific gender may encounter impediments to active involvement in circumstances where gender biases exist, with some students may have to be encouraged to speak up more than others based on convention. As a result of gender-related pressures or biases, students are unable to fully benefit from collaborative and interactive learning experiences, impeding equal contributions, limiting different viewpoints, and impairing learning results. This justification is supported by Górska et al. (2021) and Lee and Mccabe (2021).

Hypothesis 7 is accepted as p-value is less than 0.1. Gender weakens (β= -0.066) the relationship between digital tool effectiveness (DTE) and student's performance (STDPERF). Gender differences may lead to technological self-efficacy thus creating an uneven playing field in which a specific gender may struggle to use or leverage on digital resources adequately. This can result in lower engagement, less interaction with course materials, and less collaborative possibilities, all of which can have an influence on academic success. Furthermore, gender biases in technology-related sectors can reinforce prejudices that inhibit particular genders from fully embracing digital technologies, aggravating the negative moderating effect on the relationship between technological efficacy and student performance. This explanation is supported by Abdulai et al. (2021) and Mathrani et al. (2022).

Hypothesis 8 is accepted as p-value is less than 0.05. Learning preference (LEARNPREF) strengthens (β= 0.079) the relationship between learning mode (LM) and students' performance (STDPERF). Students are more likely to be fully engaged, absorb concepts more efficiently, and retain information longer when learning modes cater to their preferences, whether visual, aural, kinaesthetic, or a combination. This alignment boosts motivation, reduces cognitive load, and encourages active engagement, all of which lead to greater academic success as the learning experience is suited to each student's preferred method of receiving and processing information. The claim is supported by Alzubi (2023) and Pandey and Pal (2023).

Hypothesis 12 is accepted as p-value is less than 0.01. Level of interaction (LEVINTER) strengthens (β= 0.249) the relationship between level of participation (LEVPART) and students' performance (STDPERF). Students who actively participate in high-interaction activities, such as serious debates, collaborative projects, and peer feedback, not only reinforce their own understanding but also obtain exposure to other opinions and constructive critiques. This multifaceted interaction fosters critical thinking and communication skills, resulting in improved academic performance as the combined effect of participation and interaction cultivates a more comprehensive and interconnected understanding of the subject matter. This critique is supported by Demetroulis et al. (2023).

The rest of the hypotheses are not discussed as they are not supported. It is concluded that learning mode does not significantly influence student performances, cognition does not significantly moderate level of participation and student performance, level of revision does not significantly mediate teaching delivery and student

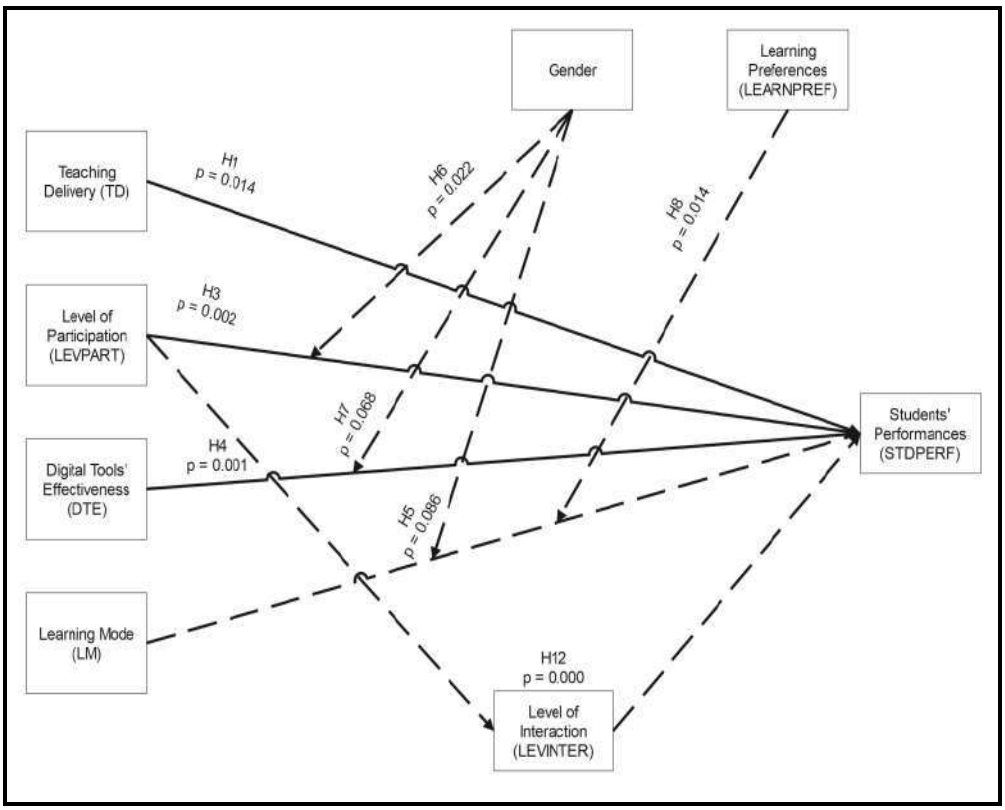
performances, and level of revision does not significantly mediate learning mode and student performances.

V. CONCLUSIONS AND RECOMMENDATIONS

5.1. Analysis

Figure 2 depicts the revised framework based on the findings of this study.

Figure 2
Validated Framework on the Determinants of Students' Performance



The rejected hypotheses indicate that learning mode does not influence students' performance. The choice of whether students come to class or learn online does not affect their performance. However, their learning preference does influence their performance. The different learning mode caters to students' learning behaviour such as availability of class recording from online classes allows them to review the contents in their own time whereas face-to-face classes give them access to group discussions.

Cognition as a moderating variable on the relationship between level of participation and performance does not strengthen or weaken the relationship. Students are committed in the classroom regardless of whether they understand or not. Factors such as teaching delivery and peer interaction may probably create a conducive classroom environment for students to participate in class.

Level of revision does not mediate the relationship between teaching delivery and students' performance, implying that teaching delivery is an important factor for student learning ACCA. This indicates that students are over-reliant on teaching delivery. This is a concern to be addressed given the shift towards online T&L materials provided by the professional bodies and educational resource providers that require students to be more independent and self-learners, to utilise these resources.

In addition, level of revision does not mediate the relationship between learning mode and students' performance, implying that regardless of the learning mode, students do their own revision at the same level. This indicates that students should develop high self-motivation to be able to revise independently out of classroom time.

Teaching delivery has a direct impact on students' performance. Therefore, factors that can improve teaching delivery such as training relevant to the nature of the programme and lecturers' qualification and experience are crucial.

Level of participation has a direct impact on students' performance. The more they participate in class the more they enhance their understanding. Interaction level, as part of the social framework, mediates the relationship between level of participation and students' performance. This indicates that the students participate well in class by interacting with their peers.

The effectiveness of digital tools directly affects student performance. This has implications on the digital infrastructure and accessibility to support the optimum use of digital tools in T&L. This is consistent with connectivism theory where the dynamics of networks, environments and ecologies support a continuous learning process.

Gender as a moderating factor weakens the relationship between level of participation and students' performance. Data shows that specifically male students are less likely to participate therefore may negatively impact their performance. Gender also weakens the relationship between digital tools' effectiveness and students' performance. Data shows that this is attributed to male students most probably because they under-utilise digital tools for learning and rely on traditional tools instead.

Students prefer going back to traditional face to face classes as compared to ODL classes during post covid-19 pandemic study sessions as evidenced by H_2, H_3, H_5, H_6, H_8 and H_{12}. Even so, generally students utilise certain advantages of ODL classes such as the availability of class recording that they can view repeatedly.

Students perceive ODL as effective for ACCA class delivery due to the advantage of ODL classes as highlighted and the fact that they have ready access to digital technology.

It is found that ODL classes do not significantly change students' learning style. Levels of participation and revision remain the same regardless of the learning mode as they tend to display the same learning behaviour in both ODL and traditional classes. It can be deduced that students are comfortable with both ODL and traditional classes.

5.2. Conclusions and Recommendations

This study seeks to understand whether students changing their learning style is a coping mechanism in their learning while education institutions transition from pandemic to endemic stage. Data analysis shows that only learning mode does not affect students' performance. Other factors such as teaching delivery, level of participation and digital tools effectiveness do. The core element of T&L concerns more on how the subject matter is being internalised by students and this is supported by factors that can assist their cognition. Learning style denotes more than learning mode and encompasses learning behaviour factors such as independent and active learner and high self-motivators. In the context of the ACCA programme, its demanding and dynamic nature place extra emphasis on these factors since students are required to adapt quickly to changes. Generally, the learning profile of the student population in this study indicates that the ability to adapt is still lacking and this may be a localised scenario. The practical implication of this finding can be used by educational administrators and policymakers to enhance learning experiences by having a comprehensive review of the education

system that can develop students to become independent and active learners with high self-motivation. The plus-side of covid-19 pandemic is that ODL classes enable students and lecturers to experience other T&L delivery than traditional. Capitalising on the best of both methods to bridge the gap between online and face-to-face T&L may produce a better design of the appropriate T&L style moving forward.

5.3. Recommendations for Future Research

Based on limitations of this study, the research should address the comparison of performance between online and face-to-face classes. As the findings of this study indicate the significant impact of learning preference on performance, future research can factor in students' profile to determine its impact on learning styles. Comparative study across countries and across different programmes may provide deeper insight on the learning styles of students as coping mechanism for change.

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